

# EMERGING AND RE-EMERGING ORGANIZATIONAL FEATURES, WORK TRANSITIONS AND OCCUPATIONAL RISK FACTORS: THE GOOD, THE BAD, THE RIGHT. AN INTERDISCIPLINARY PERSPECTIVE

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# EMERGING AND RE-EMERGING ORGANIZATIONAL FEATURES, WORK TRANSITIONS AND OCCUPATIONAL RISK FACTORS: THE GOOD, THE BAD, THE RIGHT. AN INTERDISCIPLINARY PERSPECTIVE

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The labor market is evolving very rapidly in recent years, in Europe and worldwide. The fast and deep changes brought a brand-new context of challenges and occupational risks to the attention of stakeholders. The current global financial crisis has increased the economic pressures on companies and they in turn have intensified the effects on employees, particularly in terms of new competition contexts and a lot of stress and mental health issues.

Concurrently, social, political, and environmental problems generate under-employment, over-qualification, over-education, low wages for skilled workers, and unmet demand for education. Consequently, both high skilled and low skilled immigrant workers are increasing. In addition, workplaces are continually changing in step with the introduction of new technologies, materials, and work processes, together with the changes in the labor market, the new forms of employment, and the new work organizations. These changes lead to new opportunities for employees and employers – but also to new risks or re-actualization of old organizational risks.

According to the EU-OSHA, the key points that describe the evolution that is currently ongoing in the world of work are globalization, the technical innovation, and the aging population. On one hand, some older potential risks are reappearing in organizations: intensive fear and worries, organizational anxiety, boredom, physical violence, alienation, segregation, loneliness, and isolation. On the other hand, re-emerging perceived organizational features seem vital for organizations and more important today than ever. Central constructs in the study of organizational behavior and organizational health such as perceived organizational support, commitment in organizational context, socialization processes, change capacity of organizations, perceived organizational justice, ergonomics, and motivation, nowadays seem increasingly important and renewed.

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# Editorial: Emerging and Re-emerging Organizational Features, Work Transitions, and Occupational Risk Factors: The Good, the Bad, the Right. An Interdisciplinary Perspective

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## Editorial on the Research Topic

### Emerging and Re-Emerging Organizational Features, Work Transitions and Occupational Risk Factors: The Good, the Bad, the Right. An Interdisciplinary Perspective

## INTRODUCTION

This special issue aims to provide an overview of the profound changes that have interested the labor market in the last decade all over the world. These rapid and profound transformations have, on the one hand, generated new opportunities for both employers and employees, but, on the other hand, they have led to the re-actualization of old organizational risks as well as the emergence of new occupational risks.

In such a context, the stakeholders had to suddenly face a new context of challenges and critical issues in the workplace and, therefore, it is not surprising that scientific research is increasingly focusing on perceived organizational support, commitment in organizational context, socialization processes, changes in capacity of organizations, perceived organizational justice, occupational ergonomics, and motivation.

The European Agency for Safety and Health at Work (EU-OSHA, 2016) has identified three key points that describe the ongoing evolution in the modern labor market: globalization, technical innovation, and aging of the population. First, some potential occupational risks, for many years considered old, are reappearing in organizations: intensive fear and worries, organizational anxiety, boredom, physical violence, alienation, segregation, loneliness, and isolation. Moreover, the perceived re-emerging organizational characteristics seem to be of utmost importance for companies.

The 33 manuscripts selected for this special issue are mainly empirical contributions, written by authors belonging to different disciplinary sectors and coming from different geographical regions. They therefore offer different perspectives on labor transitions and occupational risk factors, also

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contributing to promoting an interdisciplinary and international approach to research that will allow the progress of science in the field of occupational health and safety (H&S).

The manuscripts, when considered together, bring out three important aspects. First of all, the issues concerning the re-emergence and the emergence of occupational risks and professional opportunities are particularly current in the light of the continuous changes and of the instability of companies in the global economy. Secondly, employee health and well-being are crucial in a time of current global financial crisis and economic pressures on companies. Finally—considering the huge social, political and environmental implications—in this special issue is clearly emerged the importance of evaluation and prevention of psychosocial risks and work-related stress.

## OVERVIEW OF ARTICLES IN THIS RESEARCH TOPIC

The 33 papers published in the special issue addressed these issues in a variety of ways. There are: 23 original research; 6 perspectives; 3 conceptual analysis; and one review.

Following the setting of this Research Topic, the articles can be divided into two macro-categories: one “positive” (*the good, the right*) and the other “negative” (*the bad*). The first macro-category emphasizes the importance of health promotion and of the elements oriented to improve health and well-being of workers. The second macro-category places greater emphasis on the risk factors that the organization has to properly assess for the purpose of intervention in order to preserve health and safety of workers.

Furthermore, this Research Topic was focused on emerging and re-emerging organizational features in the contemporary occupational world. The received contributions highlight the strong need of studying the emerging phenomena both for health and for wellbeing of workers. However, it is equally important that the research also takes into account the “old” constructs that may acquire different and changing meanings in today’s occupational landscape, by virtue of the temporal and spatial context.

Thirteen manuscripts (6 original articles; 4 perspectives; 3 conceptual analysis) focus on the “positive” aspects (*the good, the right*) of work organizations, and highlight, at the same time, mainly emerging issues (well-being, performance, personal and organizational growth, healthy business, sustainable development, Industry 4.0, gratitude, etc.).

Mariani et al. consider safety climate in a warehouse and wants to analyze the Leader–Member Exchange (LMX) role in respect to safety performance. Survey data were collected from a sample of 133 full-time employees in an Italian warehouse. The study shows that the different aspects of leadership processes interact in explaining individual proficiency in safety practices.

Vignoli et al. using the Job Demands-Resources model, demonstrate how a mixed methods approach to conducting screening enables the identification of potential context-dependent demands and resources in the workplace, which should to be targeted by the intervention. The study confirms

that mixed methods approach is useful in occupational health intervention research and offers a way forward on helping organizations prioritize their intervention activities.

Palazzeschi et al. address innovation in organizations in the scenario of Industry 4.0, including technological innovation and psychological innovation. This perspective article also suggests new directions in a primary prevention perspective for future research and intervention relative to innovation and innovative work behaviors in the organizational context.

Di Fabio et al. examine, in a sample of 258 Italian workers, the relationship between the Intrapreneurial Self-Capital Scale (ISC) and well-being (hedonic well-being and eudaimonic well-being) controlling for the effects of personality traits, administering the Big Five Questionnaire (BFQ), the Intrapreneurial Self-Capital Scale (ISCS), the Satisfaction With Life Scale (SWLS), and the Flourishing Scale (FS). Hierarchical regression analyses showed that ISC explained a percentage of incremental variance beyond that explained by personality traits in relation to both life satisfaction and flourishing.

Ariza-Montes et al. assess the link between authenticity and subjective wellbeing within the rarely explored context of faith-driven organizations, where the management of emotions attains a particular significance. Specifically, this study links authenticity with subjective wellbeing among the distinct groups that shape a large international Catholic organization. Relatedly, the majority of studies featured in this special issue explored different organizational features linked to labor market changing.

Petrovic et al. analyze the psychometric properties of the Serbian versions of the UWES-17 and UWES-9. The sample consisted of 860 employees from a number of organizations and jobs across Serbia. The study contributes to enhanced understanding of work engagement by offering an insight from the Serbian cultural and economic context, significantly different from the UWES originating setting.

Di Fabio et al. in a perspective article, reviews the construct of gratitude. In organizations, gratitude is now thought to be crucial to employees’ efficiency, success, and productivity while also improving organizational citizenship behaviors, prosocial organizational behavior, and the organizational climate.

Another perspective article by Di Fabio deals with the concept of healthy organizations and starts with a definition of healthy organizations and healthy business. The focus is not on deficiency and failure but on a positive organizational attitude that proposes interventions at different levels: individual, group, organization, and inter-organization. Healthy organizations need to find the right balance between their particular situation, sector, and culture, highlighting the importance of well-being, and sustainability.

A third perspective article by Di Fabio discusses the contribution of the psychology of sustainability and sustainable development to well-being in organizations from a primary prevention perspective. It deals with sustainability not only in terms of the ecological, economic, and social environment but also in terms of improving the quality of life of every human being. The psychology of sustainability and sustainable development is seen as a primary prevention perspective that can foster well-being in organizations

at all the different levels going from the worker, to the group, to the organization, and also to inter-organizational processes.

Dell'Aversana and Bruno, in a perspective article, explore the perceptions of healthcare providers in managing diversity and the strategies used to meet health needs at a professional and organizational level. Findings indicated that dealing with diversity poses challenges for healthcare providers, by confronting them with multilevel barriers to quality of care.

A conceptual analysis by Herrera-Sanchez et al. focuses on the implementation process and attempts to identifying the main factors that contribute toward ensuring a greater success of occupational health and safety interventions conducted at the organizational level. They also propose some steps that can guide a successful implementation.

A conceptual analysis by Theeboom et al. describe which competencies of coaches are crucial in the different stages of change that coaching aims to bring about. The framework delineated in this paper contributes to the understanding of coaching as a tool to assist employees in dealing with the challenges of an increasingly dynamic work-environment and yields concrete suggestions for future theory development and research on coaching.

Graffigna discuss the results of a conceptual analysis of the literature conducted in order to investigate overlapping features and areas of divergence among three different areas of investigation and application of the engagement phenomenon in organized settings: the domains of employee engagement, consumer engagement, and patient engagement.

Nine manuscripts (8 original articles and a perspective) are focused on the “positive” aspects (*the good, the right*) of work organizations, and highlight, at the same time, mainly re-emerging issues (organizational justice, job demands, organizational constraints, role ambiguity, inclusive leadership human performance, etc.).

Lee et al. explore the linking mechanisms and conditional processes underlying the relationship between psychological voice climate and individual change readiness in a sample of 187 full-time employees.

Qi and Liu investigated the impact of inclusive leadership on employee voice behavior and team performance through caring ethical climate evaluating the model with a time-lagged data of 329 team members from 105 teams in six cities in China. This study revealed the mechanism of the positive cross-level effects of inclusive leadership on the caring ethical climate, employee voice behavior, and team performance.

Bar-On describe the development as well as the initial norming and validation of the Multifactor Measure of Performance™ (MMP™), which is a psychometric instrument that is designed to study, assess and enhance key predictors of human performance to help individuals perform at a higher level.

Loscalzo et al. deep the analysis of the wellbeing of peacekeepers military. They founded that peacekeepers have higher levels of psychological resources (i.e., self-efficacy, self-esteem, social support) and quality of life (i.e., higher life satisfaction and lower general stress).

The aim of Abessolo et al. study was to use Schwartz's model of structural values to empirically explore the relationships and structural correspondences among basic values, career orientations, and career anchors in an heterogeneous sample of 238 employees from French-speaking Switzerland. The results showed that it was possible to meaningfully position both career orientations and career anchors in Schwartz's values structure.

Pan et al. examined the effects of organizational justice (OJ) on positive organizational behavior POB of employees with two different studies, a large-sample survey and a situational experiment. In the first study, a total of 2,566 employees from 45 manufacturing enterprises completed paper-and-pencil questionnaires assessing OJ and POB of employees. In the second study, 747 employees were randomly sampled to participate in the situational experiment with  $2 \times 2$  between-subjects design.

Kowalczyk et al. evaluate the correlations between different aspects of 789 nurses' psychosocial working conditions. The results show that perception of the need for changes was influenced by the assessment of job demands, components of the control scale and, most of all, the scale of social support.

Since atypical forms of employment have substantially increased in the labor market, Kottwitz et al. building on research regarding organizational constraints and role ambiguity, hypothesize that the paucity of information is negatively related to job satisfaction. Multiple regression analyses further revealed interaction effects of paucity of information and form of employment. Specifically, the negative correlation of paucity of information with global as well as satisfaction with the social climate was stronger for employees' holding more than one job.

Bruno et al. conducted a survey among 57 Health Department directors belonging to the National Health Service in the North of Italy in 2016 with the aim to explore how different leaders' behaviors (task-oriented and relationship-oriented) interact with CO of health organizations. Specifically, the aim of the paper was to contribute to this topic, by considering the leaders' point of view.

Three original articles are focused on the “negative” aspects (*the bad*) in the work organizations, and highlight, at the same time, mainly emerging issues (such as age, work ability, future time perspective, and expatriations).

Converso et al. aims at examining the role of job and personal resources between age and work ability within 333 nurses. Multiple linear regression showed that age is significantly and negatively associated to work ability, and that job resources (e.g., decision authority and meaning of work) and personal resources (e.g., hope and resilience) moderate the relationship between age and work ability.

Kerry and Embretson analyzed FTP (Future time perspective) in an experimental manipulation of subjective life expectancy (SLE). Results indicate general support for decreasing age-change in FTP, indicated by independent-sample *t*-tests showing lower FTP in the “Die-by” framing condition.

In the article by Jannesari et al. is examined the role of psychological availability as a means of psychological engagement between self-initiated expatriates (SIEs) and their host-country nationals (HCNs) colleagues during their work and interaction adjustment. The study demonstrated the value of proactive



personality as an antecedent effect and supportive supervisor relations as a moderating effect and investigated how these factors can lead to a sense of psychological availability and boost psychological engagement between SIEs and HCNs in order to improve the adjustment between them.

Eight manuscripts (7 original articles and a review) are focused on the “negative” aspects (*the bad*) in the work organizations, and highlight, at the same time, mainly re-emerging issues (such as burnout, job insecurity, long working hours, specific occupational stressors as robberies, etc.).

Trifiletti et al. with the aim of extending the Anxiety Buffer Disruption Theory (ABDT), argue that high levels of burnout may disrupt the anxiety buffer functioning that protects people from death concerns. Participants were 418 nurses, who completed a questionnaire including: a mortality salience (MS) manipulation, a delay manipulation, and measures of burnout, work-related self-efficacy, and representation of oneself as a valuable caregiver.

Golonka et al. refer to cognitive aspects of burnout as the effects of long-term work-related stress. The purpose of the study was to investigate electrophysiological correlates of burnout to explain the mechanisms of the core burnout symptoms: exhaustion and depersonalization/cynicism.

In an EEG study, Golonka et al. focuses on analyzing event-related potentials (ERPs): N170, VPP, EPN, and LPP, as indicators of emotional information processing. The results show that burnout subjects, as compared to the control group, demonstrate significantly weaker response to affect-evoking stimuli, indexed by a decline in VPP amplitude to emotional faces and decreased EPN amplitude in processing emotional scenes.

The study by Soler-Gonzalez et al. assessed the relationship between absence (loneliness) and presence (empathy) of human connections with the occupational well-being of healthcare professionals in a sample of 628 healthcare professionals working in Spanish public healthcare institutions. The findings support an important role for empathy in the prevention of work stress in healthcare professionals. They also confirm that loneliness, as a multidimensional and domain specific experience, is detrimental to occupational well-being.

Wagner-Hartl and Kallus suggest that from a psychophysiological point of view long working hours were more demanding for normal hearing employees. In total, 51 white-collar workers, aged between 24 and 63 years, participated in the laboratory study. The results show no significant effects for age and hearing impairment on the intensity of subjective consequences (perceived recovery and fatigue, subjective emotional well-being and physical symptoms) of long working hours.

Chirumbolo et al. proposed the Job Insecurity Integrated Model aimed to examine the effects of quantitative job insecurity and qualitative job insecurity on their short-term and long-term outcomes. This model was empirically tested in two independent studies, hypothesizing that qualitative job insecurity mediated the effects of quantitative job insecurity on different outcomes, such as work engagement and organizational identification (Study 1), and job satisfaction, commitment, psychological stress, and turnover intention (Study 2).

Setti et al. explore to what extent experiencing robberies and/or thefts at work affect workers' mental health, coping-self-efficacy, social support seeking, workload, and job satisfaction. The results indicated that victims of thefts and robberies experienced greater workload, higher psycho-physical complaints, and greater tendency to seek social support in comparison with their non-affected counterparts.

The only review of this Research Topic, by Giorgi et al. assess, on the MEDLINE® database, the work-related stress in the banking sector. There was uniform agreement among the studies that stress in the credit industry is now at critical levels, and that it can have deleterious psychological effects on workers, and on their physical health, and that organizations, too, are affected. Most studies showed that mental health problems had increased in the banking sector, and that they were stress-related.

## CONCLUSION

Overall, the papers in this special issue report findings from a cumulative sample of nearly 31,000 workers and perspectives from 100 authors. They suggest that emerging and re-emerging organizational features and occupational risk factors may be enhanced by rapid transformations in both in organizations and in the workers (i.e., numerous changes in demographics, society, working processes, productive rhythms, and environment) and provide several perspectives and instruments to orientate both practice and research in the future.

We believe that the best starting point for making a correct assessment of the future of work is to analyze the current situation of the same. In this context, today there is a strong need to focus both on emerging occupational risks and on the reactivation of occupational risks that are now considered historic.

We would like to highlight a motto of the Business@Health Laboratory of the European University of Rome ([www.uerbusinesshealth.com](http://www.uerbusinesshealth.com)): “*business doesn't exist without workers' health & workers' health is business.*” Our hope is that this special issue will stimulate researchers in many disciplines to broaden their perspectives and horizons with the goal to integrate occupational H&S politics as part of activities oriented to promote at the same time health, well-being, performance, and productivity (e.g., Sagha Zadeh et al., 2018; Sorensen et al., 2018; Di Fabio and Kenny).

In fact, the adoption of multidisciplinary and integrated methodologies in the H&S management in the workplace is emerging. Such an approach is applicable in any employment context, particularly in larger companies. A careful assessment of the organizational and psychosocial risks and a subsequent adoption of truly effective measures can bring—in addition to the H&S benefits of workers—advantages for the companies in terms of increasing productivity and reducing injury risk. In this view, all the policies and the intervention strategies proposed in this special issue can be considered more as an opportunity than as a cost for the employers. This appears as the only road that can now be pursued to guarantee the competitiveness and

sustainability of European companies in an increasingly varied and globalized market.

## AUTHOR CONTRIBUTIONS

GA, GG, NM, J-LB, and AD equally contributed to all the following issues of the Editorial: conception of the work;

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# In an Unpredictable and Changing Environment: Intrapreneurial Self-Capital As a Key Resource for Life Satisfaction and Flourishing

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The twenty-first century is characterized by an unpredictable and challenging work environment, and the Intrapreneurial Self-Capital (ISC) career and life construct can be seen as a core of individual intrapreneurial resources that enables people to cope with ongoing challenges, changes, and transitions founding innovative solutions when confronted with the constraints imposed by such an environment. The ISC is a challenging construct since it can enhance behavior and attitudes through specific training, unlike personality traits, which are considered substantially stable in the literature. Against this background, the present study examined the relationship between ISC and well-being (hedonic well-being and eudaimonic well-being) controlling for the effects of personality traits. The Big Five Questionnaire (BFQ), the Intrapreneurial Self-Capital Scale (ISCS), the Satisfaction With Life Scale (SWLS), and the Flourishing Scale (FS) were administered to 258 Italian workers. Hierarchical regression analyses showed that ISC explained a percentage of incremental variance beyond that explained by personality traits in relation to both life satisfaction and flourishing. These results indicate that ISC is a key resource for hedonic well-being and eudaimonic well-being and that it offers new research and intervention opportunities.

**Keywords:** intrapreneurial self-capital (ISC), life satisfaction, flourishing, career construction, life construction, healthy business, healthy organization

## INTRODUCTION

The twenty-first century has so far been characterized by continuous economic challenges, globalization, and instability in the labor market (Savickas, 2011; Guichard, 2013). Occupational prospects are becoming increasingly unpredictable, and it is even more difficult to predict defined and stable life trajectories (Blustein, 2011, 2013; Savickas, 2011; Duffy et al., 2016).

In the face of this unpredictable and challenging environment, organizations try to introduce more innovation (García-Goñi et al., 2007) and workers need to adapt continually to change (Di Fabio and Gori, 2016a). In the current ever-changing world of work (Di Fabio and Kenny, 2016a), workers require the resources to deal with change constructively (Di Fabio and Gori, 2016a).

They can then devise new ways of dealing with challenges and transitions successfully thereby also promoting their own well-being (Zelenski et al., 2008; Van den Heuvel et al., 2010; Di Fabio and Palazzeschi, 2015; Di Fabio and Bucci, 2016). People who see change as an opportunity to learn and grow are far more likely to respond positively to the challenges of postmodern society (Wanberg and Banas, 2000; Van den Heuvel et al., 2013; Di Fabio, 2014; Di Fabio and Gori, 2016a). The great



benefit of intrapreneurial self-capital (ISC, Di Fabio, 2014), as a core of individual intrapreneurial resources, is that it can assist people cope with frequent changes and transitions by helping them come up with innovative solutions to problems.

## Intrapreneurial Self-Capital

At the same time, ISC represents a challenging career and life construct, a new scale to measure this construct (Di Fabio, 2014), and an intervention in terms of specific training to build and improve the construct (Di Fabio and Van Esbroeck, 2016). The ISC is “a higher order construct containing seven subconstructs: (1) core self-evaluation as positive judgment of oneself in terms of self-esteem, self-efficacy, locus of control, and absence of pessimism (Judge et al., 2003); (2) hardiness as resistance with its three dimensions: commitment, control, and challenge (Maddi, 1990); (3) creative self-efficacy as one's perception of one's ability to solve problems creatively (Tierney and Farmer, 2002); (4) resilience as the perceived ability to cope with adversity adaptively and to use adaptive strategies to deal with discomfort and adversity (Tugade and Fredrickson, 2004); (5) goal mastery as the perceived ability to continuously develop one's own skills (Midgley et al., 2000); (6) decisiveness as the perceived ability to make decisions timeously in any life context (Frost and Shows, 1993); and (7) vigilance as the careful searching for relevant information (Mann et al., 1997)” (Di Fabio, 2014, pp. 100–102). Empirical studies so far have shown a positive relationship between ISC and scholastic success, career self-efficacy, and employability and a negative relationship with difficulties in making career decisions. What makes ISC particularly interesting is that it can be enhanced through specific training (Di Fabio, 2014) unlike personality traits, which are generally regarded as being substantially stable (McCrae and Costa, 1987).

ISC can, in fact, be seen as an individual resource that workers can use to face the uncertainty of the twenty-first century world of work and that can promote “healthy organizations” within a primary prevention perspective (Hage et al., 2007; Di Fabio and Kenny, 2015). In the postmodern era, the role of a positive work environment in enhancing the health and well-being of workers is widely recognized (Sparks et al., 2001) and calls for an organizational positive psychology approach in an organization (Tetrick and Peiró, 2012; Snyder et al., 2014; Di Fabio and Kenny, 2015; Di Fabio and Gori, 2016a,b) centered on fostering positive individual resources to promote employee well-being and flourishing, resilient workers (Di Fabio and Saklofske, 2014b; Di Fabio and Kenny, 2015; Di Fabio and Maree, 2016). The definition of a healthy organization is fundamental in this approach (De Smet et al., 2007; Grawitch and Ballard, 2016), and a healthy organization can be considered an organization whose culture, climate, and practices generate an environment that promotes employee health and safety as well as organizational effectiveness (Lowe, 2010).

## Hedonic and Eudaimonic Well-Being

In terms of positive psychology (Seligman and Csikszentmihalyi, 2000), two aspects of well-being can be distinguished: hedonic well-being and eudaimonic well-being. Hedonic well-being (Watson et al., 1988) has life satisfaction as a cognitive evaluation

component (Diener et al., 1985) and the dominance of positive emotions over negative emotions as an affective evaluation component (Watson et al., 1988).

Eudaimonic well-being refers to the full functioning of the individual (Ryan and Deci, 2001), life meaning, and purposefulness (Waterman et al., 2010). Flourishing refers to social and psychological prosperity and well-being (Diener et al., 2010) and is seen as perceived success in important areas such as relationships, self-esteem, sense of purpose, and optimism.

ISC, as a core of individual intrapreneurial resources, can therefore be regarded as an asset for workers in the twenty-first century, helping them create innovative solutions when confronted with constraints imposed by the organizational challenging environment. ISC can promote healthy people in terms of both hedonic and eudaimonic well-being (Di Fabio and Gori, 2016c) and consequently also healthy organizations.

## Aim and Hypotheses

The aim of the study was to examine the relationship between intrapreneurial self-capital (ISC) and life satisfaction and flourishing controlling for the effects of personality traits.

The following two hypotheses were formulated.

- H1: A positive relationship will emerge between ISC and life satisfaction controlling for the effects of personality traits.
- H2: A positive relationship will emerge between ISC and flourishing controlling for the effects of personality traits.

## MATERIALS AND METHODS

### Participants

Two hundred and fifty eight Italian workers of different private and public organizations participated in the study. Regarding gender, the 59% of the participants were men and the 41% were women. The participants' ages ranged from 29 to 58 years ( $M = 45.59$ ,  $SD = 9.92$ ).

### Measures

#### Big Five Questionnaire (BFQ)

To evaluate personality traits, the Big Five Questionnaire (BFQ; Caprara et al., 1993) was used. The BFQ consists of 132 items with a response format on a 5-point Likert scale ranging from 1 = *Absolutely false* to 5 = *Absolutely true*. The questionnaire measures five personality traits. The Cronbach's alpha coefficients were 0.81 for Extraversion (example of item: “I think that I am an active and vigorous person”), 0.73 for Agreeableness (example of item: “I understand when people need my help”), 0.81 for Conscientiousness (example of item: “I tend to be very thoughtful”), 0.90 for Emotional stability (example of item: “I do not often feel tense”), and 0.75 for Openness (example of item: “I am always informed about what is happening in the world”).

#### Intrapreneurial Self-Capital Scale (ISCS)

To evaluate intrapreneurial self-capital, the Intrapreneurial Self-Capital Scale (ISC; Di Fabio, 2014) was used. The ISCS consists of 28 items (e.g., “I am able to deal with most of my problems,” “I am able to improve the ideas produced by others,” “One of my goals in training is to learn as much as I can”) with a response format on a 5-point Likert scale ranging from 1 = *Strongly agree*

**TABLE 1** | Means, standard deviations, and correlations between BFQ, ISCS, SWLS, and FS.

	<i>M</i>	<i>DS</i>	1	2	3	4	5	6	7	8
1. BFQ extraversion	77.06	13.30	–							
2. BFQ agreeableness	80.76	12.47	0.50**	–						
3. BFQ conscientiousness	81.72	12.80	0.48**	0.47**	–					
4. BFQ emotional stability	71.81	13.90	0.43**	0.41**	0.22**	–				
5. BFQ openness	83.52	12.98	0.53**	0.50**	0.40**	0.38**	–			
6. ISCS	103.00	14.57	0.31**	0.20**	0.18**	0.16**	0.28**	–		
7. SWLS	24.01	6.35	0.50**	0.45**	0.38**	0.39**	0.38**	0.44**	–	
8. FS	43.22	7.98	0.58**	0.50**	0.39**	0.40**	0.50**	0.52**	0.64**	–

*N* = 258. \*\**p* < 0.01. BFQ, Big Five Questionnaire; ISCS, Intrapreneurial Self-Capital Scale; SWLS, Satisfaction With Life Scale; FS, Flourishing Scale.

**TABLE 2** | Hierarchical regression.

	SWLS	FS
	$\beta$	$\beta$
<i>Step 1</i>		
BFQ extraversion	0.24**	0.31**
BFQ agreeableness	0.18*	0.11
BFQ conscientiousness	0.12	0.01
BFQ emotional stability	0.17*	0.13*
BFQ openness	0.12	0.14*
<i>Step 2</i>	0.32***	0.37***
<b>ISCS</b>		
<i>R</i> <sup>2</sup> step 1	0.31***	0.39***
$\Delta R^2$ step 2	0.09***	0.12***
<i>R</i> <sup>2</sup> total	0.40***	0.51***

The contributions of personality traits (first step) and intrapreneurial self-capital (second step) to life satisfaction (SWLS) and flourishing (FS).

*N* = 258. \**p* < 0.05. \*\**p* < 0.01. \*\*\**p* < 0.001. BFQ, Big Five Questionnaire; ISCS, Intrapreneurial Self-Capital Scale; SWLS, Satisfaction With Life Scale; FS, Flourishing Scale.

to 5 = *Strongly disagree*. Cronbach's alpha coefficient was 0.84 (Di Fabio, 2014).

### Satisfaction with Life Scale (SWLS)

The Satisfaction With Life Scale (SWLS, Diener et al., 1985) in the Italian version by Di Fabio and Gori (2015) was used to evaluate life satisfaction. The scale consists of five items (e.g., "I am satisfied with my life," "The conditions of my life are excellent") on a 7-point Likert scale ranging from 1 = *Strongly disagree* to 7 = *Strongly agree*. Cronbach's alpha coefficient was 0.85.

### Flourishing Scale (FS)

The Flourishing Scale (FS, Diener et al., 2010) in the Italian version by Di Fabio (2016) was used to evaluate flourishing. The FS consists of eight items with response options on a 6-point Likert scale ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*). Examples of items: "My social relationships are supportive and rewarding," "I lead a purposeful and meaningful life," "I am optimistic about my future." The FS showed a unidimensional structure with good reliability in the present study ( $\alpha = 0.88$ ).

### Procedure and Data Analysis

The questionnaires were administered in groups by trained psychologists. The order of administration was counterbalanced

to control the possible effects of a set presentation of the instruments.

The study assured to respondents anonymity and confidentiality. The questionnaire included a statement regarding the personal data treatment, in accordance with the Italian privacy law (Law Decree DL-196/2003). The workers authorized and approved the use of anonymous/collective data for possible future scientific publications. Because the data was collected anonymously and the research investigated psycho-social variables not adopting a medical perspective, ethical approval was not sought.

Descriptive statistics, Pearson's *r* correlations and hierarchical regressions were used. For the studied variables, gender differences were analyzed in distinct regressions for gender but no differences emerged. Therefore, only regressions for the entire sample are presented in the results session.

## RESULTS

Means, standard deviations, and correlations between the BFQ, ISCS, SWLS, and FS are shown in **Table 1**.

**Table 2** shows the results of two different hierarchical regression models, alternatively with life satisfaction and flourishing as the criterion measures and with personality traits at the first step and intrapreneurial self-capital at the second step.

At the first step, personality traits accounted for 31% of the variance in life satisfaction. At the second step, intrapreneurial self-capital added 9% of the incremental variance. The model overall accounted for 40% of the variance.

At the first step, personality traits accounted for 39% of the variance in flourishing. At the second step, intrapreneurial self-capital added 12% of the incremental variance. The model overall accounted for 51% of the variance.

## DISCUSSION

The aim of the present study was to examine the relationship between intrapreneurial self-capital, life satisfaction and flourishing controlling for the effects of personality traits.

The first hypothesis was confirmed as intrapreneurial self-capital added significant incremental variance beyond that accounted for by personality traits in relation to life satisfaction. The present study showed that intrapreneurial self-capital helped create individual resources the participants could use to deal

with twenty-first century challenges and thus also the challenges of everyday existence (Di Fabio, 2014) thereby contributing to greater hedonic well-being in terms of global satisfaction with their own careers and lives (Diener et al., 1985).

The second hypothesis, too, was confirmed as intrapreneurial self-capital added significant incremental variance beyond that accounted for by personality traits in relation to flourishing. These results supported the positive association of intrapreneurial self-capital (Di Fabio, 2014) with eudaimonic well-being (Di Fabio and Gori, 2016c) in terms of social and psychological prosperity and well-being in important areas such as relationships, self-esteem, presence of purpose, and optimism (Diener et al., 2010). It is interesting to note that ISC offered the biggest contribution to variance, especially in relation to flourishing, underlining the promising role of this core of intrapreneurial resources in promoting people as flourishing and resilient workers.

## Limitations

The study showed the positive contribution of ISC to life satisfaction and flourishing, yet a number of limitations can be mentioned. The sample was limited to a group of Italian workers who were not necessarily representative of all Italian workers. Future research should therefore extend the study of the relationship between these variables to participants from different geographical areas in Italy. Participants in other countries could also be included. Future research could also investigate ISC in relation to other aspects of hedonic and eudaimonic well-being (Watson et al., 1988) such as positive affect and meaning in life (Morgan and Farsides, 2009), subjective experiences of eudaimonia (Waterman et al., 2010), and existential fulfillment (Länge et al., 2003). Future research could also investigate ISC in relation to job satisfaction (Drydakis, 2017). Despite these limitations, the results add to the literature on the subject by

underlining the contribution of ISC to life satisfaction and flourishing.

## Practical Implications

If future research confirms the results of the present study, interventions could be introduced to enhance ISC thereby helping people face more successfully the unpredictable and changing environment in twenty-first century organizations. This would promote both individual and organizational well-being as seen from a primary prevention perspective in positive psychology (Hage et al., 2007; Di Fabio and Saklofske, 2014b; Di Fabio and Kenny, 2016b).

## CONCLUSIONS

In conclusion, ISC, as a core of individual intrapreneurial strengths, can be regarded as a key resource that workers can use to deal with the ongoing changes in the twenty-first century working environment (Di Fabio, 2014; Di Fabio and Gori, 2016a). The contribution of ISC to different aspects of workers' well-being highlights, from an organizational positive psychology perspective, the importance of enhancing individual resources (Di Fabio and Saklofske, 2014a,b; Di Fabio, 2015) to promote healthy businesses and healthy organizations (Boyatzis et al., 2002, 2015; Boyatzis and Saatcioglu, 2008; Boyatzis, 2009; Di Fabio and Blustein, 2016; Di Fabio and Kenny, 2016a,b; Di Fabio et al., 2016).

## AUTHOR CONTRIBUTIONS

ADF conceptualized the study, choose the theoretical framework and the measures. OB helped in the collection of the data. ADF and LP analyzed the data and wrote the methods and results. Then all authors wrote the paper together and read and revised the manuscript several times.

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# Cognitive Impairments in Occupational Burnout – Error Processing and Its Indices of Reactive and Proactive Control

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The presented study refers to cognitive aspects of burnout as the effects of long-term work-related stress. The purpose of the study was to investigate electrophysiological correlates of burnout to explain the mechanisms of the core burnout symptoms: exhaustion and depersonalization/cynicism. The analyzed error-related electrophysiological markers shed light on impaired cognitive mechanisms and the specific changes in information-processing in burnout. In the EEG study design ( $N = 80$ ), two components of error-related potential (ERP), error-related negativity (ERN), and error positivity (Pe), were analyzed. In the non-clinical burnout group ( $N = 40$ ), a significant increase in ERN amplitude and a decrease in Pe amplitude were observed compared to controls ( $N = 40$ ). Enhanced error detection, indexed by increased ERN amplitude, and diminished response monitoring, indexed by decreased Pe amplitude, reveal emerging cognitive problems in the non-clinical burnout group. Cognitive impairments in burnout subjects relate to both reactive and unconscious (ERN) and proactive and conscious (Pe) aspects of error processing. The results indicate a stronger ‘reactive control mode’ that can deplete resources for proactive control and the ability to actively maintain goals. The analysis refers to error processing and specific task demands, thus should not be extended to cognitive processes in general. The characteristics of ERP patterns in burnout resemble psychophysiological indexes of anxiety (increased ERN) and depressive symptoms (decreased Pe), showing to some extent an overlapping effect of burnout and related symptoms and disorders. The results support the scarce existing data on the psychobiological nature of burnout, while extending and specifying its cognitive characteristics.

**Keywords:** burnout, cognitive impairments, error processing, ERN, Pe, reactive and proactive control

## INTRODUCTION

Professional burnout is a syndrome that is currently receiving much interest from scientific research and organizational specialists. The concept of burnout is characterized by typical symptoms: psychophysical or emotional exhaustion, depersonalization and diminished professional efficacy (Maslach and Schaufeli, 1993; Maslach et al., 1996, 2001; Maslach and Leiter, 1997, 2004, 2008; Leiter and Maslach, 2004). The processual character of burnout refers to

cumulative negative consequences of long-term work-related stress. The core burnout symptoms are exhaustion (associated with a lack of energy, fatigue, and discouragement) and depersonalization/cynicism (associated with withdrawal, lack of motivation and emotional distance with clients, patients or co-workers). These usually lead to a further decrease in personal accomplishment and professional efficacy. However, additional effort and other compensative mechanisms may prevent these consequences (Berggren and Derakshan, 2013; Moser et al., 2013). The sequential process of burnout (e.g., Leiter et al., 2010) implies that the initial state of fatigue and exhaustion may lead to further psychosocial and health consequences.

There are many studies examining the antecedents and prevalence of burnout (for a review see Maslach et al., 2001; Schaufeli et al., 2009), effects on psychosomatic health (Bauer et al., 2006; Melamed et al., 2006; Feuerhahn et al., 2013) and work performance (Beck et al., 2013; Diestel et al., 2013). Despite the fact that burnout has well-documented effects on psychophysical states, a limited number of studies have examined its influence on specific cognitive functions (e.g., van der Linden et al., 2005; Schmidt et al., 2007; Castaneda et al., 2011; Oosterholt et al., 2012, 2014; Deligkaris et al., 2014; Sokka et al., 2014, 2017; Giorgi et al., 2016). Regarding the broader context of the current economic situation (Mucci et al., 2016), the dynamics of workplace changes (Rachiotis et al., 2014; Giorgi et al., 2015), and the prevalence of work-related stress and burnout problems, it is particularly important to study its impact on mental health, well-being and individual functioning.

## Burnout and Cognitive Functions

Based on the assumption that burnout is a stress-related syndrome (Maslach et al., 2001), the research on the consequences of long-term stress on the brain and cognition is particularly interesting (Sapolsky, 1996; Buwalda et al., 2005; Marin et al., 2011). Rönnlund et al. (2013) found that long-term stress is associated with decreased subjective evaluation of memory and cognitive functioning. Nonetheless, there was no significant difference with controls regarding objective tests, such as episodic memory performance, word fluency and block design performance. A systematic review provided by Deligkaris et al. (2014) distinctly showed that burnout is associated with a decline in three main cognitive functions: executive functions, attention and memory (assessed objectively using psychometric tests instead of self-reports). Impaired cognitive functioning is often reported by burnout individuals who complain about attentional and memory problems (van der Linden et al., 2005; Oosterholt et al., 2012; Feuerhahn et al., 2013; Jonsdottir et al., 2013). According to van der Linden et al. (2005), burnout subjects reveal difficulties in voluntary control over attention and the difficulties vary with the severity of burnout symptoms. The latest findings of He et al. (2017) confirmed cognitive impairments in burnout subjects who had lower scores of immediate memory and attention and a lower total score of Repeatable Battery for the Assessment of Neuropsychological Status (RBANS). He et al. (2017) demonstrated that lower cognitive performance in burnout was associated with decreased brain-derived neurotrophic factor (BDNF).

## Error Monitoring

Regarding the core burnout symptoms of emotional exhaustion and depersonalization, cognitive processing in which emotional aspects are involved remains particularly interesting. One well-studied example of this process is error monitoring. Error monitoring is a fundamental component of behavioral regulation that has a significant adaptive function related to signaling and detection of errors that makes it possible to adjust to current and future situations. Compton et al. (2008) have already shown that error monitoring plays a crucial role in an individual's adaptation, particularly in situations of environmental stress. According to their research, participants who better distinguished between errors and correct responses were less reactive to stressors and exhibited superior emotion regulation in response to stressors in daily life.

Results from electrophysiological studies suggest two main response-locked components of error processing: error-related negativity (ERN) and error positivity (Pe) (Falkenstein et al., 1990, 1991). ERN and Pe reflect neural activity related to action monitoring. Although these two components are observed after errors are committed, they differ in terms of timing and cognitive significance.

The ERN is a negative deflection occurring 0–100 ms after an erroneous response. It is thought to represent a rapid, automatic internal response evaluation mechanism (Unger et al., 2014). Its homolog after correct responses is correct-response negativity (CRN): an event-related potential of similar topography and source of generation, but with much less prominent amplitude. The other event-related potential component associated with the process of response evaluation is Pe: a positive deflection occurring 200–400 ms after an erroneous response and reflecting conscious error recognition (Falkenstein et al., 2000).

The brain structure believed to underlie the process of response evaluation and error detection is the anterior cingulate cortex (ACC), a brain area that is part of the limbic system that has great importance in affect regulation and response selection (Hajcak et al., 2004). The ACC—especially its dorsal part—was found to be the source of the event-related potentials involved in response evaluation (Debener et al., 2005).

The findings of Nieuwenhuis et al. (2001) and Endrass et al. (2007) pointed toward the clarification that ERN and Pe are different processes regarding the level of awareness. While ERN is not modulated by error awareness, Pe is. Pe is described not only as an index of conscious error awareness, but also as motivated attention allocation that enhances behavioral adjustments and may lead to improved performance (Nieuwenhuis et al., 2001; Schroder et al., 2013).

## ERN and Pe in Psychopathology

Studies have suggested that a wide variety of mental or psychological disorders are associated with altered error processing; this is observable in error-related potential (ERP) patterns and is indexed by ERN and Pe components (e.g., Hajcak et al., 2004; Hajcak and Foti, 2008).

## ERN Component

Patients with obsessive-compulsive disorder, generalized anxiety disorder and major depressive disorder were often characterized by hyperactive early error monitoring, reflected in a larger ERN (for review see Weinberg et al., 2010; Hajcak, 2012; Moran et al., 2017). On the other hand, individuals diagnosed with borderline personality disorder, autism spectrum disorder (for review see Wu et al., 2014) and individuals with substance abuse and impulsive personality characteristics (Hajcak et al., 2004) have decreased ERN amplitude. Moreover, the amplitude of the ERN is known to be influenced by external factors. Examples include: greater amplitude when the task instruction stresses performance accuracy over response speed (Gehring et al., 1993); when there is a prominent discrepancy between a correct and incorrect response (Falkenstein et al., 2000); when the negative affect is induced during the experimental manipulation (Wiswede et al., 2009).

Pfabigan et al. (2013) revealed that a short-lasting subjective state manipulation evoking feelings of helplessness increased ERN amplitude (but did not differentiate the later stages of performance monitoring indicated by Pe amplitude), which proves that such manipulation can modulate some neuronal correlates of action monitoring. This leads to the assumption that context and environmental factors may be considered as independent variables influencing ERP patterns.

In their meta-analysis of the relationship between anxiety and error monitoring, Moser et al. (2013) found a consistent pattern for ERP components for the pathological anxiety indexed by higher ERN amplitude. Anxiety relates to exaggerated error monitoring and is accompanied with typical symptoms including cognitive deficits, impairments in personal functioning, and strategic avoidance behaviors. Regarding the complexity of the studied construct, Moser et al. (2013) indicated two main facets of anxiety: anxious apprehension and anxious arousal. Anxious apprehension is defined by excessive worry and ruminations evoked by indistinct future threats, while anxious arousal is defined by somatic tension and physiological hyperarousal evoked by present and distinct threats. Interestingly, Moser et al. (2013) suggest that increased ERN relates more to anxious apprehension than anxious arousal.

Schroder et al. (2013) point out that depressive symptoms may also be correlated with reduced ERN or show no relation to ERN amplitude. Some data suggests that depression is associated with components that are later than ERN and Pe. Alderman et al. (2016) observed no differences between depressed and control groups in ERN and Pe, but found significant differences in other late ERP components, whose amplitude was higher in depressed groups. Thus, although more evidence supports the increased ERN effect in depression, the outcomes from the aforementioned findings are not conclusive.

## Pe Component

In a study on anxiety with enhanced concern over mistakes, Tops et al. (2013) observed an increase in Pe amplitude. According to Moser et al. (2013) the relation between the Pe component and anxiety is inconclusive as research variously shows reduced Pe, increased Pe, or revealed no association.

Considering depression and negative affect, the results consistently reveal reduced (e.g., Hajcak et al., 2004; Holmes and Pizzagalli, 2010; Olvet et al., 2010; Schroder et al., 2013) or unaffected (e.g., Alderman et al., 2016) Pe amplitude. Schroder et al. (2013) observed that reduced Pe was related to worse post-error accuracy and stated that reduced Pe in depressed participants may be evidence of worse resource allocation in error trials.

## Error Monitoring in Burnout – ERN and Pe Components

It is already proven that ERP components may be considered as significant markers for many clinical disorders. Burnout, by its correlation with depressive symptoms, negative affect, and anxiety, may also be related to the ERP patterns described above. One important aspect of the aforementioned studies is the clinical character of most studied samples. The question arises if these relationships appear in non-clinical groups. Although Olvet and Hajcak (2008) claim that abnormalities of the ERN are related to relatively stable characteristics, some researchers have already proved that situational changes can modulate ERP patterns. An increase in the ERN amplitude can be observed when the task instruction stresses performance accuracy over response speed (Gehring et al., 1993), or when there is a substantial difference between a correct and incorrect response (Falkenstein et al., 2000). On the contrary, decrease in the ERN amplitude can be observed when presented stimulus is rudimentary (Scheffers and Coles, 2000), due to the fatigue (Scheffers et al., 1999) or in older age (Falkenstein et al., 2001).

Hajcak et al. (2004) suggested that exploration of response monitoring abnormalities in the context of different concepts of psychopathology is an important research area. To the best of these authors' knowledge, the proposed study is one of the first in which the problem of error monitoring is analyzed in the context of burnout. All the above findings support the idea of electrophysiological indices in burnout groups. The question then arises as to what the specific pattern of ERN and Pe components in burnout groups is. Considering significant correlations between ERP components and clinical disorders, particular attention is paid to the characteristics of the studied group.

## The Severity of Symptoms – Clinical and Non-clinical Burnout

The degree of burnout refers to the range and severity of the symptoms. In the literature, a popular distinction which refers to clinical and non-clinical burnout groups can be found (Oosterholt et al., 2014). The non-clinical burnout group refers to burnout symptoms among employees who can still do their job. The clinical burnout group consists of employees who reveal severe burnout symptoms and who are not able to perform efficiently or are unable to perform their duties at work. The latter group usually requires professional treatment to overcome employees' problems (Van Dam, 2016). Interestingly, some researchers also indicate the sociocultural context that defines clinical or non-clinical connotations of burnout subgroups. For



example, Schaufeli et al. (2009) point out that burnout severity does not only refer to intensity of the consequences of long-term work-related stress, but also to the broader context of the methods of diagnosis and treatment.

Burnout subjects who are drug-free, currently working, and describe themselves as 'healthy individuals' without any psychiatric or neurological disorders are assumed in the presented study to refer to a non-clinical group.

Summarizing the above findings, it may be concluded that burnout individuals should reveal impaired response to potentially stressful events. On the basis of existent studies on cognitive impairments, a significant difference between burnout and controls in error processing is expected. Thus, the following main research hypothesis is proposed:

**General hypothesis:** Compared to controls, burnout subjects reveal different ERP patterns in error processing indexed by ERN and Pe amplitudes.

Considering strong burnout correlations with anxiety and depressive symptoms, it can be hypothesized that burnout subjects should reveal increased ERN, as enhanced ERN was observed in most studies in negative affect and depressive or anxiety samples (e.g., Hajcak et al., 2004; Holmes and Pizzagalli, 2010; Moser et al., 2013, respectively).

Regarding the Pe component, it reflects conscious aspects of error monitoring, therefore depletion rather than enhancing would be expected. This would correspond with withdrawal, inhibition, distancing and emotional detachment as symptoms of cynicism and would be in line with some EEG research on depressive symptoms (Hajcak et al., 2004; Holmes and Pizzagalli, 2010; Olvet et al., 2010; Schroder et al., 2013).

Thus, referring to the presented literature review, two specific hypotheses are introduced:

**Hypothesis A:** Burnout subjects reveal enhanced ERN amplitude in error processing.

**Hypothesis B:** Burnout subjects reveal decreased Pe amplitude in error processing.

## MATERIALS AND METHODS

### Participants

The study was conducted on a group of 80 participants (47 females; mean age = 36.00 years;  $SD = 7.77$  years) selected from an initial group of 100 subjects. Participants were excluded on the basis of inconclusive questionnaire results (11 participants), poor EEG data quality (5 participants), and insufficient number of committed errors (4 participants).

This study was carried out in accordance with the recommendations of the APA Ethics Code. All subjects gave written informed consent in accordance with the Declaration of Helsinki. The study protocol was approved by the Bioethics Commission at Jagiellonian University.

Participants were employees with at least 1.5 years of work experience, ranging in age from 25 to 55. They were recruited to the study after completing the Maslach Burnout Inventory – General Survey (MBI-GS; Maslach et al., 1996) and the Areas of

Worklife Survey (AWS; Leiter and Maslach, 2004). The presence of burnout symptoms was rechecked with the use of the Link-Burnout Questionnaire (LBQ; Santinello, 2007) at the time of the EEG session.

Subjects were paid for their participation. All of them were reported to be active workers, not to work night shifts, with normal or corrected-to-normal vision. They all described themselves as being right-handed, not suffering from any neurological disorders, not being addicted to psychoactive substances, and not being pregnant.

Based on MBI-GS and AWS results, subjects were divided into two groups: the burnout group and the control group. The burnout group is characterized with high scores on exhaustion ( $>4$ ) and cynicism ( $>4$ ) and medium scores on efficacy ( $<3.5$ ). Additionally, to ensure the work-related context of burnout symptoms, only subjects with low scores in at least three of six AWS scales were selected for the burnout group. Low AWS scores indicate the mismatch between individual and work environment in six work-related areas: workload, control, reward, community, fairness, and values. Furthermore, to control individual characteristics, trait anxiety, neuroticism and depressive symptoms were analyzed on the basis of the State-Trait Anxiety Inventory (STAI; Spielberger, 1989), NEO Five-Factor Inventory (NEO-FFI; Costa and McCrea, 1992), and Beck Depression Inventory (Beck et al., 1988), respectively.

Results of the burnout group ( $N = 40$ ) and demographically matched (including educational level) healthy reference subjects ( $N = 40$ ) were analyzed in the study. The mean age of the burnout group was 37.60;  $SD = 7.27$  years (23 females); the mean age of the control group was 34.40;  $SD = 8.02$  years (24 females). The descriptive statistics of the burnout and control groups

**TABLE 1 | The means (M) and standard deviations (SD) for the burnout and control groups on burnout symptoms (exhaustion, cynicism, and efficacy), depressive symptoms, neuroticism, anxiety, work-life areas, and independent-sample *t*-test between burnout and controls.**

	BURNOUT ( $N = 40$ ) M (SD)	CONTROL ( $N = 40$ ) M (SD)	<i>t</i> -value ( $df = 78$ )
<b>MBI-GS</b>			
Exhaustion	4.32 (0.83)	1.86 (0.70)	−14.34***
Cynicism	4.11 (0.82)	1.44 (0.63)	−16.34***
Efficacy	3.22 (1.11)	4.53 (0.60)	6.58***
<b>BDI</b>			
Depression	15.58 (7.18)	4.45 (4.18)	−8.47***
<b>NEO</b>			
Neuroticism	27.85 (7.71)	14.98 (6.09)	−8.29***
<b>STAI-T</b>			
Anxiety	51.30 (8.19)	39.45 (6.78)	−7.05***
<b>AWS</b>			
Workload	2.24 (0.82)	3.23 (0.84)	5.36***
Control	2.42 (0.95)	3.45 (0.67)	5.60***
Rewards	2.36 (0.72)	3.44 (0.65)	6.96***
Community	2.65 (0.99)	3.58 (0.69)	4.89***
Fairness	1.93 (0.63)	3.09 (0.57)	8.66***
Values	2.71 (0.69)	3.57 (0.54)	6.16***

\*\*\* $p < 0.001$ .



are presented in **Table 1**, including burnout symptoms, work-life areas, anxiety, neuroticism and depressive symptoms and independent *t*-tests with *p*-values.

## Task

Participants were presented with an arrow-headed version of the flanker task (Eriksen and Eriksen, 1974). In this paradigm, participants respond to a target presented in the middle and are asked to ignore a simultaneously presented flanker stimuli. The task consists of two stimuli types: congruent, where target and flanker are alike, and incongruent, where target and flankers differ (Van Veen and Carter, 2002). Overall, the Eriksen flanker task is an example of a response-monitoring task and is characterized by good internal consistency and external validity (Olvet and Hajcak, 2008; Foti et al., 2013).

In the current experiment, five horizontally aligned arrowheads were presented in random order on each trial. Incongruent (i.e., < < > < < or > > < > >) and congruent stimuli (i.e., < < < < or > > > >) were presented in a 2:1 ratio to enforce the maximal number of committed errors. All stimuli were presented for 200 ms and the submitted response was followed by an ITI that varied from 800 to 1200 ms (mean 1000 ms).

## Experimental Procedure

Participants were seated at a viewing distance of approximately 60 cm and were instructed to press the “1” button with their left index finger if the center arrow was facing to the left and to press the “2” button with right index finger if the center arrow was facing to the right. Responses were submitted using SRbox (Psychological Software Tools Inc.). Moreover, they were told to respond both as quickly and as accurately as possible. Participants performed a practice block containing 20 trials, during which they were presented with external feedback indicating a good, bad or too slow response (the “too slow” screen appeared every time the response was slower than 500 ms, to force participants to respond as quickly as possible during the main experimental block). The actual task consisted of 5 blocks of 60 trials each (300 trials total). Participants were able to control the length of the inter-block interval.

## Psychophysiological Recording, Data Reduction and Analysis

Continuous dense-array EEG data (HydroCel Geodesic Sensor Net, EGI System 300; Electrical Geodesic Inc., Eugene, OR, USA) was collected from a 256 channel EEG at a sampling rate of 250 Hz (band-pass filtered at 0.01–100 Hz with a vertex electrode as a reference) and recorded with NetStation Software (Version 4.5.1, Electrical Geodesic Inc., Eugene, OR, USA). The impedance for all electrodes was kept below 50 k $\Omega$ . The offline data analysis was conducted with open source EEGLAB toolbox<sup>1</sup> (Delorme and Makeig, 2004). Data was digitally filtered to remove frequencies below 0.5 Hz and above 35 Hz. Average reference was recomputed, and bad channels were automatically removed

by kurtosis measures with a threshold value of five standard deviations. Next, continuous data was visually inspected in order to manually remove channels or time epochs containing high-amplitude, high-frequency muscle noise, and other irregular artifacts.

Independent component analysis was used to remove artifacts from data. Due to the large number of channels, decomposition of EEG data with the Infomax algorithm was preceded with Principle Component Analysis. Fifty independent components were extracted and visually inspected for each subject. On the basis of the spatiotemporal pattern (Bell and Sejnowski, 1995; Jung et al., 2000), components recognized as blinks, heart rate, saccades, muscle artifacts, or bad channels were removed. Missing channels were interpolated and ICA weights recomputed.

The EEG was segmented for each trial beginning 200 ms before each response onset and continuing for 1000 ms (i.e., for 800 ms following the response), and a 200 ms window from -200 to 0 ms prior to response onset served as the baseline.

The response-related brain activity was measured at the FCz electrode site (average of four fronto-central electrodes), where the error-related activity is maximal. The ERN was evaluated as the mean activity on error trials in the 70–90 ms post-response time-window. The same time-window was applied to epochs containing correct responses to assess the amplitude of CRN. The Pe was defined as the mean activity from 260 to 310 ms following both correct and erroneous responses.

Behavioral measures included both the number of error trials for each subject, as well as accuracy expressed as a percentage of incorrect trials. Moreover, average reaction times (RTs) on error and correct trials were calculated separately. Trials were removed from the analysis if RTs were faster than 200 ms or slower than 1000 ms (1.3% of all trials).

A paired *t*-test was separately performed for the ERN and PE time-windows to assess the significance of the difference between the mean post-response amplitude for error and correct trials.

The post-error mean amplitudes were tested separately for the ERN and the Pe time-window using a *t*-test to assess whether there was a significant difference between the burnout and control group. Similar analyses were performed for mean post-correct amplitudes.

## RESULTS

### Behavioral Results

Accuracy and RT data are presented in **Table 2**. The number of committed errors did not differ between the groups. RTs varied significantly as a function of accuracy [ $F(1,78) = 205.32$ ,  $p < 0.001$ ], with responses significantly faster on error than correct trials. Moreover, there was a significant difference in RT between the burnout and control group [ $F(1,78) = 4.67$ ,  $p < 0.05$ ], with controls responding significantly faster. However, no interaction effect was found. The analysis of post-error and post-correct RT revealed significantly faster responses following errors [ $F(1,78) = 200.93$ ,  $p < 0.001$ ], with no significant difference between the burnout and control group.

<sup>1</sup><http://sccn.ucsd.edu/eeqlab>

**TABLE 2 | Mean response times and accuracy values for burnout and control group.**

	BURNOUT (N = 40)	CONTROL (N = 40)
<b>Reaction time (ms)</b>		
Error trials	396.25 (93.86)	363.43 (63.43)
Correct trials	467.84 (67.08)	435.85 (51.70)
<b>Post-trial reaction time (ms)</b>		
Post-error trials	398.84 (92.80)	371.50 (64.90)
Post-correct trials	470.26 (65.80)	438.95 (51.22)
% of errors	4.7%	5.7%

Standard deviation values are noted in brackets.

## Psychophysiological Results

**Figure 1A** presents the grand average response-locked ERP waveform at the FCz recording site, comparing correct and error trial waveforms for burnout group and controls. The presented waveforms depict a difference in the post-error activity (red line) for the ERN component (marked by the first gray shadow bar) and the Pe component (marked by the second gray shadow bar) between the burnout (dotted line), and control (solid line) groups. The gray line presents post-correct ERP waveform (dotted line – burnout, solid line – control). **Figure 1B** presents topographic maps for the burnout (top) and control (bottom) groups, depicting voltage differences (in  $\mu\text{V}$ ) across the scalp for error minus correct responses in the time-window of the ERN (80 ms) and Pe (300 ms). In addition, **Table 3** presents grand-average mean amplitude values of ERN, CRN, and Pe (for both post-error and post-correct trials, respectively) for burnout, control, and total number of participants.

### The ERN/CRN

**Figure 2A** presents mean amplitude values of the post-error and post-correct response ERP components in the time-window of

**TABLE 3 | Grand-average mean amplitude values of error-related potential (ERN), correct-response negativity (CRN), and error positivity (Pe) (for both post-error and post-correct trials, respectively) for both burnout and control groups, and total number of participants.**

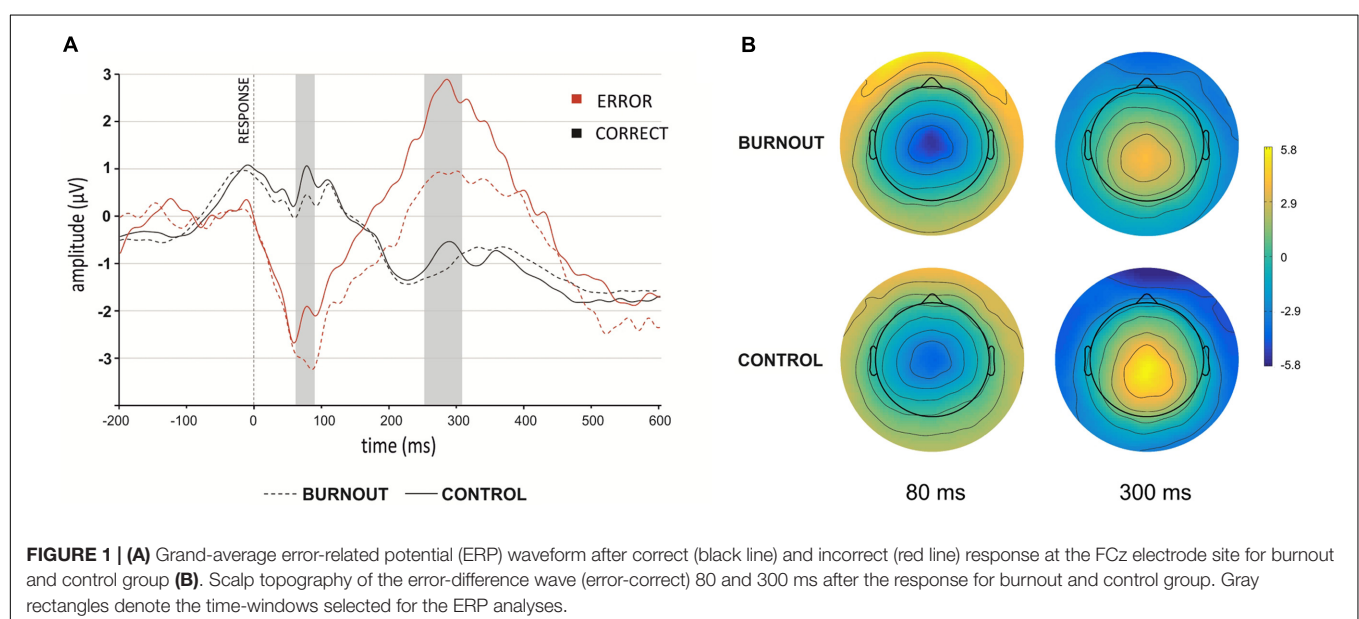
	Grand-average amplitude in $\mu\text{V}$ (SD)		
	BURNOUT (N = 40)	CONTROL (N = 40)	TOTAL
<b>ERN</b>	−3.12 (2.56)	−2.01 (2.36)	−2.57 (2.51)
<b>CRN</b>	0.29 (1.38)	0.87 (1.49)	0.58 (1.46)
<b>Pe</b>			
Post-error trials	0.89 (2.66)	2.69 (3.72)	1.79 (3.34)
Post-correct trials	−1.08 (1.66)	−0.64 (1.72)	−0.86 (1.69)

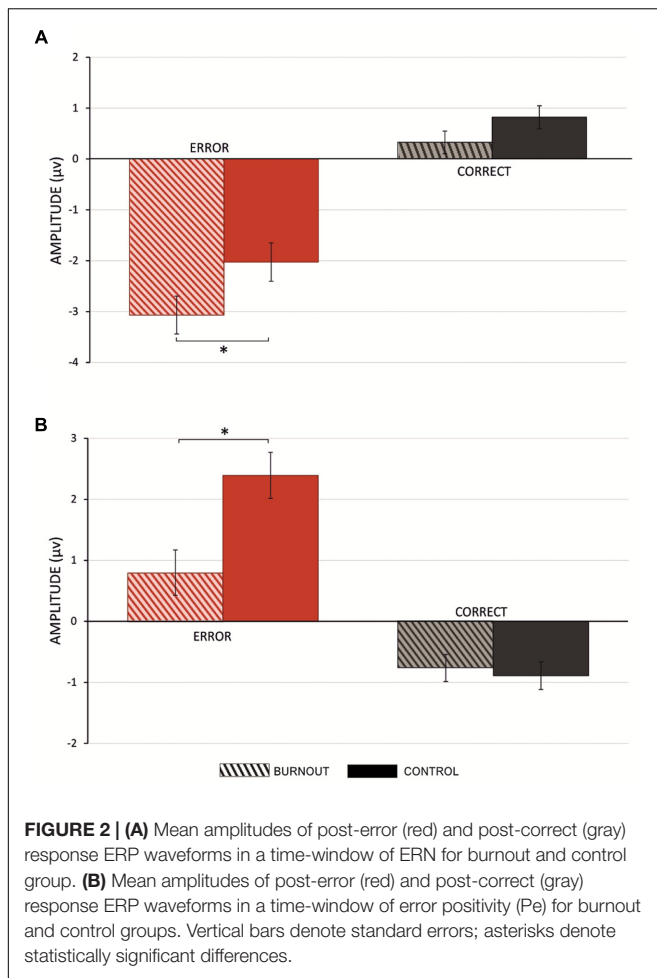
the ERN/CRN for the burnout and control groups. There was a significant difference between the response-related post-error ( $M = -2.57$ ,  $SD = 2.51$ ) and post-correct ( $M = 0.58$ ,  $SD = 1.46$ ) mean amplitude;  $t(79) = -9.54$ ,  $p < 0.001$ . Thus, the significantly more negative mean amplitude for the erroneous trials and the mean amplitude for the correct trials account for the ERN and CRN, respectively.

The analysis of a between-groups difference in the mean post-error activity revealed that burned-out participants had a significantly larger ERN, i.e., more negative amplitude ( $M = -3.12$ ,  $SD = 2.56$ ) than the control group ( $M = -2.01$ ,  $SD = 2.36$ );  $t(78) = 2.02$ ,  $p < 0.05$ . The amplitude of the CRN did not differentiate the groups [ $t(78) = 1.79$ ,  $p > 0.05$ ] (for reference, see **Figure 2A** and **Table 3**).

### The Pe

**Figure 2B** presents mean amplitude values of the post-error and post-correct ERP components in the time-window of the post-response positivity for the burnout and control groups. In the time-window of post-response positivity, there was a significant difference between the response-related post-error ( $M = 1.79$ ,





$SD = 3.34$ ) and post-correct ( $M = -0.86$ ,  $SD = 1.69$ ) mean amplitude;  $t(79) = 7.57$ ,  $p < 0.001$ . Thus, the Pe had significantly more positive mean amplitude for erroneous trials than correct ones.

The analysis of a between-groups difference in the mean post-error activity revealed that burned-out participants had a post-error Pe of significantly smaller (i.e., less negative) amplitude ( $M = 0.89$ ,  $SD = 2.66$ ) than the control group ( $M = 2.69$ ,  $SD = 3.72$ );  $t(78) = 2.02$ ,  $p < 0.05$ . The amplitude of the post-response activity in the time-window of Pe after correct responses did not differentiate the groups [ $t(78) = 1.1$ ,  $p > 0.1$ ] (for reference, see **Figure 2B** and **Table 3**).

## DISCUSSION

The presented study examined neural mechanisms of error processing among burnout individuals compared to a control group. The results are discussed in the context of behavioral research, ERP studies, as well as theoretical models and conceptions. The findings are also related to important scientific discussion on the overlapping effects of burnout, specific individual traits, and other symptoms and disorders.

Behavioral results revealed a significant difference in RTs, with controls responding significantly faster, but did not show a significant error rate difference between the groups. Therefore, notable behavioral adjustments in the burnout group lead to prolonged RTs on trials subsequent both to correct and erroneous trials, thereby reflecting a more cautious response mode that is consistent with earlier research (Rabbitt, 1966; Ridderinkhof et al., 2004). The effect of post-error slowing is not observed in the presented study. Schroder et al. (2013) concluded that post-error slowing may not be an inherent and adaptive reaction in each error commission situation: specific task context may be an important moderator here. The obtained behavioral results are consistent with many studies on depression (see for review Schroder et al., 2013) that suggest that in relatively simple flanker tasks, post-error performance impairments were not observed.

The presented results indicate that burnout individuals react slower, although no differences were observed on the performance level. The results are consistent with Moser et al.'s (2013) analysis: correlations between ERN and error range were found in only 3 of 37 reported studies; furthermore, in most studies performance level did not differentiate anxious and control groups. Moreover, none of the studies revealed a relationship between anxiety and RT.

The behavioral data is in line with Oosterholt et al.'s (2014) study, which compared three groups: clinical burnout, non-clinical burnout, and healthy control group. Only a mild impairment in cognitive test performance was observed in the clinical burnout group. The impairment was associated with slower RT, but no evidence of impaired cognitive functions was found. Similarly, Diestel et al. (2013) did not observe any differences in performance between exhausted and not exhausted subjects if tasks put low demands on executive control. The significant difference was observable only when a task was associated with high demands on executive control. Diestel et al. (2013) confirmed worse performance among burnout individuals, but only in specific circumstances. Similar tendencies were reported by Österberg et al. (2009). In many cases, only by analyzing particular conditions or certain detailed aspects of individual functioning is it possible to differentiate burnout subjects from controls. Furthermore, as many findings did not reveal a significant performance level difference between burnout/long-term stressed subjects and control groups, the criterion of lower efficacy and impaired performance is not so evident. Therefore, deeper and more detailed analyses could explain the specific problems of cognitive functioning among burnout subjects.

## ERN and Pe Components in Burnout

In terms of ERPs, participants diagnosed with burnout syndrome were characterized by significantly greater ERN amplitude in error trials, suggesting that this stress-related syndrome modulates the first stage of error processing linked with automatic detection of errors (Falkenstein et al., 2000).

The relation between ERN and depression and anxiety is not consistent in existing research; therefore, it is especially desirable to compare results referring to similar tasks. Schroder et al. (2013) compared the results of their study on depressive

disorder to other EEG studies. The researchers pointed that their observation of reduced Pe and intact ERN is similar to studies in which a flanker task was used (cf. Olvet et al., 2010). In terms of corresponding task demands, one could conclude that the burnout group can be distinguished from the depressive group on the basis of decreased ERN in error trials.

Regarding the phase of error monitoring, ERN demonstrates the first reflexive reaction, which seems to be exaggerated among burnout subjects. If, as pointed out by Maier et al. (2008), ERN is not linked to error detectability, it may imply that error commission is more significant for burnout subjects and evokes a stronger electrophysiological response.

Gehring et al. (1993) and Olvet and Hajcak (2008) suggested that ERN might relate to the significance of an error as it reflects ongoing evaluation of the response correctness and response conflict. If errors may be considered salient events which evoke emotional and motivational responses, the neural response for such events may be perceived as an index of an individual's emotional and motivational state. Thus, increased ERN in burnout may be a manifestation of both the significance of committed errors and increased sensitivity to committing errors. It can furthermore be an index of enhanced emotional reaction to erroneous response in burnout subjects.

Increased ERN in burnout may be described in terms of contemporary models of psychopathology (Krueger, 1999) and related to symptoms of internalizing disorder and core personality traits, i.e., neuroticism, negative emotionality, and behavioral inhibition. The dichotomic tendency in ERP changes (Hajcak et al., 2004) refer directly to internalizing and externalizing disorders. Hyperactive error processing indexed by increased ERN may characterize internalizing disorders, while hypoactive error processing indexed by decreased ERN may reflect externalizing disorders.

Significant correlations between burnout and anxiety, depressive symptoms and neuroticism have been revealed in many cited works. Additionally, most of these personality traits correlate with increased ERN (e.g., Amodio et al., 2008). Overall, it may be concluded that both objective and subjective measures support the idea of internalizing the nature of burnout syndrome.

Furthermore, Luu et al. (2000) and Hajcak et al. (2004) argued that increased ERN is not typical of pathological conditions of anxiety or depression; however, it reflects their underlying, core attribute, i.e., negative affect. Taking this perspective, it may be assumed that negative emotionality underlines the problems of impaired error processing in burnout individuals.

Smaller Pe in burnout subjects after erroneous responses implies reduced error awareness and attention allocation. Presumably, it is the basis for maladaptive reactions to failures. As is emphasized by Schroder et al. (2013), the trend of reduced Pe may be linked to diminished ability to adapt after failures, impaired coping strategies and helpless behavior.

If Pe, as much evidence indicates, reflects the conscious awareness of error commission (cf. Nieuwenhuis et al., 2001; Murphy et al., 2012; Schroder et al., 2013), reduced Pe amplitude in burnout groups may be associated with the decreased conscious detection of committed errors and reduced ability

to allocate attention in order to minimize the possibility of committing errors in the future.

Pe relates to post-error behavioral adjustment and may be linked to slower or more accurate responses (e.g., Nieuwenhuis et al., 2001; Schroder et al., 2013). The presented findings have revealed no differences in post-error behavioral measures. In this context, lower Pe may be interpreted in relation to diminished awareness of mistakes. The presented findings have not revealed any difference in post-error behavioral measures, so in this context lower Pe may be interpreted in relation to diminished awareness of mistakes. Maintenance of the same level of performance may stem from possible compensatory mechanisms developed by burnout subjects which require greater effort. In more complex and demanding tasks or situations, a decrease in Pe may be reflected by lower efficacy, which is a typical burnout symptom.

## The 'Hidden Costs' of Burnout

Some neuroimaging studies (for a review see Berggren and Derakshan, 2013) have revealed that increased neural activity in anxiety was linked to a possible compensatory effort. This helped to explain the maintaining of high performance in a broad range of attentional and memory tests. Moser et al. (2013) suggest that enhanced ERN may be an index of the compensatory effort and greater utilization of processing resources.

All of this leads to the conclusion that not effectiveness but efficiency is essential to the correct understanding of burnout. Although burnout subjects do not differ from control subjects in performance level (especially in non-demanding tasks), the costs invested in action performance may be higher. The 'effort to effect' ratio may be inadequate for expectations and needs. The costs of additional effort implemented in task performance may cause a state of imbalance that might subsequently activate defense mechanisms.

## Burnout and Reactive and Proactive Control

The results can also be discussed from the perspective of Braver's (2012) 'dual mechanisms of control' theory. Similar conclusions were drawn by Schroder et al. (2013) in relation to specific Pe patterns in depressed symptoms, and by Moser et al. (2013) regarding specific ERN patterns in anxiety. Braver explains the alternating nature of cognitive control and proposes a dual-mechanism framework. He focuses on the diversity and temporal dynamic of cognitive control processes. The differences between the two aspects of control refer to reactive and proactive control. Reactive control relates to transient, stimulus-driven goal reactivation, while proactive control enables optimal cognitive performance and refers to anticipatory maintenance of goal relevant information (Braver, 2012).

Schroder et al. (2013) speculate that depressive symptoms are associated with problems of the engagement of proactive control. As the presented results in the aspect of Pe amplitude are similar to Schroder et al.'s (2013) findings, it leads to the hypothesis that a similar assumption may arise in the context of burnout. Moreover, regarding hyperactive error processing



related to the initial, unconscious stage indexed by increased ERN amplitude, an additional presumption may refer to problems with adequate reactive control in burnout. This is in line with Moser et al. (2013), who emphasize that enhanced ERN is associated with increased transient reactive control and reduced preparatory proactive control. Moser et al. (2013) argue that it may be explained by the compensatory error-monitoring hypothesis. Particularly for anxiety, increased ERN is associated with distracting effects of worry, and a compensatory effort is dedicated to constant reactivation of task goals (enhanced reactive control).

Proactive control is a cognitively demanding process as it relates to active maintenance of goals and rules that facilitate future performance. Reactive control is less effortful: it involves allocating attention to goals and rules as and when required (Braver, 2012). According to Braver, healthy subjects are able to flexibly change between reactive and proactive control modes. Increased ERN in chronically anxious people may indicate a stronger 'reactive control mode,' which can deplete resources for proactive control and hence the ability to actively maintain goals.

## Burnout and Individual Traits

Wu et al.'s (2014) work is a rare example in which error processing and ERP components in long-term stress context were studied. Their research is particularly interesting as the stress influence was analyzed in a homogenous group of subjects whose personality trait characteristics did not differentiate the compared groups. Long-term academic stress evoked an increase in Pe amplitude but did not influence ERN amplitude. This might implicate a significant role of trait characteristics as variables determining the ERN component in subjects influenced by long-term environmental stress. Comparing Wu et al.'s (2014) study with presented findings, it may be assumed that enhanced Pe in Wu et al.'s (2014) study reflected higher motivational assessment in the stressed group, while in the presented study enhanced ERN reflects higher emotional response (generally) and decreased Pe (lower motivational assessment), but only in the situation of error commission.

The presented findings may also stem, to some extent, from individual differences in anxiety traits and neuroticism. On the one hand, the differences are well-documented variables that are linked to larger ERN amplitude (Weinberg et al., 2012), while on the other hand they are significant predisposing factors to burnout (Langelaan et al., 2006; Mojsa-Kaja et al., 2015).

Van Dam (2016) point out that burnout overlaps with anxiety and depressive disorders. Bianchi et al. (2015) even concluded that it is questionable if the two distinct entities of burnout and depression should be introduced. Instead, the two main dimensions of burnout—exhaustion and depersonalization—are seen as depressive responses to a negative work-related environment.

The presented findings address the scientific discussion on the differences between burnout and other disorders, such as depression (Brenninkmeyer et al., 2001). On the electrophysiological level, both depressive and burnout individuals differ in the magnitude of ERN amplitude as

compared to controls, but only major depressive disorder leads to differences in Pe amplitude (Olvet et al., 2010). Anxiety, another strong burnout correlate, also indicates ERN amplitude differences. Anxious subjects consistently demonstrate increased ERN response throughout the various pieces of research. On the contrary, anxious individuals do not present slower RTs, as was observed in burnout subjects who were significantly slower than controls. Thus, the presented study provides more evidence of the overlapping effect between these disorders, but also introduces important differences: ERP patterns in error processing and behavioral measures (RTs) in burnout resemble neither patterns observed in anxious individuals, nor in depressive ones. In fact, the relationships observed in the burnout group can be described as a combined anxiety-depression pattern.

## Limitations

The limitation of the presented study refers to the causal relationship between burnout and abnormal psychophysiological indices of response monitoring. Hajcak et al. (2004) showed that negative affect was connected with enhanced ERN and reduced Pe, but emphasized that the causal interferences relating negative affect and abnormal ERP patterns required experimental manipulation. Similarly to their assumption, in the presented study it would be possible to state the causal effect if it were possible to observe the influence of change in burnout symptoms (in the sense of level and severity) on psychophysiological responses in the long-term.

Another limitation refers to the difficulty in distinguishing burnout from other closely related characteristics and symptoms such as neuroticism, anxiety or depression. In the presented study, neuroticism, anxiety and depression were highly correlated with burnout; this is consistent with existing data (Langelaan et al., 2006; Mojsa-Kaja et al., 2015; Van Dam, 2016). It is possible to separate subjects with, e.g., comparable levels of depressive symptoms, but this would result in studying non-typical burnout and healthy samples. The distribution of neuroticism, anxiety and depression differs between burnout and healthy samples and much research has proved these interdependencies.

An additional limitation of the presented study is that it relied on self-report measures of burnout and related constructs (such as depression), which have satisfying validity but are not the only means of assessing analyzed stress-related syndrome. Therefore, further research should be enriched by independent diagnosis performed by a clinical psychologist.

When analyzing the individual histories and context determinants of tested burnout subjects, it may be concluded that their state was highly influenced by their work-related environments. Additional measures (AWS, structured interview) were incorporated to find the source of their problems. This made it possible to ensure that work-related stress was at least to some extent a causal factor of deterioration in subjective well-being. Still, there is a question: to what extent? Longitudinal studies could find if individual characteristics and work-related conditions and stressors should be considered in parallel with the well-being of workers (studied with subjective and objective



measures). The complexity of possible factors influencing all those relationships, such as subjects' health, personal history, changing work demands and resources, etc., reveal the difficulties of this study design. Leaving aside individual characteristics, which always play an important role in burnout, methodological issues limit the more precise estimation of the extent of solely work-related stress. Previous research and existing data show that individual characteristics such as neuroticism, anxiety, negative affect and depressive symptoms are associated with burnout, some of them may predispose burnout, and they are close to burnout in some behavioral and neural manifestations.

Thus, it may be concluded that there is no clear distinction between patterns of neural activity underlying burnout syndrome and those associated with, e.g., anxiety or depression. The observed neural activity reflects a subtle cognitive impairment in error processing which is not exclusively related to burnout. Moreover, regarding biographical and contextual analyses it may be assumed that these impairments, at least to some extent, might be a result of work-related long-term stress.

## CONCLUSION

*The obtained results indicate impaired error processing in individuals presenting burnout symptoms; cognitive impairments are indexed by enhanced ERN and decreased Pe amplitude.*

This conclusion supports the research hypotheses: compared to controls, burnout subjects reveal different ERP patterns in error processing, indexed by enhanced ERN and decreased Pe amplitudes. The deficits in cognitive control in burnout subjects refer to two phases of error monitoring: error detection (indexed by ERN) and response monitoring (indexed by Pe), which might have a further influence on implementation of adequate behavioral adjustments.

*Error processing among burnout individuals relies more on reactive control, which seems to have a negative influence on proactive control.*

In the context of the presented studies and theories, it may be assumed that two kinds of cognitive impairments are found in burnout groups: inadequate reactive control, which refers to exaggerated reaction to errors, and insufficient proactive control, which is associated with reduced response monitoring and impaired goal-oriented processes. The first impairment is possibly linked to high sensitivity to salient, negative stimulus and anxious apprehension, while the second is associated with diminished cognitive resources to actively plan and monitor further actions.

*The conclusions of the presented study relate to error detection and error monitoring and should not be generalized on other aspects of information processing.*

The significant difference in the ERN and Pe amplitudes between the burnout and control group were observed only in error trials. The results might suggest that burnout did not influence the phase of conscious recognition and did not modulate the level of action awareness in neutral or positive events (as in the correct trial). Further research could consider

other examples of salient events and emotion-related stimuli to verify whether these findings reveal universal cognitive processes of error monitoring in burnout subjects, or are specific task-related correlations.

*Changes in ERN characteristics in the burnout group may be analyzed as symptoms or markers of pathological processes with abnormal response monitoring.*

In a broad review of functional, neurobiological, and developmental studies, Olvet and Hajcak (2008) concluded that increased error-related brain activity indexed by ERN amplitude is associated with the internalizing dimensions of psychopathology and that neural and information-processing abnormalities may indicate the risk of developing psychopathology. The presented study provides support for the possible underlying mechanisms of the cognitive deficits/impairments in burnout individuals. This may help in understanding worse performance on cognitively demanding tasks that require efficient cognitive processing and extend the knowledge of mechanisms that refer to exhaustion and depersonalization.

When studying ERPs as biomarkers of psychotic disorders, Foti et al. (2013) revealed that task specificity might strongly influence the outcomes and conclusions. This is an important suggestion for future studies: the relations between error monitoring impairments and psychopathological symptoms should be related to specific task demands as important moderators of studied mechanisms.

To sum up, the results of this study hold the promise of identifying ERP as a clinically useful measure for detecting risk of specific cognitive impairments (error monitoring impairments) among burnout individuals and adds to the body of knowledge of cognitive functioning, which might be helpful in providing care for burnout individuals.

## AUTHOR CONTRIBUTIONS

KG and MG substantial contributions to the conception and design of the work; acquisition, analysis, interpretation of data, drafting the work and revising it critically; final approval of the version to be published; agrees to be accountable for all aspects of the work. JM-K substantial contributions to the conception and design of the work; analysis, interpretation of data, drafting the work and revising it critically; final approval of the version to be published; agrees to be accountable for all aspects of the work. KP: substantial contributions to acquisition, analysis, interpretation of data, drafting the work and revising it critically; final approval of the version to be published; agrees to be accountable for all aspects of the work.

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# Steps to Ensure a Successful Implementation of Occupational Health and Safety Interventions at an Organizational Level

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There is increasing meta-analytic evidence that addresses the positive impact of evidence-based occupational health and safety interventions on employee health and well-being. However, such evidence is less clear when interventions are approached at an organizational level and are aimed at changing organizational policies and processes. Given that occupational health and safety interventions are usually tailored to specific organizational contexts, generalizing and transferring such interventions to other organizations is a complex endeavor. In response, several authors have argued that an evaluation of the implementation process is crucial for assessing the intervention's effectiveness and for understanding how and why the intervention has been (un)successful. Thus, this paper focuses on the implementation process and attempts to move this field forward by identifying the main factors that contribute toward ensuring a greater success of occupational health and safety interventions conducted at the organizational level. In doing so, we propose some steps that can guide a successful implementation. These implementation steps are illustrated using examples of evidence-based best practices reported in the literature that have described and systematically evaluated the implementation process behind their interventions during the last decade.

**Keywords:** implementation process, intervention evaluation, intervention effectiveness, intervention methodology, occupational health and safety

## INTRODUCTION

An increasing number of evidence-based practices and meta-analysis studies have shown the positive impact of occupational health and safety interventions on employee health and well-being (e.g., van der Klink et al., 2001; Kuoppala et al., 2008; Richardson and Rothstein, 2008; Conn et al., 2009; Martin et al., 2009; Rongen et al., 2013). However, some authors have indicated that the impact of such interventions is limited and inconsistent, particularly when interventions are approached at an organizational level and are aimed at changing organizational policies and processes (e.g., Briner and Reynolds, 1999; Biron et al., 2010; Kahn-Marshall and Gallant, 2012).

Consequently, in recent years several authors have highlighted how failures in the implementation process may explain inconsistent research outcomes when assessing the effectiveness of occupational health and safety interventions (e.g., Nytrø et al., 2000; Saunders et al., 2005; Nielsen et al., 2010a; Nielsen and Randall, 2013), particularly when such interventions are conducted at an organizational level and therefore make it difficult to incorporate experimental

designs (Kompier et al., 2000). Intervention implementation in occupational health and safety settings can be defined as the action of transforming and changing the working conditions that affect employee health and well-being in a specific organizational context. Such implementation emerges at the intersection between the design and evaluation of the intervention's effectiveness. In other words, implementation refers to *what should be done* in order to achieve the desired situation (design) and *what can be done* when taking into account the social reality in which the organization is embedded: its available resources and ongoing results (evaluation). The successful combination of these three elements (design, implementation, evaluation) will most certainly guarantee the effectiveness of the intervention. On the other hand, failures determined by a weak design, inadequate implementation, or poor or non-existent evaluation procedures may explain why a given intervention does not achieve the expected results.

We view implementation as “the dynamic process of adapting the program to the context of action while maintaining the intervention's core principles” (Herrera-Sánchez et al., 2007, p. 214). Indeed, given that occupational health and safety interventions are usually tailored to specific organizational contexts, generalizing and transferring such interventions to other organizations is a complex endeavor. In response, several authors have argued that implementation evaluation facilitates the early detection of those factors that may moderate or mediate between the intervention's design and its effectiveness (i.e., results or outcomes), thus allowing researchers to identify those factors that may prove successful under different circumstances when compared to the original context for which the intervention was designed, resulting in major implications for the intervention's external validity (e.g., Klein and Knight, 2005; Nielsen et al., 2006). In this sense, an evaluation of the implementation process is crucial not only for assessing the intervention's effectiveness, but also for understanding how and why the intervention has been (un)successful (Nielsen et al., 2010b; Rongen et al., 2013). In other words, implementation evaluation is a prerequisite for being able to explain what actually occurs during the intervention implementation phase and to critically draw conclusions about the effects of the intervention (Dane and Schneider, 1998; Rossi et al., 1999; Nytrø et al., 2000; Nielsen and Randall, 2013).

However, although significant efforts to map the social and cognitive processes influencing intervention implementation in occupational health and safety settings have been made (e.g., Nytrø et al., 2000; Nielsen et al., 2010a; Nielsen and Randall, 2013), some systematic reviews have pointed to a lack of studies examining the relationship between implementation factors and intervention effectiveness (Murta et al., 2007; Egan et al., 2009; Knowlden et al., 2014; Bellicha et al., 2015).

To address this, the current paper focuses on the implementation process and attempts to move this field forward by identifying the main factors that contribute toward ensuring a greater success. In doing so, we propose 10 steps that can lead to successful implementation of interventions at organizational level. These implementation steps are illustrated using examples from previous intervention studies that have described and systematically evaluated the implementation

process behind their interventions, which can be considered evidence-based best practices reported in the literature during the last decade.

## STEPS TO ENSURE A SUCCESSFUL IMPLEMENTATION

How to develop and consolidate the effective implementation of an intervention in occupational health and safety settings has been a growing research topic over the last couple of decades. The literature offers general recommendations for implementing interventions (e.g., Fixsen et al., 2005; Meyers et al., 2012); practical guidelines for conducting interventions aimed at improving employee health and well-being at work (e.g., Nytrø et al., 2000; Sheldon, 2007; Weiner et al., 2009; Nielsen et al., 2010a); and even more specific guidelines for implementing certain interventions in organizational contexts, such as those dealing with workplace stress management (Health and Safety Executive, 2007).

Despite these intervention-oriented recommendations, Kompier et al. (2000) pointed out that the success of any intervention depends on the implementation process rather than on the intervention's own content. Furthermore, they listed the following success factors as relevant to interventions addressing stress prevention at work: a systematic and gradual approach; a proper diagnosis or risk analysis that identifies risk factors and risk groups; a series of theory-driven measures that logically deal with those problems previously identified in the risk analysis; a participatory approach that engages both employees and middle management; and a sustained commitment from senior management. More recently, Nielsen et al. (2010a) revised five standardized occupational health and safety methods for conducting interventions and identified five phases based on the core elements shared by these methods: initiation/preparation, screening, action planning, implementation, and evaluation considering both intervention processes and effects.

Based on these approaches, we turn to previous studies in the field of occupational health and safety (e.g., Biron et al., 2010; Myers et al., 2010; Sørensen and Holman, 2014; Nielsen et al., 2015) to illustrate and describe the key steps that can help guide the implementation and continuous improvement of interventions, as summarized in **Table 1**.

### Defining the Problem

The first step is to describe and analyze how the problem manifests itself within the organization carrying out the intervention. Thus, the design stage begins by detecting and investigating the problem, taking on board the existing resources to solve it (needs analysis or diagnosis: Herrera-Sánchez et al., 2006). This implies giving a working definition of the problem and its evaluation in the context in which the problem occurs.

According to Kelly et al. (2000), intervening from an ecological perspective requires a vision of how people and their social systems affect each other, and not just an examination of their independent qualities. This is the case of the ‘Stand Up Australia’ intervention (Neuhaus et al., 2014), which describes best practices

to promote occupational health and safety from a multi-component approach that addresses the multiple intertwined influences of the political, physical and psychosocial environment on individuals' behaviors. Thus, the organizations' characteristics together with how their corresponding systems interrelate may determine the feasibility and appropriateness of adopting certain strategies. In this sense, Biron et al. (2010) showed how, even when an organization decides to adopt stress prevention initiatives in line with mandatory legislation, certain context-specific circumstances may lead to poor implementation, which, in turn, may negatively affect its results. For example, the decision to adopt participatory strategies using a workshop

format, which provides a space for constructive dialog, may work in contexts where there is a low power distance between workers and managers; however, this type of strategy may not prove successful in more authoritarian contexts, or where conflicts arise between employees and management (Nielsen et al., 2015).

Thus, the tasks to be performed at this initial stage include: (a) identifying the main problem and the most vulnerable groups; (b) analyzing both the risk and protective factors associated with the problem; (c) examining the ecological environment and its interdependent systems to determine how they affect the problem; (d) examining the different levels of intervention

**TABLE 1 |** Main questions an intervention needs to address at each implementation step.

Steps	Questions
(1) Defining the problem	What exactly is the problem? Who is exposed to such a problem? What are the factors that facilitate (risk) or constrain (protective) the emergence of such a problem? What is the perspective of those affected by the problem? How does the problem emerge within organizational systems and in their interrelated elements?
(2) Analyzing resources and support	What available resources are needed to deal with the identified problem? Where are the resources located and how can they be accessed? Which resources have already been mobilized?
(3) Clarifying the goals and objectives	What are the goals and the desired results? What are the target groups? Is it possible to reach an agreement with stakeholders?
(4) Searching for previous effective interventions	Is it possible to identify other programs that have demonstrated high levels of effectiveness? What are the core components of these programs? How can these components be adapted to the particular context of intervention?
(5) Clarifying the intervention	What are the core components of the intervention? How should these core components fit the needs and problems identified? If necessary, what components can be changed to fit the intervention context and which ones cannot? How can these components be integrated into the organization?
(6) Promoting team building and empowerment	Which groups may be interested in collaborating? How can stakeholders be involved in the process of identifying needs and in selecting and monitoring intervention strategies? Is the organization prepared to change its organizational practices? Who could be part of the steering committee responsible for the intervention?
(7) Establishing an organizational infrastructure	What are the organization's underlying values and philosophies? Are the intervention objectives and key activities consistent with the organization's core values? What roles and functions are necessary to achieve strong leadership and commitment to change? What resources does the organization have to support the intervention? Is it possible to consider other organizations in order to achieve the established goals?
(8) Undertaking initial implementation and further development	Does the pilot study confirm the core components identified in the action plan? What adaptations are needed following the results of the pilot study? How should the intervention elements be sequenced considering the different levels within the organization?
(9) Promoting innovation	How and under what conditions is the program being developed? What are its strengths? What are its weaknesses? What are the results of the program in accordance with the established objectives? Which methods and techniques best fit the evaluation questions posed?
(10) Achieving sustainability and integration in standard procedures	How is the intervention more sustainable? How can intervention activities be integrated into the organization's daily routines? How can intervention activities be promoted and disseminated?

that fit with the organization (Nielsen et al., 2010b); and (e) addressing how the organizational culture and values condition employee perceptions and health behaviors. In addition, it is important to tackle the problem by taking the points of views of those involved or aware of the situation into account.

Different sources of information should be collated at this stage, ranging from literature reviews and conceptual analyses of the problem to consultations with key groups to gain access to records that contain statistical data on the problem. The more varied the information collected, the better placed one is to set realistic goals suited to the identified needs, establishing criteria for deciding which groups the intervention should focus on, and gathering data to log the changes introduced by the intervention. For example, Sørensen and Holman (2014) opted for a workshop-based, participative intervention aimed at diagnosing problems and developing change initiatives, focusing on organizational change and job redesign. This type of realistic, context-specific information helps those groups with a potential role in developing the program become aware of the need to intervene, meaning that the intervention receives the support it needs to be a success.

## Analyzing Resources and Support

Along with defining the problem, it is important to examine the available resources and support that could help mitigate the risk conditions or enhance protective factors. This is particularly relevant for small organizations where resources are more limited. Identifying such resources provides insight into issues that are already being addressed as opposed to those not yet on the agenda, thus avoiding duplication of effort. In addition to established programs and services, it is useful to identify those services that can lend intervention support through the provision of funds, spaces and other resources.

In this step, intervention designers gather information on the location, accessibility and amount of available resources (Chinman et al., 2004) by holding meetings with all social agents (managers, middle management, representatives) to ensure that the intervention fits with the organizational context and that the existing resources cover all phases of the intervention. For example, Biron et al. (2010) described a case in which the greatest efforts in terms of resources and time were directed toward the design of sophisticated tools for risk assessment. However, these tools ended up not being used during the implementation phase.

## Clarifying the Goals and Objectives

Having identified the need for intervention and available resources, the next key step is to specify the goals of the program, the target population, and the desired outcomes. On the premise of cooperation, all groups involved need to reach a consensus concerning the project objectives. The same groups that had previously discussed the problem can also set the intervention objectives. Thus, in this stage, goals should be articulated and described in a clear and direct manner. Once participants agree on the objectives, they can turn to the decision-making process. Here they select the theory-based model that

will guide the intervention; outline the implementation details; and discuss how to mobilize resources, measure the effects of the program, and respond to criticism and manage resistance to change. For example, Nielsen et al. (2015) centered their intervention on workshop sessions involving all health and safety members within the organization (health and safety representatives, supervisors, managers, senior management), establishing specific intervention areas that emphasize workplace safety. These workshops yielded detailed agreements on specific activities to be carried out (e.g., developing and implementing new safety procedures).

## Searching for Previous Effective Interventions

It is important to look for evidence-based interventions that respond more adequately to the goals and objectives identified by and negotiated with the groups involved in our own intervention. Such evidence-based interventions are often categorized as *best practices*, that is, interventions that have consistently shown positive outcomes through a rigorous evaluation of their processes and results. Adopting these best practices implies determining not only how they fit with the goals and objectives of our intervention, but also how these previous interventions fit with the social ecology underlying our intervention context (Chinman et al., 2004). For example, Nielsen et al. (2015) based their workplace safety management intervention on DeJoy's (2005) intervention strategy which activates participatory problem-solving processes as well as culture change, and which has shown to be effective. However, its limited duration (under 26 weeks), together with the inherent characteristics of Nielsen and colleagues' intervention in small enterprises, required an adaptation of outcome measures. Instead of measuring culture change, the authors focused on a more specific operationalization of the "safety levels" construct, which comprised culture-oriented (e.g., leadership, knowledge, involvement); structural (health and safety representatives' commitment); and behavioral measures (safety behavior).

## Clarifying the Intervention

Here implementation is viewed as the dynamic process of adapting the intervention to the performance context while maintaining its core principles (adaptation vs. fidelity, e.g., Randall et al., 2005; Egan et al., 2009; Augustsson et al., 2015). In this step, the main and difficult tasks are, on the one hand, to identify which intervention components should remain unchanged (i.e., the most essential and indispensable components for maintaining the intervention's identity and effectiveness) and, on the other hand, to identify which components should be adapted to fit with the social ecology under the new intervention scenario, but without affecting its effectiveness (Dalton et al., 2001).

In doing so, it is necessary to conduct a systematic replication of the intervention; the assumptions and mechanisms that explain how and why the intervention might achieve improved working conditions should be clearly indicated. The intervention's underlying theory should help to maintain the



principles of effectiveness identified in the original intervention (core components) and should therefore increase the likelihood of delivering similar results to those achieved by the original intervention. In short, the task of identifying or developing an intervention theory is crucial during this stage (Bickman, 1987; Chen, 1990; Rossi et al., 1999).

Moreover, intervention adaptation is required here. According to Hunt et al. (2007), the elements at the original intervention's surface and deep structure levels should be adapted by taking into account the identified needs and problems, the intervention's social ecology, and the cultural factors/socioeconomic characteristics of the target group(s). For example, in the case of an intervention addressing safety behavior, the core components are clearly identified in the literature based on the principles of behavioral analysis, but require adjustment to a variety of work settings such as hospitals, offices, transportation, mining and factories (Myers et al., 2010).

Finally, it is necessary to introduce the appropriate methods and procedures to determine implementation fidelity (implementation evaluation) and to study the effects of the intervention. As such, an implementation manual would benefit all concerned, including guidelines or instructions on how to implement each activity and the required support materials and resources. These instructions can be perfectly embedded into the intervention theory as illustrated by Biron et al. (2010, see p. 140). These authors provide a figure which outlines the underlying assumptions for the intervention that the managers should be aware of for the program to work. In short, it is crucial that this step defines an action plan that clearly describes the program's objectives, deadlines and each proposed change initiative and the people responsible for conducting such initiative, as well as its success criteria (Nielsen et al., 2010a).

## Promoting Team Building and Empowerment

Change can be initiated and occurs when an organization and its members demonstrate awareness, commitment, and action capacity. From this perspective, several authors have attributed the success of their interventions in the occupational health and safety context to the participation and involvement of stakeholders, managers, and employees (Nytro et al., 2000; Hunt et al., 2007; Nielsen and Randall, 2013; Nielsen et al., 2015; León-Pérez et al., 2016). According to Weiner et al. (2009, p. 294), "implementation activities [...] must be coordinated and synchronized for employees working in different functional departments, work shifts and work locations." A comprehensive occupational health and safety intervention must be understood as an innovation within the organization and, as such, requires a "collective behavior" that drives forward change. This would bring about collective benefits for the organization such as improved health, greater productivity, and reduced healthcare costs (see León-Pérez et al., 2016).

In other words, workers and social agents' involvement is necessary to create favorable and optimal conditions to enable the desired change. For example, not only do they play a key role in guaranteeing that the implementation activities

fit with the needs and values of the groups involved in the intervention, but they are also well positioned to anticipate and address any potential resistance to change. Moreover, given that organizational interventions usually involve some kind of change within the organization, stakeholder participation is needed to be able to handle these changes and avoid resistance (Mackay et al., 2004; Nielsen et al., 2010a). The greater the groups' involvement and participation, the greater the likelihood of achieving a sense of ownership which can lead to a lasting and sustained commitment.

These groups should play an active role in recognizing their needs and resources, selecting strategies and services, monitoring and following up on interventions and, finally, supporting intervention sustainability. Different experiences of collaborative intervention in the organizational context have yielded positive results (McVicar et al., 2013; Sørensen and Holman, 2014). In terms of effective participation, certain conditions and activities are required, starting with identifying the groups that may be interested in collaborating. In addition to encouraging work team participation, other influential groups (middle and senior management) can help when it comes to obtaining the necessary support. Moreover, it is important to ascertain the organization's willingness to adopt an intervention and work toward strengthening their capacity to implement such programs. Organizational disposition and readiness for change refers to the extent to which implementing employees "are psychologically and behaviorally prepared to make the changes in organizational policies and practices that are necessary to put the innovation into practice and to support innovation use" (Weiner et al., 2009, p. 296).

As for coordinating organizational participation, specific steering committees are often set up to solve problems, as well as focus groups whose job entails identifying needs, assessing risks, and voicing suggestions for improvement. Myers et al. (2010) documented how different safety committees were established whose main purpose was to promote communication between the different safety areas. Sørensen and Holman (2014) developed workshops made up of managers and employees to ensure that the intervention fit with the organization and its people. During these workshops, the most salient aspects of work and well-being capable of prioritizing change initiatives were highlighted. Both authors observed how the employees' main concerns were more about developing initiatives such as leader feedback and knowledge sharing to reduce ambiguity and uncertainty than about other activities that had been identified in the literature as key components for improving employee well-being, such as increasing task control and task variety. Finally, León-Pérez et al. (2016) conducted conflict management training at a healthcare organization in which they "also trained the department's line managers to gain their support and ensure their involvement with the intervention." (p. 4).

## Establishing an Organizational Infrastructure

We can state conclusively that interventions heavily depend upon the degree of responsiveness shown by

the organizations that promote them. Therefore, for an intervention to be successful, besides addressing its design aspects (intervention theory), an organizational context must be developed in accordance with the intervention requirements. Mellor et al. (2011) examined 100 public sector organizations that implemented work-related stress prevention and reduction guidelines in line with the “UK Management Standards” that focus on risk assessment and management, covering the 2007–2009 period. They found that continuous processes of change within an organization, a goal-oriented culture, and lack of support from senior management can interfere with an intervention’s progress. As a result, it may be concluded that intervention success is, to a large extent, dependent on how well managerial culture, based on quality, effectiveness and efficiency, is promoted.

In other words, this step is about having the resources and means for implementing and sustaining the intervention at one’s disposal. This requires: (a) commitment from the organization and its members to adopt the intervention; (b) the establishment of clearly defined roles and functions of strong leadership; (c) staff committed to the intervention and, where appropriate, a plan for staff selection and training; (d) the necessary materials and financial resources or a plan on how to obtain them; and (e) establishing connections with other organizations. Ultimately, where possible, interventions must be carried out in organizations that are trained to implement them.

In this regard, and as a key point, it is important to ensure that the program objectives tie in with the aims and goals of the organization hosting the intervention. As Dalton et al. (2001) indicated, it is unlikely that an organization will adopt a prevention or health promotion initiative unless its members are able to establish a clear relationship between the purposes of the initiative and the organization’s mission. Thus, a workplace stress prevention intervention would only work if management were open to structural changes if required. Specifically, Myers et al. (2010) documented an experience in behavioral safety where the alignment of the organization’s values and objectives, together with the identification of relevant practices that support them, constituted the essence of the intervention. The management team had a clear mission to reduce potential harm to employee health and well-being and therefore shifted the culture toward workers’ health and safety values. Olsen et al. (2009) introduced a safety intervention into a process of organizational change in which management involvement and commitment were considered one of its success factors. From this perspective, for an intervention to be accepted and supported, all parties must: (a) examine the organization’s underlying values and philosophies through its plans and action strategies; (b) analyze the intervention’s objectives and key activities to determine to what extent they are consistent with the organization’s core values and, if needed, specify the necessary modifications and adaptations; and (c) strengthen the leadership committed to these values and, if appropriate, redirect them so that

they are compatible with the intervention’s goals and objectives.

## Undertaking Initial Implementation and Further Development

Implementation implies somewhat drastic changes for an individual or organization (skills, organizational capacity, political strategy, etc.). However, these changes take time to develop and consolidate; meanwhile, trust and sense of ownership toward the intervention increases. Thus, as reported by Fixsen et al. (2005), these changes do not occur simultaneously within an organization; the various intervention components need to be implemented sequentially. From this perspective, the intervention process can begin with a pilot study aimed at achieving a few goals, but confirming the principles and core components of the intervention which will undergo fidelity replication. The results of this pilot study may facilitate a careful analysis of the effects of the current intervention context, therefore encouraging dialog on the need to modify and adapt said intervention. Hence, potential modifications are made on the basis of a research-action process where implementation is monitored, the results are analyzed, feedback is provided, and intervention adjustments and adaptations are examined and discussed.

To summarize, a pilot study enables social agents leading the intervention to become familiar with the content and materials before the program officially starts, which helps to define intervention adjustments (intervention clarification) as well as to organize the available resources (organizational infrastructure). For example, Neuhaus et al. (2014) introduced two pilot studies to determine the effectiveness (efficacy), viability (feasibility) and acceptability of the intervention, which served to identify its core components. Similarly, Myers et al. (2010) launched a pilot study in an area of a company with a high incident rate before introducing their safety management intervention in a petroleum refinery.

Once adaptations to the current context have been considered, and taking into account that interventions at an organizational level entail multiple actions at various levels (e.g., individual, interpersonal, organizational), the intervention components can be implemented sequentially. Indeed, an intervention is fully implemented when the organization adopts the policies, procedures, and resources required for its implementation; the team of professionals involved acquires the skills and abilities necessary for its implementation; and when the entire organization knows the intervention and adapts itself to it (Fixsen et al., 2005). In a similar vein, Sørensen and Holman (2014) differentiated between high-, medium- and non-implementing organizations depending on the type, extent and speed of initiative implementation in accordance with the change initiatives planned during the intervention design phase. The conclusion drawn from their process evaluation was that the degree of implementation affected the results of the six examined interventions aimed at improving working conditions and psychological well-being in Denmark. In high-implementation organizations, employees reported greater activity involvement,

increased support from their superiors, and more information about the intervention compared to their peers in organizations that fall under medium- and non-implementing groups. Furthermore, employees working for organizations classified as high in terms of intervention implementation reported significant higher improvements in work relationship quality and greater reductions in burnout.

## Promoting Innovation

The value of an intervention lies in how well it is able to adapt existing empirical evidence to the emerging and different circumstances in which the intervention takes place. Thus, in this step we focus on introducing evaluation mechanisms that can be used as a tool for ongoing learning and improving the intervention during the implementation phase (process evaluation), as well as an indicator of intervention results and effects (outcome evaluation).

Process (implementation) evaluation is about monitoring and assessing the different intervention activities in order to identify the strengths and weaknesses that provide useful feedback for improvement. In this sense, process evaluation requires all parties involved in intervention implementation to participate in the decision-making and problem-solving processes. As a result, this evaluation may help explain the results obtained following intervention, or at least how and under what boundary conditions can an intervention succeed or fail. Furthermore, there are interventions with similar objectives that can give rise to different or unexpected effects within a certain context that only process evaluation can help understand (Nielsen et al., 2006). In addition, process evaluation is needed to determine the potential for moving the intervention from its originally intended context, for which it was designed and implemented, to a different one. Along these lines, Nielsen and Randall (2013) proposed a model for evaluating occupational health interventions at an organizational level which they felt encompassed those mechanisms capable of linking intervention processes with their outcomes. They developed this evaluation model based on three key pillars: intervention design and implementation, the intervention context and its ecological validity, and the participants' mental models of the intervention and its subsequent impact on behavior change. Recently, Augustsson et al. (2015) showed how some of these factors (context, intervention, mental models) seem to explain variations in implementation between units within the same organization. Even in the case of organizational interventions, where effectiveness is difficult to determine, it is reasonable to assume that the main indicator of success is an intervention subject to a continuous improvement process rather than one that obtains isolated positive results.

On the other hand, outcome evaluation focuses on assessing whether or not the program has achieved the proposed and desired goals (e.g., improving employee health and well-being). This evaluation type frequently seeks to obtain information about the intervention's efficacy, efficiency, and effectiveness that serves decision making and future planning: discarding actions that have proven ineffective and returning to those that have been a success.

In this regard, this type of evaluation requires an objective, independent evaluator in a position to take full responsibility for the evaluation process, as opposed to stakeholders and other social agents who may have interests beyond the intervention goals. As for evaluation methodology, all options are considered valid as long as they meet the needs of the intervention and the evaluator (Herrera-Sánchez et al., 2005). In the early stages, when little is known about the problem and its potential solutions, it is useful to explore and describe the intervention's unique features (for example, through case studies). When an intervention is sufficiently implemented locally, thus making it possible to evaluate its effectiveness, the evaluation process requires causal or probabilistic explanations (correlational, experimental or quasi-experimental designs). Meanwhile, when similar interventions across different organizational contexts are at play and policy makers wish to gather evidence about which intervention is more generalizable, evaluation should be based on a systematic literature review and synthesis or meta-analysis. Finally, the intervention evaluation process may go beyond evaluating the intervention's impact by also considering the value of various alternatives for solving social problems, leading to interpretive evaluations using the hermeneutical approach.

Regarding occupational health and safety interventions at an organizational level, mixed-method evaluation designs undoubtedly stand out as the most appropriate methodology when it comes to determining an intervention's effectiveness, while also providing a broad overview of the whole implementation process (Lipsey and Cordray, 2000; Nielsen et al., 2010a; León-Pérez et al., 2012; Jenny et al., 2015; Abildgaard et al., 2016). For example, Sørensen and Holman (2014) applied a longitudinal design combining qualitative and quantitative methods to examine the processes and results of an intervention to improve working conditions and employee health at six organizations in Denmark. During the 14-month-long intervention, the qualitative methodology provided a better understanding of the intervention process, and the change initiatives emerging from participatory processes also helped to explain the quantitative results. Additionally, the quantitative methodology also provided evidence for the intervention process and accounted for the changes generated in the employees' perceptions of their working conditions and psychological well-being. In a similar vein, two studies adapted the RE-AIM (Reach, Effectiveness, Adoption, Implementation, Maintenance) model in a public health context, highlighting four factors that examine both the processes involved in intervention implementation and intervention effectiveness at individual and organizational levels using a wide range of quantitative and qualitative measures (see Estabrook et al., 2012; Jenny et al., 2015).

## Achieving Sustainability and Integration in Standard Procedures

Once the intervention has proven both its effectiveness, or has at least shown that it can be effective following appropriate changes, and its suitability for transfer to other organizational settings, then it is worthwhile making efforts to include it in the organization's daily routines (i.e., institutionalization), thus rendering it an integral part of standard operating

procedures (see also Mayer and Davidson, 2000). In other words, this implementation step refers to the degree to which the intervention or innovation begins to be accepted by and integrated into the organization's daily procedures.

Despite its theoretical relevance, there are limited studies reporting intervention sustainability in organizational settings. However, some studies have emphasized that intervention maintenance, sustainability and institutionalization are more likely when such programs are aligned with the organizational mission and values and enjoy the support and involvement of several groups and individuals playing a key role within the organization or community (e.g., senior managers, policy makers, community leaders); this has been associated with a greater acceptance toward intervention continuity and obtaining additional resources (Myers et al., 2010; Jenny et al., 2015). In a similar vein, Augustsson et al. (2015) reinforced the development of a health promotion intervention by linking it to an existing continuous improvement system within the organization (Kaizen).

Finally, it is important to promote and disseminate intervention activities through different communication channels (e.g., forums, scientific journals, press releases, technical reports) and share the lessons learned during the design, implementation, and evaluation phases to reach relevant audiences that can become involved and help ensure intervention sustainability.

## CONCLUSION

Occupational health and safety interventions at an organizational level have been found to improve working conditions and employee health and well-being. However, how to best evaluate the results and effects of such interventions remains a challenging task (e.g., Biron et al., 2010; Kahn-Marshall and Gallant, 2012; Abildgaard et al., 2016). Furthermore, there are several interventions whose design does not include a good follow-up strategy or which lack steering committees aimed at monitoring activity progress and making subsequent decisions regarding the intervention, thus potentially giving rise to misinterpretations of the intervention's effects. Indeed, implementing an intervention at the organizational level can generate endless problems that, when left unsolved, may lead to a failure to achieve the proposed goals.

Undoubtedly, the main difficulty, and perhaps from which all others derive, lies in maintaining fidelity to the original design during intervention implementation while being able to adapt it to the social reality in which the intervention occurs. Implementation most certainly requires all involved parties to identify and understand the organizational dynamics and processes that render the intervention scenario unique, and will therefore guide the necessary adjustments taken from the original program. Consequently, scholars believe that an evaluation of the implementation process is a prerequisite for being able to explain what actually occurs during the intervention implementation phase and to critically draw conclusions about the intervention outcomes and effects across different levels of analysis (e.g., Dane

and Schneider, 1998; Rossi et al., 1999; Nytrø et al., 2000; Nielsen and Randall, 2013).

In response, we proposed some steps including strategic actions that can guide successful intervention implementation. Our aim was not to be exhaustive in our literature review but to use a convenience sample of evidence-based best practices reported in previous literature as examples to help illustrate the proposed implementation steps. Indeed, these studies and evidence-based best practices have described and systematically evaluated the implementation processes behind their interventions. An interesting avenue for further research may be to conduct a systematic literature review while using the implementation steps proposed herein to determine the effectiveness of the implementation process of such interventions reported in the literature over the last decade. In addition, future studies should wider their scope and incorporate findings from other research fields to gain knowledge about the implementation process of interventions at organizational level as a result of cross-fertilization between disciplines (e.g., strategy implementation area: Hitt et al., 2017). Our view is that the implementation process should respect the intervention's core components given their importance in maintaining intervention quality and effectiveness. In order to identify these components, the intervention should be theory-driven or based on a set of assumptions and mechanisms that indicate how and why the intervention is supposed to achieve intentional changes in organizational settings (e.g., León-Pérez et al., 2016). Simultaneously, implementation also implies a process of adaptation to the particular and changing conditions of the context (i.e., the intervention's social ecology).

Thus, this paper provides 10 steps that cover a series of key elements at play in intervention implementation, which can be viewed as a cyclical, emergent, and non-linear process that are open to definition depending on the specific problem to be addressed as well as the organization's characteristics and internal dynamics. In this sense, although our first step in the implementation process was to define the problem, it does not always have to be the first choice action. For example, in risk prevention interventions, the risk assessment phase usually follows on from team building and forming the steering committee. Specifically, in the case of Nielsen et al. (2010a), the authors suggested beginning with a preparation phase where method, structure and culture familiarization are considered necessary. Furthermore, at the early stages, it is important to determine the willingness and readiness of employees and the organization itself to embrace change. As Myers et al. (2010) argued, the starting point of any intervention is the establishment of the mission, values, and rules of interaction between members of the organization.

In short, implementation must be understood as a cyclical and continuous process that encompasses intervention design and evaluation by means of, among other things, problem analysis; selecting and adapting to the context of previous effective intervention strategies; team building and empowerment aimed at strengthening organizational capacity; and monitoring and evaluating the intervention in order to provide information about its impact on the target population. This loop of action and



feedback aims to generate knowledge about the changes resulting from the intervention, which, in turn, will initiate a new cycle whereby new problems are identified, and which will serve as the basis for designing new intervention strategies or adaptations of those that have shown to be sustainable over time.

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## AUTHOR CONTRIBUTIONS

All authors equally contributed to the conception of the work and to write and develop the intellectual content of this article. Also, they agreed and approved the final version to be published.

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# Effects of Inclusive Leadership on Employee Voice Behavior and Team Performance: The Mediating Role of Caring Ethical Climate

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As an emerging research field of leadership, inclusive leadership reflects the new style of leadership demanded by researchers and practitioners. Is it a leadership style that can better integrate employees and organizations and adapt to new complex management situation? Based on theories of social exchange, organizational support, and self-determination, this study investigated the impact of inclusive leadership on employee voice behavior and team performance through caring ethical climate. We evaluated the model with a time-lagged data of 329 team members from 105 teams in six cities in China. Results indicated as following: inclusive leadership was positively correlated with employee voice behavior at the individual level and team performance at the team level; caring ethical climate mediated the relationship between inclusive leadership and employee voice behavior at the individual level, as well as mediated the relationship between inclusive leadership and team performance at the team level. This study revealed the mechanism of the positive cross-level effects of inclusive leadership on the caring ethical climate, employee voice behavior, and team performance. These findings also provided important contributions for human resource management and practice.

**Keywords:** inclusive leadership, team ethical climate, employee voice behavior, team performance, cross-level analysis

## INTRODUCTION

Given the rapid changes in market environment and fierce competition between companies, how to improve organizational competence becomes an extremely important issue. As teams in companies are more flexible and organized than individuals in confronting complicated problems, focusing on team behavior and performance provides numerous benefits for the companies. Currently, studies on factors influencing team performance and effectiveness have identified team leadership as the most important factor, particularly that which has the potential to motivate the team member and improve team performance.

Team members' constructive behaviors, such as employee voice, can improve organizational performance (Hsiung, 2012) because, as a prosocial role behavior, the voice of the team member can shape a team-based work context and establish a relationship between the team members and thus benefit performance. However, few studies have focused on evaluating the relation between leadership with employee voice at the team level and the mechanism through which leadership affect the voice of the team member in the context of teamwork.

In this study, we used the data pertaining to 105 teams and 329 team members in China and conducted a multilevel empirical study to investigate the influence of an inclusive leadership style on team performance. We also investigated caring ethical climate as a mediator between inclusive leadership and team-member voice. The model of this research is presented in **Figure 1**.

## THEORETICAL BACKGROUND AND HYPOTHESES

### Inclusive Leadership and Employee Voice

Inclusive leadership was first defined by Nembhard and Edmondson (2006) as a relationship style that always accepts the differences of various members. Carmeli et al. (2010) emphasized that “inclusive leadership refers to leaders who exhibit openness, accessibility, and availability in their interactions with followers.” According to Ospina et al. (2011), leader inclusiveness does not only acknowledge the value of diversity but is also responsible for this variance. Current research shows that leadership inclusiveness correlates with diversity of team member behavior (Kearney and Gebert, 2009). These studies agree that inclusive leadership can shape the comprehensive work circumstance, overcome barriers between members with different backgrounds, and improve work coordination and other team performances (Wasserman et al., 2008; Shore et al., 2011; Mor Barak, 2013).

Hirschman (2011), who first proposed the definition of employee voice, assessed that employees who were not satisfied with their jobs would have two responses: to voice or to quit. Voice is the method of solving problems by expressing opinions. Employees willing to share their constructive suggestions can benefit the development of their organization. A number of management studies have been published to encourage employee voice (Farh et al., 2007).

Employee voice is a socially based behavior (Van Dyne and Le Pine, 1998). Suk et al. (2015) indicated that inclusive leadership can positively affect employee work engagement. Svendsen and Joensuu (2016) demonstrated that transformational leadership can positively influence employee voice,

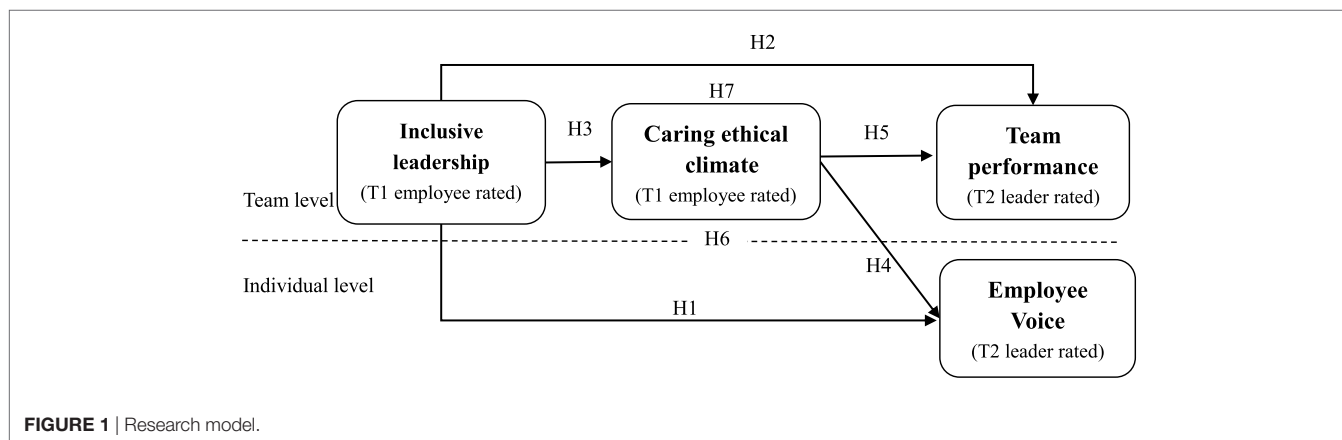
productivity, and performance. Hirak et al. (2012) concluded that leadership inclusiveness implies acceptance of new information, listening to a new voice, and receiving a new challenge. These behaviors can change employee work attitudes, increase trust in leadership and the organization, and enhance attachment to their organization. The inclusive leader can also improve the psychological security (Hirak et al., 2012) and team identity of the subordinates (Mitchell et al., 2015). Therefore, the inclusive leader can build team member trust across the organization and increase attachment to the leader; thus, it can improve employee voice. Specifically, the following hypotheses are presented:

Hypothesis 1: Team-level inclusive leadership is positively related to individual-level employee voice.

### Inclusive Leadership and Team Performance

To improve team-level performance, leaders consider not only how to improve performance at the individual level but also the need for team members to collaborate among themselves in order to improve team performance. To achieve these aims, leaders must first show an influential leadership. West (2004) suggested that if the leader shares with the team members his idea and information in the decision-making process, the team members are more likely to acknowledge their responsibility in the team, consequently improving team performance. Dionne et al. (2004) asserted that transformational leadership can improve team performance by improving individual performance as well as teamwork process. In addition to effective leadership, building a positive social environment in the context of teamwork is likewise necessary; this method might be the most important mediating mechanism to team output (Gladstein, 1984, Ancona and Caldwell, 1992, Anderson and West, 1998).

In some ways, leader inclusiveness is a mixture of transformational leadership and transactional leadership. Both types of leadership can positively affect team task performance. Inclusive leaders perceive team members as contributors, acknowledging everyone's value. This behavior can increase the commitment of team members and motivate team members to handle their



**FIGURE 1 |** Research model.



work in a flexible manner (Carmeli et al., 2010). In addition, leader inclusiveness can more effectively promote member perception of team goals, job satisfaction, and direct improvement of team task performance. Hence, we expect that:

Hypothesis 2: Inclusive leadership will be positively related to team performance.

## Inclusive Leadership and Caring Ethical Climate

Organizational ethical climate is a component of organizational climate. It mainly refers to shared employee perceptions of ethical norms and behavior. Ethical climate can guide the ethical attitude, belief, and motivation of employees; likewise, it can affect ways to solve ethical problems at the organizational level. Several studies have been conducted to explore the antecedent of ethical climate (Rathert and Fleming, 2008, Mossholder et al., 2011). The majority of these studies have agreed that leadership exert a greater positive influence on ethical climate than other variables. On the one hand, if leader behavior conforms with ethical demand, the behavior of low-level employees would be more ethical because they regard leader behavior as a reference point (Calabrese and Roberts, 2002; Treviño et al., 2003). On the other hand, leaders are always given behavior criteria for ethical issues, and some of these rules would be published as institutional. These activities can improve ethical climate (Grojean et al., 2004).

Victor and Cullen (1988) proposed the five dimensions of ethical climate: “caring,” “rules,” “law and code,” “independence,” and “instrumental.” The inclusive leader pays close attention to the different demands and characteristics of the subordinates (Yukl, 2006). The influence of this close interaction between leader and members can be explained by social exchange theory. First, those who feel encouraged tend to share their opinion and knowledge, reinforcing knowledge sharing; second, frequent communication can create a “strong situation,” and this situation can show kindness and concern, similar to caring climate.

Unlike other dimensions of ethical climate that need to match a set of management activities, including organization routines and HR systems, caring ethical climate can be attributed to social processes. In the context of teamwork, leaders create an environment to share their ethical cognitions and values, shaping a caring ethical climate.

Hypothesis 3: Inclusive leadership is positively related to team caring ethical climate.

## Caring Ethical Climate and Team Member Employee Voice

Caring ethical climate implies a shared manner of behavior in an organization (Cullen et al., 2003). The team members tend to share information and discuss the ethical issues directly, similar to that in a motivating environment. These activities can increase the willingness of the members to open up on issues concerning team development and put forward their own advice for work issues.

When team members are in a caring ethical environment, influence becomes obvious. Concern for the needs of others increases mutual trust within the team and emphasizes the importance of helping others. Employee voice becomes louder in this situation. The following hypothesis is thus proposed:

Hypothesis 4: Caring ethical climate can positively influence team member employee voice at the individual level.

## Caring Ethical Climate and Team Performance

The ethical climate also exerts a positive effect on employee performance and can influence employee routines and norms in ethical issues. Such overall guidance provides good logic for employees in their job performance.

A caring ethical climate generally influences the prevailing thinking mode in a team. If everyone in the team cares about the welfare of others, the team members would tend to cooperate in complex tasks and effort and the efficiency would increase. The following hypothesis is thus proposed:

Hypothesis 5: Caring ethical climate positively affects team performance.

The association of leadership with employee behavior has been supported by a number of evidence. Inclusive leaders give team members norms to develop, encourage full communication, take additional responsibilities, and speak out. Leaders also have ability to create a new ethical climate. Employee voice is a type of self-determined behavior (Meyer et al., 2002), and ethical climate can subtly influence the thought mode of the employees. An inclusive leader can institute ethical guidelines and encourage members to learn the boundaries for their behavior and provide directions. Such an inclusive behavior is likely to promote shared attention by team members. We therefore propose:

Hypothesis 6: The positive relationship between inclusive leadership at the team level and employee voice at the individual level is mediated by caring ethical climate at the team level.

Team leadership shows a close relationship with ethical climate in a team, and leaders always play the critical role in shaping the thoughts and perceptions of team members (Schminke et al., 2005). In addition, leaders also exert additional enforcement through the institution and ethical codes. These effects have been cited in previous research.

Inclusive leaders can affect the perceptions of the team member by showing acceptance and respect. In the context of teamwork, the team member does not only care about the needs of others but also take into serious consideration the advice of the leader from different angles, all of which can substantially improve team performance. Accordingly, we posit a mediated hypothesis:

Hypothesis 7: The positive relationship between inclusive leadership and team performance is mediated by caring ethical climate at the team level.

## METHOD

### Sample and Procedures

The study was conducted among teams of enterprises from six major cities in China including bank, retail, law, oil, estate, and information technology. A total of 364 employees were administered at random from 116 teams participated in this study. To test our hypotheses, two separate survey questionnaires were designed with a view of minimizing single source of data bias. Questionnaire I was distributed to employees, it included measures of demographical variables, inclusive leadership and caring ethical climate. In addition, 3 months later, the direct supervisors of those employees received a second questionnaire in which they were asked to assess their subordinates on employee voice behavior and team performance. All respondents were given time to complete the survey during working hours and were assured full confidentiality. And they were instructed to completed surveys directly with the envelopes sealed to the researchers.

With the help of HR department, each of the questionnaire was coded, so that 3 months later, each supervisor still knew who he/she was rating. After the questionnaires were matched based on code, the response rate was 90.8%. The questionnaires of 35 employees were eliminated because they were incomplete or failed to conform with the requirements. The final sample included 329 employees from 105 teams with an effective recovery rate of 82%. The sample structure of the survey was as follows: in terms of gender, males were dominant, with 55.2% of the sample, and females comprised 44.8% of the sample; in terms of age, the youngest was 26 years old, whereas the oldest was 55 years old, with those in the 36–45 years comprising 46.7% of the sample.

### Ethics Approval

An ethics approval was not required as per institutional guidelines and national laws regulations because there's no unethical behaviors existed in the research procedures. We just conducted questionnaire survey and were exempt from further ethics board approval since our research did not involve human clinical trials or animal experiments. Also, the content of the questionnaire does not involve any sensitive or personal privacy or ethical and moral topics. In the first page of the questionnaire, information on consent procedures was included in information provided to participants and participants were notified that consent was to be obtained by virtue of survey completion. Meanwhile, we informed that participants about the objectives of the study and guaranteed their confidentiality and anonymity. The way to fill in the questionnaire is to take out the secret system, which can further ensure the rights of the people who answer the questionnaire. All the participants were completely free to join or drop out the survey. Only those who were willing to participate were recruited.

## Measures

All the assessments in the current study were conducted in Chinese. We followed Brislin's (Brislin, 1980) translation/back-translation procedure to translate the English-based measures into Chinese. Without exception, participants responded to all measures using a five-point Likert-type scale (1 = strongly disagree, 5 = strongly agree).

### Inclusive Leadership

Team members were asked to indicate, using a 9-item inclusive leadership scale developed by Carmeli et al. (2010). The sample items were as follows: "The team leader is open to hearing new ideas," "The leader is attentive to new opportunities to improve work processes," and "The manager is available for consultation on problems."

### Caring Ethical Climate

We used the Ethical Climate Questionnaire developed by Victor and Cullen (1988) to measure caring ethical climates, which included seven items. The sample items were as follows: "The most important concern is the good of all the people in the team as a whole," "Our major concern is always what is best for the other person," and "In this team, people look out for each other's good."

### Employee Voice Behavior

Employee voice behavior was measured using a 10-item scale adapted from Liang et al. (2012). The sample items were as follows: "Proactively develop and make suggestions for issues that may influence the team," "Proactively suggest new projects, which are beneficial to the work team," and "Raise suggestions to improve the team's working procedure."

### Team Performance

Team leaders provided a comprehensive rating of the team performance by using a 6-item measure of effective performance developed by Barker et al. (2010). The sample items were as follows: "Members in this team can work effectively" and "Members in this team can achieve or over the work demands."

### Control Variables

We statistically controlled for demographic variables such as gender, age, education, and tenure in the team as control variables at the individual level because of their potential effects on the voice behavior of the team member (Wang et al., 2016). To assess the caring ethical climate and team performance at the team level, we also controlled for the gender, age, education, and tenure of the leader.

## ANALYTICAL APPROACH

### Data Aggregation

According to previous studies, data such as leadership style, ethical climate, and performance at the team level are often

collected through individuals in the team and then integrated into the team level. Since inclusive leadership and caring ethical climate at the team level are rated by team members, the data need to be integrated. To support the aggregation, we calculated two intra class correlation indexes (ICCs) to determine whether aggregation of measures to group level was justified (Raudenbush, 2004). ICC(1) indicates how much of the proportion of the variance is explained by team membership (Hox and Mass, 2002), and ICC(2) indicates whether teams can be differentiated on the basis of the variable under consideration. We also used the interrater agreement (Rwg) to justify aggregation, with all mean Rwg values over the acceptable 0.70 cutoff (George and Bettenhausen, 1990). The ICC(1) and ICC(2) for inclusive leadership were 0.65 and 0.85, and the Rwg of 99% teams for inclusive leadership were  $\geq 0.70$ . The ICC(1) and ICC(2) for caring ethical climate at the team level were 0.57 and 0.80, and the Rwg of 98% teams for the caring ethical climate at the team level were  $\geq 0.70$ . They all met ICC(1)  $> 0.05$ , ICC(2)  $> 0.5$ , and more than 90% of the team Rwg  $\geq 0.7$ . Taken together, these evidences support the aggregation of the leadership style, ethical climate, and performance ratings.

## Descriptive Statistics

**Table 1** presents the descriptive statistics of the variables at the team level, and **Table 2** presents the descriptive statistics of the variables at the individual level. Inclusive leadership correlated

significantly ( $p < 0.05$ ) with caring ethical climate ( $r = 0.31$ ;  $p < 0.01$ ) and team performance ( $r = 0.36$ ;  $p < 0.01$ ), and caring ethical climate correlated significantly with team performance ( $r = 0.75$ ;  $p < 0.01$ ).

## Confirmatory Factor Analysis

AMOS 20.0 was used to verify the confirmatory factor analyses (CFAs) of variables at the team level to establish construct validity. **Table 2** presents the CFA results. As shown, the data of the 3-factor model were in good fit [ $\chi^2(204) = 291.23$ , values of CFI  $\geq 0.94$ , TLI  $\geq 0.93$ , and RMSEA = 0.06]. The goodness-of-fit of this model is significantly better than the other factor models (2-factor model and single-factor model), indicating that the measurement has a good discriminant validity.

## Hypothesis Tests

### Regression Analysis

**Table 3** presents the results of regression analysis in the demographic variables. Gender of leadership shows a significantly positive correlation with team performance ( $\beta = 0.24$ ,  $p < 0.05$ ). The  $F$ -values of each model were tested at the significance level of  $p < 0.01$ , indicating a good fit of the equation, and the inclusive leadership showed good explanatory power for team performance. The univariate correlations between inclusive leadership and team performance ( $\beta = 0.32$ ,  $p < 0.01$ ) provided a preliminary evidence to support Hypothesis 2, which states that inclusive leadership exhibits a positive relationship with team performance.

The control, independent, and mediator variables were entered in separate steps. As shown in **Table 4**, inclusive leadership was positively associated with both caring ethical climate ( $\beta = 0.28$ ,  $p < 0.01$ , Model 2) and team performance ( $\beta = 0.32$ ,  $p < 0.01$ , Model 4), supporting Hypotheses 3 and 5. As presented in Model 5, caring ethical climate was positively related to team performance ( $\beta = 0.72$ ,  $p < 0.01$ , Model 5). In Model 6, after putting in the mediator variance of caring ethical climate, no significant relation between inclusive and

**TABLE 1** | Means, SDs, and correlations at the team level.

Variables	1	2	3	4	5	6	7
1. Gender of leader <sup>a</sup>	1						
2. Age of leader <sup>b</sup>	-0.15	1					
3. Education of leader <sup>c</sup>	-0.07	-0.03	1				
4. Tenure of leader <sup>d</sup>	0.05	0.40**	-0.17*	1			
5. Inclusive leader	0.07	0.01	0.06	0.12	1		
6. Caring ethical climate	0.21*	0.01	-0.01	0.13	0.31**	1	
7. Team performance	0.24*	0.07	-0.01	0.22*	0.36**	0.75**	1
Means	1.45	2.66	2.05	3.26	4.38	3.93	4.17
SD	0.25	0.42	0.39	1.29	0.23	0.25	0.26

\*\* $p < 0.01$ , \* $p < 0.05$ ,  $N = 105$ .

<sup>a</sup>(1) Male; (2) Female.

<sup>b</sup>(1) 26 years old below; (2) 26–35 years old; (3) 36–45 years old; (4) 46–55 years old; (5) 55 years old above.

<sup>c</sup>(1) Junior college or below; (2) College; (3) Master; (4) Doctor.

<sup>d</sup>(1) 1 year below; (2) 1–3 years; (3) 4–6 years; (4) 7–10 years; (5) 11 years above.

**TABLE 2** | Confirmatory factor analyses results.

Model	$\chi^2$	Df	RMSEA	TLI	CFI
Null model <sup>a</sup>	1,658.49	231	0.24	0.00	0.00
Three-factor model	291.23	204	0.06	0.93	0.94
Two-factor model <sup>b</sup>	514.34	207	0.12	0.76	0.79
Two-factor model <sup>c</sup>	425.57	206	0.10	0.83	0.85
Single-factor model <sup>d</sup>	689.97	209	0.15	0.63	0.66

<sup>a</sup>In the null model, there is no relationship between all variables measured.

<sup>b</sup>Merging inclusive leadership and caring ethical climate into a potential factor.

<sup>c</sup>Merging inclusive leadership and team performance into a potential factor.

<sup>d</sup>Merging all variables into a potential factor.

**TABLE 3** | Results of regression analysis between inclusive leadership and team performance.

	Team performance	
	Model 1	Model 2
<b>Control variables</b>		
Gender of leader	0.24*	0.22*
Age of leader	0.03	0.04
Education of leader	0.04	0.01
Tenure of leader	0.20	0.15
<b>Independent variable</b>		
Inclusive leadership		0.32**
$R^2$	0.10	0.21
$F$	2.88*	5.12**
$\Delta R^2$	0.10	0.11
$\Delta F$	2.88*	12.72**

The regression coefficient is the standard regression coefficient.

\*\* $p < 0.01$ , \* $p < 0.05$ .

**TABLE 4 |** Mediating role of caring ethical climate testing at the team level.

	Caring ethical climate		Team performance			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<b>Control variables</b>						
Gender of leader	0.20*	0.18	0.24*	0.22*	0.10	0.10
Age of leader	−0.01	−0.002	0.03	0.04	0.04	0.04
Education of leader	0.02	−0.002	0.04	0.01	0.02	0.01
Tenure of leader	0.12	0.08	0.20	0.15	0.11	0.10
<b>Independent variable</b>						
Inclusive leadership		0.28**		0.32**		0.13
<b>Mediating variable</b>						
Caring ethical climate					0.72**	0.68**
$R^2$	0.06	0.14	0.10	0.21	0.59	0.61
$F$	1.50	3.08*	2.88*	5.12**	28.40**	24.97**
$\Delta R^2$	0.06	0.08	0.10	0.11	0.49	0.40
$\Delta F$	1.50	8.95**	2.88*	12.72**	117.07**	98.91**

The regression coefficient is the standard regression coefficient.

\*\* $p < 0.01$ , \* $p < 0.05$ .

team performance was found; however, the effect of inclusive leadership on team performance remains significant ( $\beta = 0.68$ ,  $p < 0.01$ , Model 6), providing a preliminary evidence to support Hypothesis 7, which states that caring ethical climate totally mediated the relationship between inclusive leadership and team performance.

### Hierarchical Linear Modeling

HLM6.02 was used to verify the hypotheses in this study. Hypothesis 1 proposed the main effect that inclusive leadership exerted a significantly positive effect on employee voice behavior. First, the control variables of the first and second levels, as well as the independent variable of inclusive leadership were entered in separate steps. As shown in Table 5, inclusive leadership was positively associated with employee voice behavior ( $\beta = 0.34$ ,  $p < 0.01$ , Model 2), supporting Hypothesis 1.

Hypothesis 6 predicted that caring ethical climate mediates the relationship between inclusive leadership and employee voice behavior. According to Baron and Kenny (1986), full mediation is supported provided that the following four conditions are met: (1) the independent variable is significantly related to the mediator; (2) the independent variable is significantly related to the dependent variable; (3) the mediator is significantly related to the dependent variable; and (4) when the mediator is present, the relationship between the independent and dependent variables becomes non-significant. In support of Hypothesis 6, the results in Table 6 indicated the following: (1) inclusive leadership was positively related to caring ethical climate ( $\beta = 0.28$ ,  $p < 0.01$ , Model 2); (2) inclusive leadership was positively related to employee voice behavior ( $\beta = 0.34$ ,  $p < 0.01$ , Model 4); (3) caring ethical climate was positively related to employee voice behavior ( $\beta = 0.65$ ,  $p < 0.01$ , Model 5); and (4) after entering caring ethical climate, the relationship between inclusive leadership and employee voice behavior became non-significant ( $\beta = 0.16$ , n.s., Model 6), whereas caring ethical climate was still positively related to employee voice behavior ( $\beta = 0.61$ ,  $p < 0.01$ , Model 6). These results suggest that caring ethical climate totally mediates

**TABLE 5 |** Results of hierarchical linear analysis of inclusive leadership and employee voice behavior.

	Employee voice behavior	
	Model 1	Model 2
<b>First-level control variables</b>		
Gender of employee	0.06 (0.07)	0.06 (0.07)
Age of employee	−0.05 (0.06)	−0.05 (0.06)
Education of employee	0.03 (0.05)	0.03 (0.06)
Tenure of employee	0.03 (0.04)	0.03 (0.04)
<b>Second level control variables</b>		
Gender of leader	0.23 (0.10)*	0.21 (0.03)*
Age of leader	0.08 (0.08)	0.09 (0.07)
Education of leader	0.03 (0.09)	0.01 (0.08)
Tenure of leader	−0.01 (0.04)	−0.01 (0.04)
<b>Independent variables</b>		
Inclusive leadership		0.34 (0.12)**
<b>Model fit statistics</b>		
Sigma square	0.19	0.19
Tau	0.19	0.16
Chi-square	416.05 (100)**	365.13 (99)**
Pseudo $R^2$ change (level 1)	—	0
Pseudo $R^2$ change (level 2)	—	15.8%

The regression coefficient is the standard regression coefficient; \*\* $p < 0.01$ , \* $p < 0.05$ ; values in parentheses are estimated SE; first level = individual level ( $N = 329$ ), second level = team level ( $N = 105$ ).

the relation between inclusive leadership and employee voice behavior. Thus, H6 is supported.

### DISCUSSION

The present study contributes to our understanding of inclusive leadership. At the individual level, we investigate and verify the mechanism of inclusive leadership on employee voice behavior on the basis of self-determination theory. At the team level, we investigate and verify the mechanism of inclusive leadership on team performance on the basis of social exchange theory. Prior research has examined many factors that affect employee voice behavior, such as psychological antecedents (Liang et al., 2012), HR practice (Conway et al., 2016), leaders' positive affect (Liu et al., 2017), etc. While few studies investigated the relationship between inclusive leadership and employee voice behavior. The style of team leadership has an important role in the voice behavior of the team members (Bienefeld and Grote, 2014). We found evidence for the effect of inclusive leadership on employee voice behavior. Employees who seek for equality and mutual benefit relationship tend to exhibit behavior that is beneficial to team or organization, such as proposing suggestions (promotive voice) that can promote the operational efficiency of the organization and pointing out problems (prohibitive voice) that would be harmful to the organization, or to enhance team performance to continuously improve work efficiency and quality in order to repay the leader and the team.

Inclusive leadership can positively affect the caring ethical climate if team leaders treat employees inclusively, match words with deeds, express their ideas truthfully, listen to the opinions of others, improve their working methods consistently, and promote their ability to work. Team members tend to work for the overall interests of the team and take care of one another.



**TABLE 6** | Inspection of the intermediary cross-level effect of caring ethical climate.

	Caring ethical climate			Employee voice behavior		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<b>First-level control variables</b>						
Gender of employee	–	–	0.06 (0.07)	0.06 (0.07)	0.06 (0.07)	0.06 (0.07)
Age of employee	–	–	–0.05 (0.06)	–0.05 (0.06)	–0.05 (0.06)	–0.05 (0.06)
Education of employee	–	–	0.03 (0.05)	0.03 (0.60)	0.03 (0.05)	0.03 (0.05)
Tenure of employee	–	–	0.03 (0.04)	0.03 (0.04)	0.03 (0.04)	0.03 (0.04)
<b>Second-level control variables</b>						
Gender of leader	0.20*	0.18	0.23 (0.10)*	0.21 (0.03)*	0.09 (0.07)	0.10 (0.07)
Age of leader	–0.01	–0.002	0.08 (0.08)	0.09 (0.07)	0.08 (0.06)	0.09 (0.05)
Education of leader	0.02	–0.002	0.03 (0.09)	0.01 (0.08)	0.02 (0.08)	0.02 (0.07)
Tenure of leader	0.12	0.08	–0.01 (0.04)	–0.01 (0.04)	–0.02 (0.03)	–0.04 (0.03)
<b>Independent variables</b>						
Inclusive leadership		0.28**		0.34 (0.12)**		0.16 (0.12)
<b>Mediator variable</b>						
Caring ethical climate					0.65 (0.08)**	0.61 (0.10)**
Sigma square	–	–	0.19	0.19	0.19	0.19
Tau	–	–	0.19	0.16	0.09	0.08
Chi-square	–	–	416.05 (100)**	365.13 (99)**	251.80 (99)**	238.30 (98)**
Pseudo $R^2$ change (level 1)	–	–	–	0	0	0
Pseudo $R^2$ change (level 2) (%)	–	–	–	15.8	52.6	50

The regression coefficient is the standard regression coefficient; \*\* $p < 0.01$ , \* $p < 0.05$ ; values in parentheses are estimated standard errors; first level = individual level ( $N = 329$ ), second level = team level ( $N = 105$ ).

The caring ethical climate significantly affects employee voice behavior. In the caring ethical climate at the team level, the team members are willing to help one another, unite as one, and offer positive advice to enhance efficiency, help colleagues, serve customers, and help the team improve. The caring ethical climate significantly affects and promotes team performance. In the caring ethical climate at the team level, the team members help one another, unite to reduce conflicts in the workplace, and promote team performance. From the point of view of the mediating role of caring ethical climate, team leadership indirectly affects employee behavior and team performance through the team ethical climate.

## Theoretical Contributions

Overall, three contributions emerge. First, our theory and results help enrich inclusive leadership research. Inclusive leadership is a new leadership style, and few studies on the empirical study of inclusive leadership have been published locally. Our findings suggest that comparative studies on the role of other mediating variables should be conducted in the future to obtain a more comprehensive understanding of the tolerance mechanism of leadership on employee behavior and team performance and build a complete and systematic theoretical model.

Second, we found that inclusive leadership indirectly affects employee voice behavior and team performance through the mediating effect of the caring ethical climate. To encourage employees to speak up, leaders may need to directly invite them to do so by showing more specific, participative/open leadership behaviors (Tangirala and Ramanujam, 2012). Accordingly, the team members in our sample who are in the caring ethical climate are more willing to express their suggestions, which contribute to team improvement.

Finally, this study revealed the mechanism of positive cross-level effects of inclusive leadership on caring ethical climate, employee voice behavior, and team performance. Our results indicated that leadership can positively affect employee behavior through employee cognition. This outcome not only supported the conclusions in previous research but also elucidated the relationship between leadership style and employee voice behavior. Therefore, this study extends the theoretical vision of inclusive leadership, team ethical climate, and employee voice behavior.

## Practical Contributions

Our findings provide three important contributions for human resource management and practice. First, the results of our study indicate that team leaders should be aware that high-quality inclusive leadership style can lead to higher levels of caring ethical climate so that they need to pay attention to leadership behavior. Team leaders should demonstrate ethical and proper behavior to their employees through their own individual behaviors and interpersonal interaction with employees. These behaviors should be reflected by consistent words and deeds, such as caring about employees, showing respect to employees, and helping employees develop their ability. In formulating strategic planning and management decisions, leaders should attach importance to the shaping of inclusive leadership style, enhance the sense of belonging of employees, and exhibit a high degree of loyalty. Employees will then be willing to contribute to the team or organization with suggestions and self-value.

Second, given the importance of the caring ethical climate for highly satisfactory team performance, our results suggest the value of actively focusing on organizational ethics. Organizational ethics should be taken into consideration as enterprises develop

organizational development strategy and planning. Enterprises should adopt positive ethical policies and increase individual perception of the ethical environment of the organization. At the organizational level, ethical systems, such as corporate ethics policy, as well as ethics consultation, teaching, and training should be constructed.

Third, the consistent results that we found involving caring ethical climate as the mediating variable provide important practical contributions for positive employee behavior. Enterprises need to create caring ethical climate to help employees obtain a greater value and stimulate their higher-order needs. Employees receive emotional benefits such as creating positive emotions, gaining mental and physical pleasure, being assured of obtaining care, and feeling organizational warmth from caring ethical climate. Leaders should pay attention to their interaction with employees, encourage and help them carry out their tasks, enhance their sense of belonging, as well as create a harmonious and friendly ethical climate.

## Limitations and Future Studies

As with any research, this study includes limitations that are worth noting. First, the study has a small sample size. Whether the sample size affected the results is difficult to determine. In the future, a study with a larger sample size for data analysis should be conducted. With time and resource constraints considered, the samples in this study reflect a narrow scope of enterprises. Future studies should select better enterprise samples across the country and attempt to reduce outcome deviations that are attributable to regional differences.

Another limitation concerns the generalizability of our results. In the conduct of the study, we found a significant difference in voice behavior between the financial and manufacturing industries. The team performance of high-technology enterprises and non-high-technology enterprises also reflect a significant difference. In the future, studies on the effect of leadership style on employee behavior and team performance can be evaluated among different industries for the conclusion to provide more practical contributions.

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Finally, this study only validated the mediating role of perceived caring ethical climate, implying that other mediators that can reflect psychological cognition have yet to be excavated; similarly, this study only verified the positive effects of inclusive leadership on positive employee behavior such as employee voice behavior; the effects on other positive employee behaviors (such as feedback seeking behavior and organizational citizenship behavior) also need to be explored. Therefore, while future studies can further investigate the mediating effect of other variables, they should also explore the influence of inclusive leadership on driving positive action and outcome as well as conduct a cross-cultural comparative study of inclusive leadership.

## ETHICS STATEMENT

This research is carried out by means of a questionnaire survey, the content of the questionnaire does not involve any sensitive or personal privacy or ethical and moral topics. The way to fill in the questionnaire is to take out the secret system, which can further ensure the rights of the people who answer the questionnaire. Therefore, there's no need to apply for the permission of the ethics committee.

## AUTHOR CONTRIBUTIONS

Substantial contributions to the conception and design of the work: LQ and BL. Statistical analyses: LQ. Drafting the work: LQ and BL. Critically revising the manuscript: LQ and BL. All authors read and approved the final version.

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# Gratitude in Organizations: A Contribution for Healthy Organizational Contexts

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This article reviews the construct of gratitude. Gratitude has been shown to be a fundamental resource for strengthening individual well-being. From a positive psychology perspective, gratitude is recognized as a promising opportunity for individuals because it can be enhanced through specific training according to a primary prevention framework. In organizations, gratitude is now thought to be crucial to employees' efficiency, success, and productivity while also improving organizational citizenship behaviors, prosocial organizational behavior, and the organizational climate. Thus, gratitude is noteworthy because it increases positive relationships, social support, and workers' well-being, reduces negative emotions at the workplace, and enhances organizational health and success. This perspective article concludes by suggesting new directions for gratitude research and intervention in the organizational context.

**Keywords:** gratitude, organizations, positive psychology, primary prevention, well-being in the workplace, healthy organizations

## INTRODUCTION

Although the word "gratitude," or its linguistic equivalent, is present in almost every language, the concept has rarely been examined in the social sciences in general or organizational psychology in particular (Emmons and Crumpler, 2000). The construct of gratitude is traditionally a fundamental variable in the positive psychology framework (Seligman and Csikszentmihalyi, 2000; Seligman, 2002) and has been studied in relation to well-being (McCullough et al., 2002; Emmons and McCullough, 2003; Watkins et al., 2003, 2014; Wood et al., 2009, 2010; Lin, 2016). More recently, certain studies have focused on organizational contexts, analyzing not only the relationship between gratitude and well-being (Emmons, 2003) but also the relationship with other variables, in particular relational aspects such as positive relationships and social support at work (Hu and Kaplan, 2014), prosocial organizational behaviors (Michie, 2009; Grant and Gino, 2010), organizational citizenship behaviors (Dik et al., 2014), and teamwork and altruism (Dik et al., 2014). Gratitude also emerges as a variable of interest in relation to efficiency, success, productivity, and job performance (Emmons, 2003; Grant and Wrzesniewski, 2010). Gratitude could thus be considered as a promising means of promoting performance and healthy organizations. Therefore, gratitude is recognized as a significant resource for individuals (Emmons and Shelton, 2002; Snyder et al., 2014) and organizations (Fehr et al., 2017).

The importance of developing programs that enhance gratitude from a positive primary prevention perspective (Kenny and Hage, 2009; Di Fabio and Palazzeschi, 2015; Di Fabio and Kenny, 2016a,b) and a resources reinforcement perspective (Di Fabio, 2014, 2015; Di Fabio and Saklofske, 2014a,b) has also been highlighted.



## DEFINING GRATITUDE

The word “gratitude” originated from the Latin term *gratia*, which means grace, graciousness, or thankfulness (Emmons and Shelton, 2002). All words that derive from this Latin root “have to do with kindness, generousness, gifts, the beauty of giving and receiving, or getting something for nothing” (Pruyser, 1976, p. 69). Gratitude can be directed to human and non-human sources, such as God, nature, or animals (Weiner, 1986). It is an attribution-dependent state because it is the result of a cognitive process articulated in two stages. In the first stage, people recognize that they have achieved a positive result associated with feelings of happiness. In the second stage, people attribute their happiness to external sources, which creates a link between happiness and gratitude (Weiner, 1986). Ortony et al. (1988) theorize that gratitude is a combination of the admiration and joy experienced by individuals when they accept a gift from a benefactor. Lazarus (1991) defines gratitude as an empathic emotion. In fact, people are only able to experience gratitude when they recognize and appreciate what another individual did for them (Lazarus and Lazarus, 1994). McCullough et al. (2002) conceive of gratitude as an individual disposition, defining it as “a generalized tendency to recognize and respond with grateful emotion to the roles of other people’s benevolence in the positive experiences and outcomes that one obtains” (p. 112).

The multidimensionality of the construct emerged as the term evolved. Watkins et al. (2003) individuated three dimensions of gratitude: (1) a sense of abundance—grateful people do not experience feelings of deprivation in relation to their own life; (2) simple appreciation—grateful people can be characterized by their tendency to appreciate simple pleasures; and (3) appreciation of others—grateful people are able to appreciate the contribution of others to their well-being.

Subsequently, Adler and Fagley (2005) individuated eight dimensions of gratitude: (1) interpersonal—evaluation of the appreciation of others; (2) personal assets—focus on material and non-material goods; (3) present moment—concentration on here and now; (4) rituals of gratitude—to remind oneself of being grateful; (5) astonishment—frequency with which an individual remains enchanted; (6) social comparisons—the positive feelings that we experience when we compare our lives to that of others; (7) appreciation of life in general—from the awareness that it is not infinite; and (8) expression of gratitude—when people express their thankfulness.

## GRATITUDE AND POSITIVE PSYCHOLOGY

In the framework of positive psychology (Seligman and Csikszentmihalyi, 2000; Seligman, 2002), gratitude is conceived as appreciation of all the positive aspects of one’s own life (Emmons and Shelton, 2002; Wood et al., 2010). Gratitude was studied in relation to well-being and finding positive relationships (McCullough et al., 2002; Emmons and McCullough, 2003). Gratitude correlates positively with hope

and optimism and negatively with depression, anxiety, and envy (McCullough et al., 2002). Watkins et al. (2003) demonstrated moderate to strong relationships between affective and cognitive aspects of well-being and gratitude. In a study by Froh et al. (2009), positive relationships were found between gratitude and positive affect, life satisfaction, optimism, and social support. Furthermore, gratitude is associated with well-being and is largely, though not completely, mediated by affect and belief (Toussaint and Friedman, 2009). Gratitude also predicts psychological well-being above the Big Five personality traits (Wood et al., 2009). A recent study (Lin, 2017) showed that higher-order gratitude, which consists of multiple components (i.e., thanking others, thanking God, cherishing blessings, appreciating hardship, and cherishing the moment), explained variance in integrated mental well-being, in terms of depression, self-esteem, and psychological well-being, after controlling for gender, age, religion, the Big Five personality traits, and unifactorial gratitude (GQ).

After considering the results present in the literature, trainings were developed to improve gratitude and, consequently, to promote well-being (Lyubomirsky et al., 2011; Rash et al., 2011). In a positive primary preventive perspective (Di Fabio and Saklofske, 2014a,b; Di Fabio and Kenny, 2016a), gratitude was considered a resource that should be enhanced early on in order to promote well-being.

## GRATITUDE IN ORGANIZATIONS

Although the construct of gratitude in organizations has not been thoroughly studied, research emphasizes and confirms its fundamental role in organizational success (Emmons, 2003). Gratitude in organizations is crucial because it has a direct effect on improving the organizational climate and contributes to enhancing individual well-being and reducing negative emotions in the workplace, such as rancor and envy (Emmons, 2003). It is also important to employee efficiency, success, productivity, and loyalty (Emmons, 2003; Grant and Wrzesniewski, 2010). Gratitude thus appears to be a precious resource that sustains performance. Gratitude in working environments also promotes psychological safety at work (Edmondson, 2002): psychological security is considered the degree to which people perceive their work environment to be conducive to the expression of their own ideas, even if they could give a negative impression on of themselves. In other words, this offers individuals the security to take interpersonal risks. Workers who have a high level of psychological security believe that others will not penalize them for asking for help (Edmondson, 2002).

Part of the positive effect of gratitude on organizational well-being is related to it being an “antidote against toxic emotions at the workplace” (Emmons, 2003, p. 90), in particular against jealousy and the perception of injustice, both of which could have a negative effect on performance (Emmons, 2003). Gratitude positively influences attitudes toward others, for example the perception of support given by supervisors or colleagues, which in turn leads to increased satisfaction with

interpersonal aspects of their workplace (Hu and Kaplan, 2014). Individuals who are grateful feel better, and their well-being helps them see their colleagues in a more positive light, thereby improving organizational citizenship behaviors and strengthening reciprocity, teamwork, and altruism (Dik et al., 2014). Gratitude also ensures that workers will be recognized for their organizational contributions (Dik et al., 2014).

A relationship has been established between gratitude and organizational citizenship behaviors (McCullough et al., 2001; Spence et al., 2013), which are tasks that workers carry out in organizations that help to maintain, support, and improve the organizational context. They are strictly connected to job performance (Organ, 1997). The association between gratitude and organizational citizenship behaviors underline as gratitude lead people to have an altruistic behavior because it has a function of moral incentive (McCullough et al., 2001; Spence et al., 2013). The function of gratitude as a moral incentive is explained by social exchange theory, through which organizational citizenship behaviors are understood (Konovsky and Pugh, 1994). From this perspective, individuals carry out organizational citizenship behaviors because they feel obliged to repay the positive treatment bestowed by the leaders and by the organization overall; otherwise, they would not realize such behaviors (Spence et al., 2013).

Gratitude is also associated with prosocial organizational behaviors (Michie, 2009; Grant and Gino, 2010) increasing well-being and performance (Cameron et al., 2004). Prosocial organizational behaviors consist of “helping, sharing, donating, cooperating, and volunteering.... [These] are positive social acts carried out to produce and maintain the well-being and integrity of others” (Brief and Motowidlo, 1986, p. 710). Prosocial behavior benefits the well-being of both workers and the organization as a whole (McNeely and Meglino, 1994). People who are thanked for their prosocial behavior are more likely to help again; moreover, they are more inclined to help others, thus creating a virtuous circle linked to the positive moral reinforcement of gratitude (Michie, 2009; Grant and Gino, 2010).

The contribution of gratitude to generalized reciprocity mechanisms has also emerged in organizational literature (Baker and Bulkley, 2014). Generalized reciprocity is based on the principle, “I help you, and you will help someone else,” and is recognized as a component of social capital in organizations. One way this occurs is through the act of reciprocating favors or passing favors to someone else. This behavior is based on positive emotions as it is aroused by the gratitude produced when an individual receives a favor from another person (Baker and Bulkley, 2014).

A recent approach by Müceldili et al. (2015), focused on a positive organizational perspective, examined the importance of gratitude at the collective level in organizations. They define collective gratitude as a positive emotional state shared within the group and being grateful for the good things that happen (Müceldili et al., 2015). Collective gratitude was found to enhance contextual performance, team learning, and high quality

connections in organizations (Müceldili et al., 2015). Even more recently, Fehr et al. (2017) developed a multilevel model of gratitude in organizations that includes episodic gratitude at the event level, persistent gratitude at the individual level, and collective gratitude at the organizational level. Episodic gratitude is defined as “a feeling of appreciation in response to an experience that is beneficial to, but not attributable to, the self” (Fehr et al., 2017, p. 363). Persistent gratitude is considered “a stable tendency to feel grateful within a particular context” (Fehr et al., 2017, p. 363). Collective gratitude is “persistent gratitude that is shared by the members of an organization” (Fehr et al., 2017, p. 364). These different types of gratitude relate to various outcomes in organizations: episodic gratitude to organizational citizenship, persistent gratitude to well-being and communal exchange, and collective gratitude to organizational resilience and corporate social responsibility (Fehr et al., 2017).

According to this model, organizations interested in maintaining an optimal level of performance and organizational well-being should ask how they might cultivate and stimulate acts of gratitude in their members. Studies that address training methods to enhance gratitude highlight the benefits of training and suggest integrating it into leadership and management training programs (Shelton, 2000; Emmons, 2003; Fehr et al., 2017).

## MEASURING GRATITUDE

The literature reveals different questionnaires to measure gratitude, which have changed as the construct has evolved over the last 15 years. The first questionnaire developed to measure gratitude is the Gratitude Questionnaire-6 (McCullough et al., 2002). This instrument considers gratitude as a generalized tendency to recognize and respond with grateful emotion to other people's benevolence. It consists of six items, including “I am grateful to a wide variety of people” and “I have so much in life to be thankful for,” and is unidimensional. According to the same definition of the construct, McCullough et al. (2002) developed a short instrument, the Gratitude Adjective Checklist, composed of three adjectives (grateful, thankful, and appreciative).

Subsequently, questionnaires to measure gratitude as a multidimensional construct were developed. The Gratitude Resentment and Appreciation Test (Watkins et al., 2003) is comprised of 44 items and individuates three dimensions: sense of abundance (“Life has been good to me”), simple appreciation (“Often I'm just amazed at how beautiful the sunset is”), and appreciation of others (“I couldn't have gotten where I am today without the help of many people”).

Another multidimensional questionnaire is the Appreciation Scale, which measures the eight dimensions outlined by Adler and Fagley (2005). It is composed of 57 items. The eight dimensions are interpersonal (“I remind myself to appreciate my family”); personal assets (“I remind myself to think about the good things I have in my life.”); present moment (“I stop and enjoy my life as it is”); rituals (“I stop to give thanks for my

food before I eat); astonishment (“I have moments when I realize how fortunate I am to be alive”); social comparison (“I think of people who are less fortunate than I am to help me feel more satisfied with my circumstances”); appreciation of life in general in relation to loss and adversity (“Experiences of loss have taught me to value life”); and expression of gratitude (“I say “please” and “thank you” to indicate my appreciation”).

Spence et al. (2013) developed the State Gratitude Scale to evaluate the actual experience of gratitude, conceptualized as a transitory state that is discrete and episodic in nature. It is composed of five items, including “I feel grateful,” “I feel a warm sense of appreciation,” and “I have benefited from the goodwill of others.” However, this questionnaire considers the construct of gratitude to be unidimensional.

Two years later, Martini et al. (2015) created the Perceived Gratitude Scale, a nine-item instrument that specifically measures the perception of gratitude of users to socio-sanitary operators. The scale has a bi-dimensional structure that measures gratitude expressed by users’ (“Several users express gratitude for the care we offer them”) and gratitude as a source of support (“Some users’ gratitude compensates for the efforts you make at workplace”).

Due to the number of different questionnaires present in the literature, Morgan et al. (2017) created the Multi-Component Gratitude Measure (MCGM) to evaluate four components of gratitude: conceptions of gratitude, grateful emotions, attitudes toward gratitude (including motivational aspects and evaluations of its importance), and gratitude-related behaviors. Respondents are presented with scenarios to examine their understandings of gratitude.

## CONCLUSION

In a positive psychology framework (Seligman and Csikszentmihalyi, 2000; Seligman, 2002), gratitude is considered a fundamental individual resource (Emmons and Shelton, 2002; Snyder et al., 2014), and a promising individual strength in the organizational context (Fehr et al., 2017). In fact, gratitude seems crucial for employees’ efficiency, success, productivity, and well-being. Based on these promising findings, future research should continue to study the relationship between gratitude and efficiency, success, and productivity in different organizational contexts. Furthermore, future research on the relationship between gratitude and well-being in organizational contexts could examine the association between gratitude and hedonic well-being (Watson et al., 1988) and eudemonic well-being (Ryan and Deci, 2001; Waterman et al., 2010).

Gratitude appears to be essential to constructing positive relationships, a central feature for healthy organizations (Blustein, 2006, 2011; Di Fabio, 2016; Di Fabio and Kenny, 2016a; Di Fabio et al., 2016), and to developing new positive ways to conceptualize organizational relationality. While the

connections between gratitude and prosocial organizational behaviors, organizational citizenship behaviors, and social support at the workplace have been underlined, it is also possible to analyze gratitude in relation to the new construct of workplace relational civility (Di Fabio and Gori, 2016a), which includes relational decency, relational culture, and relational readiness, and to the new construct of acceptance of change (Di Fabio and Gori, 2016b). A leadership style aimed at promoting gratitude at 360 degree could also be introduced (Avolio and Gardner, 2005; Michie, 2009). Under this perspective, the leader shows thankfulness to collaborators, while colleagues help collaborators to be grateful to both the leader and other employees, creating a cycle of gratitude that could lead to many positive effects in both performance and well-being for workers and for the entire organization. In this framework it is also possible to refer to positive organizational behavior (Luthans and Youssef, 2007; Youssef and Luthans, 2007; Avey et al., 2008; Bakker and Schaufeli, 2008), underlining the impact of a strategic management of human capital and of workers’ resources, among which gratitude could be one, for the improvement of organizational performance.

Regarding measures of gratitude in organizations, it should be noted that no questionnaires have been developed to detect gratitude in these specific contexts. Therefore, attempts should be made to create instruments to measure the constructs of episodic gratitude, persistent gratitude, and collective gratitude as defined by Fehr et al. (2017) specifically for organizational contexts.

It seems thus promising to develop gratitude to enhance positive relationships and new forms of organizational relationality (Di Fabio and Gori, 2016a) on the one side, on the other side to promote positive management and leadership styles based on gratitude (Avolio and Gardner, 2005; Michie, 2009). In this framework at an intervention level, gratitude is thus a particularly interesting construct because it can be enhanced through targeted training (Rash et al., 2011; Lai and O’Carroll, 2017). In a positive primary prevention perspective (Kenny and Hage, 2009; Di Fabio and Kenny, 2016a) for building strength (Di Fabio and Saklofske, 2014a,b; Di Fabio, 2015), it could be important to introduce early interventions aimed at improving gratitude in organizational contexts. From this perspective, it could even be seen as essential to pre-emptively intervene to enhance gratitude in organizations at different levels (individual, relational, organizational, inter-organizational) to promote performance, positive relationships, healthy workers, and healthy organizations.

## AUTHOR CONTRIBUTIONS

ADF conceptualized the work and ideated the structure. ADF, LP, and OB analyzed the literature, and all authors wrote the manuscript. Then all authors read and revised the manuscript several times.

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# Re-thinking Innovation in Organizations in the Industry 4.0 Scenario: New Challenges in a Primary Prevention Perspective

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In organizations, innovation is considered a relevant aspect of success and long-term survival. Organizations recognize that innovation contributes to creating competitive advantages in a more competitive, challenging and changing labor market. The present contribution addresses innovation in organizations in the scenario of Industry 4.0, including technological innovation and psychological innovation. Innovation is a core concept in this framework to face the challenge of globalized and fluid labor market in the 21st century. Reviewing the definition of innovation, the article focuses on innovative work behaviors and the relative measures. This perspective article also suggests new directions in a primary prevention perspective for future research and intervention relative to innovation and innovative work behaviors in the organizational context.

**Keywords:** innovation, technological innovation, psychological innovation, innovative work behavior, organizations, primary prevention perspective

## INTRODUCTION

In organizations, innovation is considered a relevant aspect of success and long-term survival (Anderson et al., 2014). Organizations recognize that innovation contributes to creating competitive advantages (West, 2002a; Zhou and Shalley, 2003; Anderson et al., 2004; Lukes and Stephan, 2017). The process of innovation relates to generating and implementing new ideas, processes, and procedures to perform tasks in the best, most effective manner and offer the best products and services (Hammond et al., 2011; Lukes and Stephan, 2017). The innovation process includes technological innovation and psychological innovation (Anderson et al., 2004; Hammond et al., 2011).

Technological innovation comprises “new products and processes and significant technological changes of products and processes” (Organization for Economic Co-operation, and Development [OECD], 2001). Mentz (2006, p. 12) proposed a working definition of technological innovation that includes three aspects: invention, “to conceive and produce a new solution (from a scientific and technological knowledge) to a real or perceived need” (p. 12); realization, “to develop this solution into a viable and produceable entity”; and implementation, “to successfully introduce and supply this entity to the real or perceived need.”

Psychological innovation is focused on the characteristics of the innovator, innovative behaviors, and psychological mechanisms that guide innovation (Anderson et al., 2004; Kumar and Bharadwaj, 2016). In the literature, not only the implementation of technological

systems as technological innovation emerges but also, and above all, the development of innovative behaviors (Scott and Bruce, 1994; Janssen, 2000; Felin et al., 2015; Lukes and Stephan, 2017) and of a culture of innovation (Patterson et al., 2005; Reicher, 2011) shared by workers with the aim of maintaining the introduced innovations. This is claiming the value of a psychological innovation with and beyond technological innovation (Baer and Frese, 2003; Bhatnagar, 2012).

## TECHNOLOGICAL AND PSYCHOLOGICAL INNOVATION IN INDUSTRY 4.0

In Industry 4.0, innovation is a core concept. Industry 4.0 refers to the trend of increased use of information and automation technologies in the manufacturing environment (Kagermann et al., 2013). Technological innovation is inherently implied in the scenario of Industry 4.0, a concept developed by the German Federal Government to enhance its high-tech strategy (Lasi et al., 2014). It is a multifaceted term that includes different interdisciplinary concepts (Lasi et al., 2014). In fact, in some cases, Industry 4.0 is used as a synonym for the Fourth Industrial Revolution, considering its technological potential (similar to that introduced by the first industrial revolution) in mechanization, use of electricity, and the beginning of digitalization (Lasi et al., 2014). From a technical perspective, Industry 4.0 is relative to increasing digitalization and automation of the manufacturing environment and the introduction of a digital value connection to increase communication between products and their environment and business partners (Brettel et al., 2014; Lasi et al., 2014; Schmidt et al., 2015).

Many advanced countries with economic systems based on the manufacturing industry must compete with emerging markets that have lower production costs (Lee et al., 2014). Manufacturing firms in advanced countries not only try to improve manufacturing technical innovation but also the modality of selling (Lee et al., 2014). They introduce a shift from simple product sales to an integration of products and services to deliver customer value (Baines et al., 2009; Lee et al., 2014). If technical innovation is essential for implementing Industry 4.0 in reality, then psychological innovation deserves more attention because it can make a difference (Bauer et al., 2015). It is no longer enough to focus on technical aspects; it is imperative to focus on employees (Bauer et al., 2015).

Manufacturing companies need new strategic approaches for holistic human resource management to cope with knowledge and competence challenges related to new technologies and processes of Industry 4.0 (Hecklau et al., 2016).

An analysis of the literature also shows that innovation can be facilitated by external social support with regard to the presence of more proximal supportive leaders and organizational support (House et al., 2004; Leung et al., 2005; Lukes and Stephan, 2017). Without these elements, innovation could be impeded. Leaders play an essential role in promoting innovation (Brisson-Banks, 2010). Research offers only some indications.

On the one hand, some leadership styles (in particular, charismatic and transformational leaders) seem to inspire and motivate followers, promoting more innovation specifically at an ideation stage. On the other hand, different leadership styles (strategic leaders) seem to enhance organizational activity in general and decrease resistance to change, and therefore have a positive impact on implementing innovation and realizing effective transitions (Kesting et al., 2016). Organizational support includes the resources that organizations make available for implementing new ideas and encouraging innovations comprising top management support (Hunter et al., 2007; Lukes and Stephan, 2017). From the workers' perspective, such organizational support for innovation encourages them to become involved in innovative behavior (Lukes and Stephan, 2017).

## THE COMPLEXITY OF THE CONSTRUCT OF INNOVATION

The first definition of innovation in the workplace includes generating creative ideas at the first stage and implementing these ideas at the second stage (West and Farr, 1990). Subsequently, Scott and Bruce (1994) individuated three stages – idea generation, idea promotion, and idea implementation – as the development of adequate plans for the application of new ideas. Similarly, Janssen (2000) highlighted three stages, but his third stage is idea realization instead of idea implementation, underlining the passage from idea to its concrete realization, which is necessary for implementation. The three stages of innovation are thus: idea generation, idea promotion, and idea realization in terms of introducing innovative ideas into the work environment. More in-depth study individuates four stages of innovation: (1) idea generation, which means to develop novel and potentially useful ideas; (2) idea promotion, with the aim to sell an idea to others and to find supporters for an idea; (3) idea realization that is relative to the concretization of an idea into the work environment; (4) idea implementation, a successful introduction of the innovative idea into work contexts (Anderson et al., 2004; Mentz, 2006).

Deepening the construct of innovation, an important distinction regarding the difference between innovation and creativity emerges (Hülsheger et al., 2009; Potocnik and Anderson, 2016). Regarding the two different innovation stages, idea generation and idea implementation (West and Farr, 1990; Hülsheger et al., 2009; Potocnik and Anderson, 2016), creativity is seen as the first stage of the process (idea generation); creativity can thus be considered a sub-process of innovation (West, 2002a,b; Hülsheger et al., 2009; Anderson et al., 2014). This perspective means that creativity mainly is focused on generating new ideas, while innovation principally centers on implementing ideas (West, 2002a,b). Therefore, creativity is relative to an absolute novelty, and innovation concerns ideas in which the novelty consists of being adopted and adapted from other organizations but used in a specific organization for the first time (Anderson et al., 2004).

Continuing to deepen the construct of innovation, it is important to consider similar but distinct constructs in the change and innovation literature. For example, these concepts include proactive behaviors (Crant, 2000; Ohly and Fritz, 2010; Potocnik and Anderson, 2016), job crafting (Wrzesniewski and Dutton, 2001; Wrzesniewski et al., 2010; Potocnik and Anderson, 2016), voice (Van Dyne and LePine, 1998; Potocnik and Anderson, 2016), taking charge (Morrison and Phelps, 1999; Potocnik and Anderson, 2016), personal initiative (Fay and Frese, 2001; Binnewies et al., 2007; Potocnik and Anderson, 2016), and extra-role behaviors (Van Dyne et al., 1995; Potocnik and Anderson, 2016).

It is also important to distinguish different levels of analysis regarding innovation: individual, team, and organization (Ramos et al., 2016). Analysis at an individual level is mainly relative to the study of innovative work behaviors (Ramos et al., 2016). This article will focus more in-depth on this level in defining innovative work behaviors and issues relative to their measurement.

In terms of the team level of analysis and its role in facilitating or inhibiting innovation in the workplace, it is important to consider different aspects in terms of antecedents as team input variables and team process variables and in terms of moderating influences on antecedent-criterion relationships (Hülsheger et al., 2009). Team input variables correspond to team composition and structure such as job-relevant diversity, background diversity, task interdependence, goal interdependence, team size, and team longevity (Hülsheger et al., 2009). Team process variables are relative to vision, participative safety, support for innovation, task orientation, cohesion, internal communication, external communication, task conflict, and relationship conflict (Hülsheger et al., 2009).

A recent meta-analysis (Hülsheger et al., 2009) showed the following results: team process variables of support for innovation, vision, task orientation, and external communication presented the most robust relationships with innovation; team input variables showed weaker effect sizes. Regarding moderators, analyses showed that relationships are different based on measurement method (self-ratings vs. independent ratings of innovation) and measurement level (individual vs. team innovation). Team variables displayed considerably stronger relationships with self-report measures of innovation compared with independent ratings and objective criteria. Team process variables were more associated with innovation at the team level rather than the individual level. These results suggest the importance to be focused on offering to the group high support for innovation and creating a climate opened to change in an intervention perspective (Hülsheger et al., 2009).

According to an organizational level, innovation is positively associated with management-related factors such as the following: management support and cooperative conflict management (Jung et al., 2003, 2008; Elenkov and Manev, 2005; Damanpour and Schneider, 2006; Choi and Chang, 2009); knowledge search and spillover (transfer), knowledge stock, social network (Katila and Ahuja, 2002; Kyriakopoulos and De Ruyter, 2004; Belenzon and Berkovitz, 2010; Kijkuit and van den Ende, 2010; Operti and Carnabuci, 2014); organizational

structure as harmonization, decentralization, reorganization (Damanpour and Schneider, 2006; Shipton et al., 2006; Cohendet and Simon, 2007; Vermeulen et al., 2007; Jung et al., 2008; Karim, 2009); organization strategy as innovation strategy (He and Wong, 2004; Richard et al., 2004; Un and Cuervo-Cazurra, 2004).

## FOCUSING ON INNOVATIVE WORK BEHAVIOR

Alongside these attempts to define innovation, the need to focus on translating innovation in work behaviors of employees emerged (Ramos et al., 2016). According to West and Farr (1990, p. 9), innovative work behavior refers to “the intentional introduction and application within a role, group or organization of ideas, processes, products or procedures, new to the relevant unit of adoption, designed to significantly benefit the individual, the group, the organization or wider society.” Subsequently, Scott and Bruce (1994) described innovative work behavior as generating creative ideas, promoting ideas to others, and developing adequate plans to implement new ideas.

In 2000, Janssen underlined three aspects of innovative work behavior: idea generation, idea promotion and idea realization. Until then, the construct of innovative work behavior was considered essentially unidimensional as relative measures. In detail, the innovative work behavior measure (Scott and Bruce, 1994) is composed of six items (e.g., generate creative ideas, promote ideas to others, develop plans for implementing new ideas), with a Cronbach's alpha of 0.89. The innovative work behavior scale (Janssen, 2000) is composed of nine items on the three basic steps in the innovation process: idea generation (creating new ideas for difficult issues), idea promotion (acquiring approval for innovative ideas), idea realization (introducing innovative ideas into the work environment in a systematic way). These three components are considered part of an overall scale of innovative work behavior due to their high intercorrelations, with a Cronbach's alpha of 0.95 for self-ratings and 0.96 for the supervisor ratings.

Subsequently, Kleysen and Street (2001) affirm that unidimensional measures do not sufficiently capture the richness of the construct, and introduced a multidimensional structure with five dimensions: (1) opportunity exploration (three items, example: “Look for opportunities to improve an existing process, technology, product, service or work relationship”); (2) generativity (two items, example: “Generate ideas or solutions to address problems”); (3) formative investigation (three items, example: “Experiment with new ideas and solutions”); (4) championing (three items, example: “try to persuade others of the importance of a new idea or solution”); (5) application (three items, example: “Implement changes that seem to be beneficial”). Because the theoretical structure was not confirmed through the empirical analysis, Kleysen and Street (2001) presented a unidimensional scale composed of 14 items with a Cronbach's alpha of 0.95.

The multidimensionality of the innovative work behavior construct emerged empirically in other scales. The Krause (2004)



measure individuates two dimensions: generation and testing ideas (five items, Cronbach's alpha 0.78) and implementation (three items, Cronbach's alpha 0.82). Exploratory factor analysis shows two factors as factorially distinct. The De Jong and Den Hartog (2010) measure detects four dimensions: opportunity exploration (two items, example: "Pay attention to issues that are not part of his daily work," Cronbach's alpha 0.88); idea generation (three items, example: "Generate original solutions for problems," Cronbach's alpha 0.90), idea championing (two items, example: "Attempt to convince people to support an innovative idea," Cronbach's alpha 0.95), and idea implementation (three items, example: "Contribute to the implementation of new ideas," Cronbach's alpha 0.93). However, the factorial structure is weak with two dimensions with only two items.

To overcome the limitations of the existing measures, Lukes and Stephan (2017) developed the Innovative Behavior Inventory, a multidimensional measure composed of seven dimensions with a good factor structure to evaluate the different aspects of the construct: (1) Idea generation (three items, example: "I try new ways to do things at work," Cronbach's alpha 0.67); (2) Idea search (three items, example: "I try to get new ideas from colleagues or business partners," Cronbach's alpha 0.81); (3) Idea communication (four items, example: "When I have a new idea, I try to persuade my colleagues of it," Cronbach's alpha 0.72); (4) Implementation starting activities (three items, example: "I develop suitable plans and schedule for the implementation of new ideas," Cronbach's alpha 0.61); (5) Involving others (three items, example: "When I have a new idea, I look for people who are able to push it through," Cronbach's alpha 0.70); (6) Overcoming obstacles (four items, example: "I'm able to persistently overcome obstacles when implementing an idea," Cronbach's alpha 0.88); (7) Innovation outputs (three items, example: "Many things I come up with are used in my organization," Cronbach's alpha 0.78). The multidimensional structure was confirmed through confirmatory factor analysis. From the analysis of the literature emerges the necessity to continue to study the dimensionality of the construct, and perhaps include more aspects regarding leader and organizational support.

## CONCLUSION

Innovation is a key driver that can guarantee competitive advantages for organizations (Lukes and Stephan, 2017), but it is crucial to identify and consider not only technological innovation but also psychological innovation. In particular, it is necessary not only to implement technological systems as technological innovation but above all to develop innovative work behaviors (Scott and Bruce, 1994; Janssen, 2000; Felin et al., 2015; Lukes and Stephan, 2017). In this regard, it seems that so far, there is not a primary prevention perspective focused on the early enhancement of individual strengths balanced with risk reduction (Hage et al., 2007; Kenny and Hage, 2009; Di Fabio and Kenny, 2016b). At the individual level, this perspective mainly calls for workers preventively equipped with resources (Di Fabio and Palazzeschi, 2012; Di Fabio, 2014; Di Fabio et al., 2017) to

be developed with specific early training. At the organizational level, it calls for constructing and facilitating an organizational climate that supports change and developing leaders equipped with specific skills for favoring change and accepting it adaptively. This perspective also includes a need for managing workers with new abilities to increase flexibility, resilience, and enthusiasm for the novelties and engaging themselves in something often not known.

By presenting some current new instruments and training in this perspective, it is possible, at an individual level, to introduce preventive and new variables in relation to innovative work behaviors, such as acceptance of change (Di Fabio and Gori, 2016a) or workplace relational civility (Di Fabio and Gori, 2016b). Until now, the focus was only on resistance to change; in a positive primary preventive perspective, acceptance of change has been introduced as predisposition to change, support for change, change seeking, positive reaction to change, and cognitive flexibility (Di Fabio and Gori, 2016a). Another variable that could be worthy of interest in this perspective, since until now the focus was on workplace incivility, is workplace relational civility that includes relational decency, culture, and readiness (Di Fabio and Gori, 2016b). Relational civility could contribute to increased innovative behaviors in organizations through introducing a new form of organizational relationality for innovation and sustainability (Di Fabio and Kenny, 2016a; Di Fabio et al., 2016; Di Fabio, 2017a,b). Thus, workplace relational civility also brings the focus to the organizational level because it can be considered a basis to create a work climate open to change, building mutual trust and focusing on offering high support for innovation (Hülshager et al., 2009). Furthermore, at an organizational level, it could be interesting to reflect on leadership styles needed to promote innovative work behaviors, a culture for change, and for adaptively building the unknown future chapter of each organization. More traditionally, research underlines the role of transformational leadership in promoting innovative work behaviors (Kesting et al., 2016), inspiring and motivating followers. It could be interesting to study new forms of leadership in relation to innovative work behaviors and their effectiveness/efficiency in different contexts of organizational support. These forms of leadership, for the moment, are referred to servant leadership (Ehrhart, 2004), benevolent leadership (Cheng et al., 2004; Wang and Cheng, 2010), authentic leadership (Avolio et al., 2009), ethical leadership (Gallagher and Tschudin, 2010), and mindful leadership (George, 2012; Herold, 2013). Based on previous reflections, there is also a need for innovative leadership styles. Also, future perspectives regarding innovative work behaviors in a primary prevention framework call for new interventions and specific training validated through the use of control groups to promote individual strengths for sustaining innovation and innovative work behaviors.

## AUTHOR CONTRIBUTIONS

LP and AD conceptualized the work and ideated the structure. LP, OB, and AD analyzed the literature, and all authors wrote the manuscript. Then all authors read and revised the manuscript several times.

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# Human Connections and Their Roles in the Occupational Well-being of Healthcare Professionals: A Study on Loneliness and Empathy

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Human connections are key to the promotion of health and prevention of illness; moreover, illness can cause deterioration of human connections. Healthcare professional–patient relationships are key to ensuring the preservation of adequate human connections. It is important for healthcare professionals to develop their ability to foster satisfactory human connections because: (i) they represent social support for patients; and (ii) they prevent work-related stress. In this study we assessed the relationship between absence (loneliness) and presence (empathy) of human connections with the occupational well-being of healthcare professionals. The Scale of Collateral Effects, which measures somatization, exhaustion, and work alienation; the Jefferson Scale of Empathy; and the Social and Emotional Loneliness Scale for Adults, were mailed to 628 healthcare professionals working in Spanish public healthcare institutions. The following explanatory variables were used to evaluate work well-being: (a) empathy, as a professional competence; (b) loneliness, age, and family burden, as psychological indicators; and (c) professional experience, work dedication, and salary, as work indicators. Comparison, correlation, and regression analyses were performed to measure the relationships among these variables and occupational well-being. Of 628 surveys mailed, 433 (69% response rate) were returned fully completed. Adequate reliability was confirmed for all instruments. The entire sample was divided into four groups, based on the combined variable, “occupation by sex.” Comparative analyses demonstrated differences among “occupation by sex” groups in collateral effects ( $p = 0.03$ ) and empathy ( $p = 0.04$ ), but not loneliness ( $p = 0.84$ ). Inverse associations between empathy and collateral effects were confirmed for somatization ( $r = -0.16$ ;  $p < 0.001$ ), exhaustion ( $r = -0.14$ ;  $p = 0.003$ ), and work alienation ( $r = -0.16$ ;  $p < 0.001$ ). Furthermore, loneliness was positively associated with collateral effects ( $r = 0.22$ ;  $p < 0.001$ ). Neither family burden, nor work dedication to clinics or management activities were associated with the three collateral effects measured. These findings support an important role for empathy in the prevention of work stress in healthcare professionals. They also confirm that loneliness, as a multidimensional and domain specific experience, is detrimental to occupational well-being.

**Keywords:** empathy, loneliness, somatization, exhaustion, alienation, healthcare professionals



## INTRODUCTION

In his book *"Social: Why our brains are wired to connect,"* Lieberman (2013) compiled extensive research evidence demonstrating the importance of human connections for human beings as a core element of human nature. According to Lieberman, human connections are an essential part of the welfare of our societies, due to their roles in the promotion of health and the prevention of physical and mental illness. However, this fragile and poorly understood aspect of our lives can be influenced by individual and environmental factors capable of deteriorating the capacity of individuals to establish and to maintain human connections. Illness is certainly one such factor.

In patients with chronic disease, the progressive lack of positive human connections increases their vulnerability to suffering from loneliness and social isolation, with negative effects on their health conditions (Stephoe et al., 2013; Neufeld et al., 2015; Mann et al., 2017). Therefore, it is reasonable to assume that, in such patients, healthcare professional–patient relationships tend to fill this social need. In addition, for healthcare professionals, the ability to forge satisfactory human connections is also important, not only because of the role they play as social support for their patients (Decety and Fotopoulou, 2014; Hojat, 2016), but also because of their protective role against work-related stress (Melamed et al., 2001; Rogers et al., 2016; Marilaf-Caro et al., 2017); the latter aspect (i.e., the role that positive human connections play in the workplace) provides a fascinating and less explored field of study.

According to Dutton and Ragins (2007), too often work and work relationships are not included in lists of things that make life worth living. Paradoxically, people spend much of their time at work and, consequently, work relationships become central, not only for how work gets done, but also for the quality of their lives. In the words of these researchers, those relationships “can be a generative source of enrichment, vitality, and learning that helps individuals, groups, and organizations grow, thrive, and flourish” (Dutton and Ragins, 2007, p. 3). Such relationships become even more meaningful when they develop in stressful situations. This has been demonstrated in organizations that are exposed to stressful situations daily, such as hospitals (Gittell, 2008; Gittell et al., 2013). However, this phenomenon has also been reported in organizations exposed to unexpected adverse events (Powley, 2009). In both cases, the ability to develop (or not) positive human connections has been identified as an important factor influencing the well-being of workers and their professional performance.

Defined as the perception that one lacks meaningful connections with others, loneliness is a complex phenomenon that is an outcome of numerous factors related to unsatisfactory human connections at different levels (Weiss, 1973, 1987; DiTommaso and Spinner, 1997). According to different authors, several factors influence loneliness including: early child rearing environments or insecure attachment relationships in childhood (Hojat, 1987; Shaver and Hazan, 1987); dysfunctional social

networks and social forces (Jones and Moore, 1987); non-facilitative living environments (DiTommaso and Spinner, 1997); or even a lack of interpersonal skills (Hojat, 2016). It is not a coincidence that many of these factors also contribute to a deficient capacity for empathy, as has been demonstrated by some studies of students of medicine (Hojat et al., 2005) and nursing (Cunico et al., 2012; Domínguez et al., 2017), and more recently healthcare professionals (Marilaf-Caro et al., 2017).

In the general population, loneliness is closely associated with depression and similar mood state disruptions (Young, 1982; Hojat, 1983; Gerstein et al., 1987; Heinrich and Gullone, 2006). It has also been associated with behavioral and mental health problems, including depression, anxiety, neuroticism, tough-mindedness, low self-esteem, and even suicidal ideation (Hojat, 1983; DiTommaso and Spinner, 1997; Mellor et al., 2008). According to DiTommaso and Spinner (1997), loneliness is also associated with a number of psychosomatic symptoms, including headaches, poor appetite, fatigue, and poor physical health. Loneliness not only acts as a barrier against psychological well-being, but also has a negative effect on physical health through its effects on the immune system (Kennedy et al., 1988). Finally, people who have experienced loneliness are likely to score low on measures of positive aspects of personality conducive to relationship building (Mellor et al., 2008; Salimi, 2011). Disconnected people are less likely to trust others, suggesting that the experience of loneliness is not conducive to forming empathetic relationships (Hojat, 1982). Consistent with this finding, one study reported that impaired peer relationships during medical school could predict later disciplinary action by medical boards against physicians (Papadakis et al., 2005). Thus, the capacity to connect can have a lasting effect on the professional behavior of physicians.

In contrast to loneliness, the establishment of satisfactory (also referred to as positive) human connections has healing power. The association between social connections and health outcomes has been relatively well demonstrated in different contexts (Bennett et al., 2001; Post, 2005; Prilleltensky and Prilleltensky, 2007). According to Hojat (2016, p. 23), social connections are protective and prevent illness because the satisfaction that results from human relationships is an important health-promoting factor. In support of this, some authors (Greenberg et al., 2001) suggest that to have satisfactory human connections (as a consequence of developing empathetic relationships) helps to strengthen self-esteem and liberates an individual from social isolation and experiencing loneliness. This issue is especially important in clinical contexts, where patients are more vulnerable to suffering from isolation and loneliness. Taking this into consideration, for patients to perceive an empathetic relationship with their healthcare providers is an invaluable support during treatment. In contrast, for healthcare professionals, empathy has been described as a central attribute of humanistic medicine (Arnold, 2002), and one of the core elements of professionalism in patient care (Veloski and Hojat, 2006; Vivanco and Delgado-Bolton, 2015). According to Hojat (2016, p. 74), for healthcare professionals, being empathetic

in clinical encounters is defined as a “predominantly *cognitive* (rather than an affective or emotional) attribute that involves an *understanding* (rather than feeling) of experiences, concerns and perspectives of the patient, combined with a capacity to *communicate* this understanding, and an *intention to help*.” In such encounters, developing an empathetic engagement based on the balanced development of the three above-mentioned elements (i.e., understanding abilities, communication skills, and intention to help) also protects from the negative effects caused by an intensive emotional involvement (Hojat, 2016; Marilaf-Caro et al., 2017; Yuguero-Torres et al., 2017). According to some authors (Yuguero-Torres et al., 2015; Hojat, 2016; Marilaf-Caro et al., 2017; San-Martín et al., 2017), empathetic relationships with patients are a type of meaningful interpersonal connection for healthcare professionals, and these connections can serve as a buffer against work dissatisfaction, professional burnout, and work-related stress. Furthermore, in nursing, as a healthcare profession that is oriented to patients’ care, empathy has a central role (Mortier et al., 2016). Therefore, empathy is expected to be a characteristic found in all nurses, independently of their specific role. According to some authors (San-Martín et al., 2017), this would explain why nurses have lesser distraction than the physicians concerning empathy, and why this ability is protective in prevention of work distress. On the other hand, in physicians a higher distraction concerning empathy may be caused by the nature of their clinical and medical roles and the professional duties associated to them. It could explain, for example, why physicians who are working in primary care, pediatrics or psychiatric areas tend to be more empathetic than their colleagues who are working in technical and surgical specialties (Hojat, 2016).

Taking the importance of empathy to the well-being of healthcare workers into consideration, this study was designed with the main purpose of assessing the relationship between absence of satisfactory human connections (measured as loneliness) and the presence of satisfactory human connections (measured as empathy) in the promotion of the occupational well-being of physicians and nurses who share workplaces in Spanish healthcare institutions. Three research hypotheses were tested, the first two to determine the association between positive human connections and occupational well-being, and the third to characterize potential factors that influence the development of empathy and the perception of loneliness and work stress. These research hypotheses were as follows: (i) in healthcare professionals who are in contact with patients, the ability to establish positive human connections with their patients (measured as empathy) protects them from the risk of suffering work-related stress (measured as somatization, exhaustion, and work alienation); (ii) in such professionals, the absence of positive human connections (measured as loneliness) increases the risk of suffering work stress at their workplace (measured as somatization, exhaustion, and work alienation); and (iii) in work teams composed of physicians and nurses, work stress (measured as somatization, exhaustion, and work alienation) and empathetic orientation to patients, but not loneliness, vary according to sex and occupation.

## MATERIALS AND METHODS

### Participants

The study included a sample of 628 physicians and nurses dedicated to direct patient care who were working in the region of Lleida for the Catalanian Healthcare Institute, a Spanish public healthcare institution that offers healthcare assistance in this area of Catalonia. Lleida is the biggest region of Catalonia, with 1,747 physicians and 2,340 nurses in charge of the healthcare of its 370,000 inhabitants. All participants were invited to take part in the study voluntarily and anonymously.

### Principal Measures

#### Psychometric Instruments

To measure work-related stress, the Scale of Collateral Effects (SCE) from the Questionnaire of General Labor Well-being, was used. The SCE is a psychometrically sound instrument composed of three scales: a 5-item scale that measures “somatization,” a 4-item scale that measures “exhaustion,” and a 4-item scale that measures “work alienation” (Blanch et al., 2010). All scales are composed by items that have to be answered on a 7-point Likert-type scale (1 = never, 7 = always). Possible scores for the SCE range from 13 to 91, with higher scores indicating greater self-perceived effects. Originally, the SCE was applied to university teachers and healthcare professionals (physicians and nurses) who were working in Spanish and Latin American institutions. It was designed with the intention to explore the perception of the above three mentioned elements. The SCE has demonstrated a high reliability and validity. Also, a high positive correlation between the SCE and the Maslach Burnout Inventory has been reported for the scales of “emotional exhaustion” and “depersonalization” (Blanch et al., 2010).

To measure empathetic orientation in clinical encounters, the Jefferson Scale of Empathy (JSE; HP-Version) was used. The JSE includes 20 items that measure the empathetic behavior of physicians and other healthcare professionals in the context of patient care (Hojat et al., 2002; Alcorta-Garza et al., 2016). The JSE is answered on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree), with higher scores associated with more empathetic behavior in the context of patient care. The JSE has enjoyed broad international attention and it has been described as possibly the most researched and widely used instrument for measuring empathy in clinical settings with more than 42 translated versions used in different territories and cultural contexts (Hojat, 2016).

To measure loneliness perception, the short version of the Social and Emotional Loneliness Scale for Adults (SELSA-S), was used. The SELSA-S consists of 15 items, and produces a total loneliness score, as well as scores for three dimensions of loneliness: “family,” “romantic,” and “social” (DiTommaso et al., 2004). The SELSA-S measures the global self-perception of each dimension of loneliness is measured using a 5-item scale. The SELSA-S is answered in a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree) and higher scores indicate a higher perception of loneliness. The following are sample items from each of the SELSA-S dimensions: “I do not feel satisfied with the friends that I have,” “I feel part of a group of friends” (Social

dimension), “I have a romantic partner to whose happiness I contribute,” “I have someone who fulfills my emotional needs” (Romantic dimension), and “I feel alone when I’m with my family,” “I feel close to my family” (Family dimension). The SELSA-S has demonstrated good psychometric properties: concurrent and discriminant validity (DiTommaso et al., 2004). In studies with healthcare professionals and students of nursing, the SELSA-S has shown a high reliability with coefficients closer to 0.90 (Domínguez et al., 2017; Marilaf-Caro et al., 2017).

## Demographics

Additional information about age, sex, occupation (medicine or nursing), professional experience, salary, family burden, and time devoted to patient care and management activities, was collected through a complementary survey.

## Procedures

From March to April 2015, a web-based (Survey Monkey®) anonymous questionnaire, based on the above-mentioned instruments, and a complementary information form were distributed as an email link to healthcare professionals working in all healthcare institutions supported by the administration of the Catalan Healthcare Institute in the province of Lleida, Spain. The email included a cover letter and a web-link to the survey. Prior to beginning the survey, an information page describing the design and purpose of the study was available, following a general protocol previously approved by an independent ethics committee (Ref. CEICLAR PI 199). At the bottom of this page participants were asked to sign to indicate their informed consent. Only participants who agreed to sign the informed consent were allowed to continue with the survey. A reminder was sent following the same protocol 15 days after the survey had initially been distributed. All responses were automatically collected in a database supported by Survey Monkey®. The study was performed in collaboration with the Delegations in Lleida of the Professional Association of Physicians (COMLL) and the Professional Association of Nurses (COILL). The work was carried out in accordance with the Declaration of Helsinki of Ethical Principles for medical research involving human subjects adopted by the World Medical Association. There was no potential risk for participants, and anonymity was guaranteed throughout the process.

## Statistical Assessment

Prior to performing any statistical assessment, internal consistency and reliability were calculated for all psychometric instruments administered using Cronbach’s alpha coefficient. Following the guidelines suggested by the American Educational Research Association, coefficient values higher than 0.7 were considered satisfactory.

For the first two research hypotheses, associations of work stress indicators (somatization, exhaustion, and alienation) and measures of empathy and loneliness, were tested using correlation analysis. To test the third research hypothesis, sex (male and female) and occupation (physician and nurse) were used as explanatory variables, while “collateral effects,” “empathy,” and “loneliness” scores were considered dependent

variables. To examine the differences between groups due to the main effects of sex and occupation, subgroups were defined using the combination “occupation by sex.” As the variance differed among the subgroups, and also because the subgroup sizes were unbalanced, a Kruskal–Wallis test was performed. *Post hoc* analyses were performed using the Bonferroni test. Moreover, after analysis of normality, correlation analyses were performed to determine whether elements, other than occupation and sex, influenced the development of empathy and the perception of loneliness and work stress. The other elements analyzed were: age, family burden, professional experience, work dedication, and salary. As professional experience and age can be related variables, when an association with age was confirmed, a partial correlation coefficient was determined for the element assessed. This analysis was performed to measure the degree of association between the correlated element and professional experience, with the effect of the variable age removed. Finally, regression analysis was performed with interaction terms for each of the three collateral effects measured to examine the differences among the “occupation by sex” groups. All analyses were performed using R statistical software, version 3.1.1 for Windows using *multilevel* (Bliese, 2013), *nortest* (Gross, 2012), and *ppcor* (Kim, 2015) packages.

## RESULTS

Of the 628 healthcare professionals who agreed to participate in the study, 433 fully completed at least one of the three psychometric instruments administered, giving an overall effective response rate of 69%. This response rate was higher than the typical rate of 61% reported for mailed surveys of practitioners (Cummings et al., 2001), and similar to the mean rate of 68% reported in previous studies using surveys mailed to American practitioners (Cull et al., 2005).

The mean age of participants was 44 years (range, 22–64 years,  $SD = 11$ ). In the entire sample, 164 participants (26%) identified themselves as physicians (73 men and 90 women), 286 (46%) as nurses (23 men and 259 women), and the remaining 178 participants (28%) declined to answer this question. The score distribution, descriptive statistics, and reliability of the three instruments used in this study are described in **Table 1**.

An association between positive human connections and occupational well-being was confirmed by measures of empathy and loneliness, assessed by the first two hypotheses. Pearson’s correlation analysis confirmed an inverse association between empathy and the three collateral effects measured by the first hypothesis: somatization ( $r = -0.16$ ;  $p < 0.001$ ), exhaustion ( $r = -0.14$ ;  $p = 0.003$ ), and work alienation ( $r = -0.16$ ;  $p < 0.001$ ). In contrast, loneliness exhibited a positive association with the three collateral effects ( $r = 0.22$ ;  $p < 0.001$ ) confirming the second hypothesis. This also occurred for each of the three dimensions of loneliness that were analyzed as is shown in **Table 2**.

Regarding the third hypothesis, the entire sample was divided into four groups according to the combination of occupation and sex variables. Comparative analyses demonstrated differences

**TABLE 1 |** Descriptive statistics and psychometric reliability of scales of collateral effects, loneliness, and empathy in a sample of Spanish healthcare professionals.

Instruments	<i>n</i>	PR	AR	Mdn	<i>M</i>	<i>SD</i>	Reliability
<b>Collateral effects</b>	435	13–91	13–91	38	40	16	0.93
Somatization	461	5–35	5–35	13	14	7	0.85
Exhaustion	461	4–28	4–28	14	14	6	0.90
Alienation	448	4–28	4–28	10	11	6	0.87
<b>Loneliness</b>	433	15–105	15–77	28	31	14	0.88
Family loneliness	451	5–35	5–26	6	9	4	0.77
Romantic loneliness	453	5–35	5–35	9	12	8	0.88
Social loneliness	463	5–35	5–29	9	11	5	0.81
<b>Empathy</b>	484	20–140	67–140	119	118	12	0.83

*n*, sample size; *PR*, possible range; *AR*, actual range; *Mdn*, Median; *M*, mean; *SD*, standard deviation.

**TABLE 2 |** Pearson's correlation analysis among collateral effects, loneliness, empathy, and age in Spanish healthcare professionals.

Indicators	Collateral effects			
	Global	Somatization	Exhaustion	Alienation
<b>Professional competence</b>				
Empathy	−0.16***	−0.16***	−0.14**	−0.16***
<b>Psychosocial indicators</b>				
Loneliness				
Global	0.22***	0.18***	0.18***	0.21***
Family loneliness	0.24***	0.20***	0.18***	0.23***
Romantic loneliness	0.12**	0.10*	0.09*	0.12**
Social loneliness	0.19***	0.13**	0.17***	0.17***
Age	−0.03	−0.13**	−0.01	0.07
Family burden	0.03	0.00	0.03	0.06
<b>Work indicators</b>				
Professional experience (years)	−0.08	−0.18***	−0.08	0.02
Work dedication to (hours):				
Clinics	0.00	−0.01	0.02	0.02
Management	0.08	0.07	0.07	0.04
Research	−0.09	−0.12**	−0.08	−0.06
Monthly salary	−0.15***	−0.20***	−0.13**	−0.05

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

**TABLE 3 |** Summary result of Kruskal–Wallis test to compare “occupation by sex” groups in a sample of Spanish healthcare professionals ( $N = 450$ ).

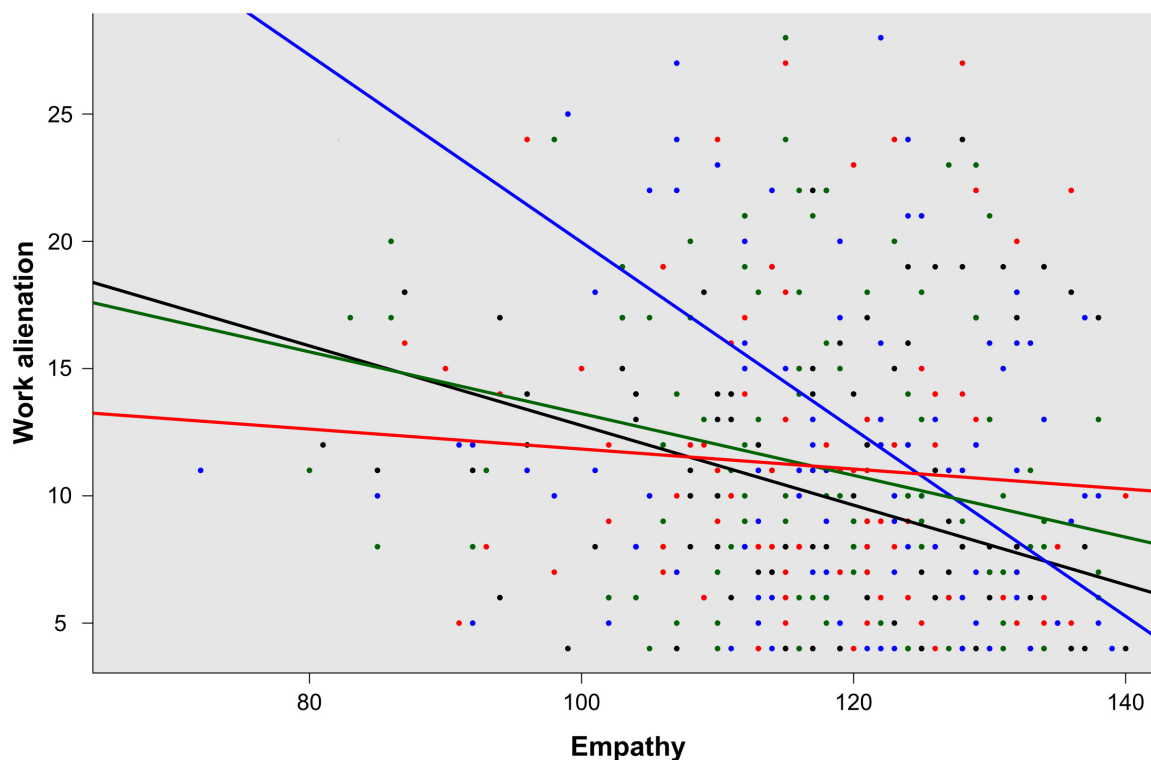
Occupation by sex	<i>n</i>	Collateral effects			Loneliness			Empathy		
		<i>M</i>	<i>SD</i>	<i>p</i>	<i>M</i>	<i>SD</i>	<i>p</i>	<i>M</i>	<i>SD</i>	<i>p</i>
<b>Physicians</b>				0.03			0.84			0.04
Men	73	35	16		33	14		115	13	
Women	91	39	16		31	14		120	11	
<b>Nurses</b>										
Men	23	39	17		32	15		123	9	
Women	259	41	16		32	14		118	13	

*n*, sample size; *M*, mean; *SD*, standard deviation; *p*, *p*-value.

among “occupation by sex” groups for collateral effects ( $p = 0.03$ ), and for empathy ( $p = 0.04$ ), but not for loneliness ( $p = 0.84$ ), confirming the third hypothesis tested. Moreover, *post hoc* analysis confirmed that female nurses suffered more collateral effects than male physicians ( $p = 0.038$ ). A similar

analysis also showed that male nurses showed a tendency, even if not meaningful, toward a higher empathetic orientation than male physicians ( $p = 0.053$ ). These findings are summarized in **Table 3**. Regression analysis with interaction terms for each of the collateral effects measured demonstrated that there were





**FIGURE 1 |** Regression analysis for “occupation by sex” groups, male physicians (black), women physicians (green), male nurses (blue), and women nurses (red), according to alienation by empathy ( $p = 0.03$ ).

statistically significant differences in association with alienation according to “occupation by sex” ( $p = 0.03$ ) (**Figure 1**).

Regarding the other factors assessed (age, family burden, professional experience, work dedication, and salary), an inverse association was identified between age and somatization ( $r = -0.13$ ;  $p = 0.006$ ). After controlling for the effect of age, a similar association was found between somatization and professional experience ( $r = -0.18$ ;  $p < 0.001$ ) by partial correlation analysis. Statistically significant differences were also observed between somatization and age according to “occupation and sex” in regression analysis of the interaction terms (**Figure 2**). Finally, work dedication to research activities ( $r = -0.12$ ;  $p = 0.012$ ) and salary ( $r = -0.20$ ;  $p < 0.001$ ) appeared to be inversely related to somatization. Salary was inversely associated with exhaustion ( $r = -0.13$ ;  $p = 0.007$ ). Neither family burden, nor work dedication to clinics or management activities were associated with any of the three collateral effects measured. With the exception of empathy and age (see above), no differences were observed in the associations according to “occupation by sex” group. A summary of these findings is presented in **Table 2**.

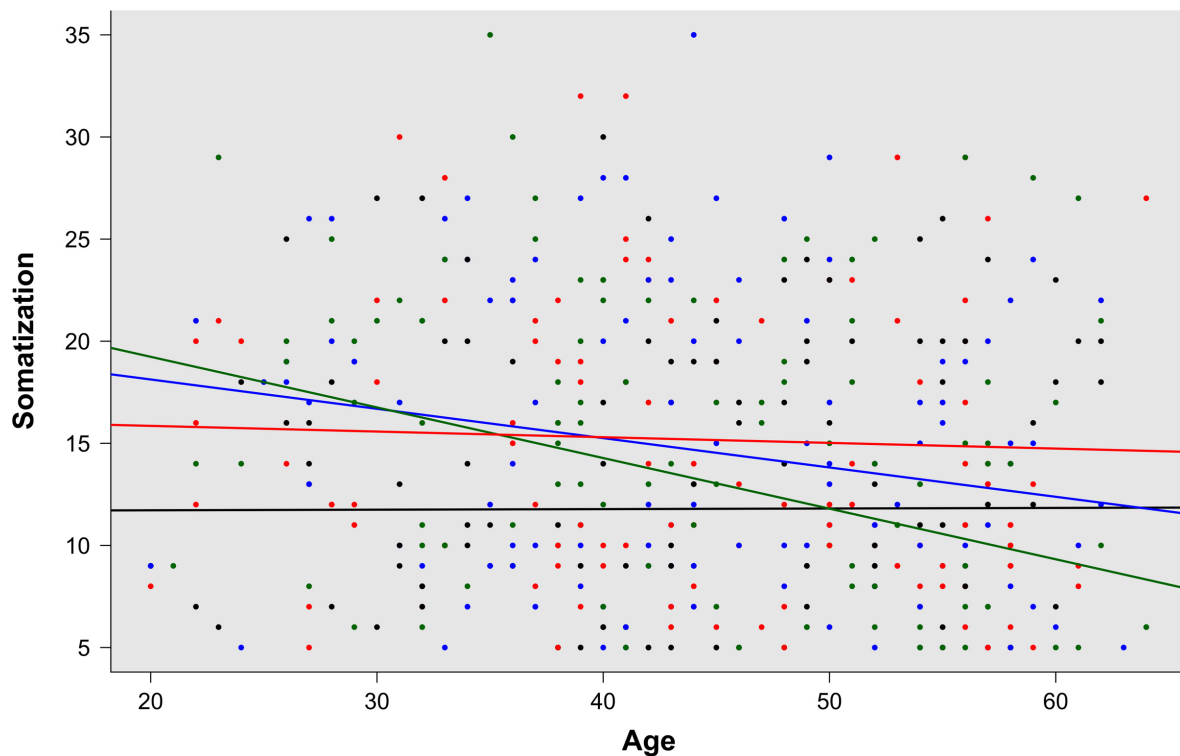
## DISCUSSION

The range observed for the Cronbach’s alpha coefficients obtained in this study was between 0.77 and 0.93. These values are higher than the recommendation of the American Educational Research

Association of 0.70, confirming the adequate psychometric reliability of all instruments used in a Spanish clinical context. These findings are also slightly superior to those previously reported for empathy (Hojat et al., 2002; Alcorta-Garza et al., 2016), loneliness (DiTommaso et al., 2004; Yáñez Yaben, 2008), and collateral effects (Blanch et al., 2010).

## Human Connections and Occupational Well-being of Healthcare Professionals

Regarding characterization of the positive influence of human connections in the promotion of the occupational well-being of healthcare professionals by measurement of empathy, the findings observed in this study are in consonance with those related to the reported positive effects of “relational coordination” among healthcare providers, patients, and their families (Gittell et al., 2000, 2013); and more recently, with those reported in Spanish (Yuguero-Torres et al., 2015, 2017) and Latin American healthcare professionals (Marilaf-Caro et al., 2017; San-Martín et al., 2017), regarding the positive role that empathy plays in the promotion of occupational well-being. Moreover, the findings of this study confirm the important role of empathy in the prevention of somatization ( $r = -0.16$ ;  $p < 0.001$ ), exhaustion ( $r = -0.14$ ;  $p = 0.003$ ), and work alienation ( $r = -0.16$ ;  $p < 0.001$ ), in Spanish healthcare institutions. Furthermore, the findings of this study related to loneliness, as an indicator of social skills deficit, are consistent with



**FIGURE 2 |** Regression analysis for “occupation by sex” groups, male physicians (black), women physicians (green), male nurses (blue), and women nurses (red), according to somatization by age ( $p = 0.04$ ).

the associations previously described in physicians-in-training and nurses between deficit of social skills and burnout and mental health problems, such as emotional exhaustion, emotional detachment, and dehumanization (Pereira-Lima and Loureiro, 2015; Marilaf-Caro et al., 2017). This study provides new evidence clarifying the important role that an absence of positive human connections (measured as loneliness) has in the perception of work-related stress. This role is even more significant than others that have traditionally been focused on, such as family burden or time dedicated to work activities. Moreover, the findings of this study underline the importance for healthcare workers of taking advantage of their family and occupational environments as healthy sources of distraction and personal fulfillment.

### Characterizing Factors Influencing Empathy, Loneliness, and Work Stress

In this study, statistically significant differences were found in collateral effects and empathy, but not in loneliness, when sex, occupation, and the combination of both variables, were compared. These different outcomes can be explained by the conceptualization of loneliness. According to some authors (DiTommaso and Spinner, 1997; DiTommaso et al., 2004), loneliness can be defined as a multidimensional, domain-specific experience. Consequently, despite different types of loneliness sharing a common core, deficits in different relationships and the associated consequences of becoming lonely in a particular relationship domain, such as family, romantic, or social domains,

can be qualitatively different (DiTommaso et al., 2004). Based on this conceptualization, it would be expected to find no differences in the perception of loneliness according to occupation, sex, or the combination of both, as observed in this study. Hence, the experience of loneliness and its negative consequences on health and well-being, can occur in all healthcare professionals.

In contrast, comparative and *post hoc* analyses performed for work stress and empathy measures revealed that female nurses perceived higher levels of work-related stress compared with other healthcare professionals, while male physicians perceived the lowest levels of work stress. In this study, male physicians working in Spanish healthcare institutions also showed the lowest empathetic orientation, while male nurses showed the highest. Both outcomes reveal important differences according to occupation and sex. This finding is consistent with a recent study performed with healthcare professionals working in Latin American institutions (San-Martín et al., 2017), where the influence of professional roles and social stereotypes on occupational well-being were demonstrated. The findings of this study also reinforce the role and influence that cultural factors have in the health and well-being of healthcare professionals in their workplaces. Several studies have confirmed that this issue is a global problem that does not only affect developing countries (Ogilvie et al., 2007; Muliira et al., 2012; Ochoa and Blanch, 2016; San-Martín et al., 2017).

Work alienation, one of the three collateral effects measured in this study, is directly related to the progressive loss of meaning

of the daily activities performed at the workplace (Sarros et al., 2002). Workers who suffer alienation at their workplace tend to express bad humor, low work satisfaction, depersonalization, and frustration because of their work (Blanch et al., 2010). The findings of this study relating to empathy and work alienation, confirm the important role of empathy in the prevention of work alienation. This function is particularly important in those professionals who spend more time with patients, such as nurses. This association between empathy and alienation was demonstrated in a recent study of Chilean nurses working in palliative care and homecare services (Marilaf-Caro et al., 2017). Hence, the findings observed in this study are in accordance with those previously reported in a different cultural context.

The outcomes observed in this study also provide novel information regarding the relationship between empathy and work alienation, according to the combination of occupation and sex (**Figure 1**). Empathy in clinical encounters, as previously mentioned, is a predominantly cognitive (rather than emotional) attribute, that involves the ability to understand (rather than feel) the experiences, concerns, and perspectives of patients, and communicate this understanding (Hojat et al., 2002; Alcorta-Garza et al., 2016; Hojat, 2016). Findings from a large number of gender studies demonstrate that women, both in the general population and in clinical contexts, are more empathetic than men (Hojat, 2016). Several plausible explanations have been given for such differences, including social learning, genetic predisposition, evolutionary origins, and other factors such as hormonal signals, newborn sensitivity to social stimuli and propensity to social interaction, and interpersonal style, verbal ability, aggressive behavior, and caring attitudes (Hojat et al., 2001, 2002; Alcorta-Garza et al., 2016; Hojat, 2016). However, due to the role of empathy in emotional regulation, this attribute also works as a “professional compass” for healthcare professionals when they are required to engage in stressful working situations in clinical encounters. This is a remarkable issue, particularly for nurses, who are more exposed than physicians to these types of situations in their daily work, due to the higher amount of time they are required to spend with patients compared with physicians. Under such circumstances, it is reasonable to assume that that being male or female would introduce an important difference in how the daily patient care workload is handled. According to Wood and Eagly (2010), women more often use communication to enhance interpersonal relationships due to their *communal character*, while men, because of their *agentic character*, tend to use communication to achieve tangible outcomes and exert dominance. Similarly, Hojat (2016, p. 179), argues that “in stressful situations women would tend to express their emotions and talk about the problem to acquire their mates’ support (a communal characteristic), but men often prefer not to talk but rather do something about problems (an agentic characteristic)”. In this sense, the outcomes observed in this study not only confirm the role of empathy in the prevention of work-related stress, but also demonstrate the benefits that this attribute offers for male nurses.

Finally, this study also provides new information regarding the relationship between somatization and age, according to the combination of occupation and sex (**Figure 2**). In 2016,

*Frontiers in Psychology* published a review remarking on the positive role that age plays in occupational well-being (Zacher and Schmitt, 2016). In accordance with this work, a recent publication provided new evidence in support of a positive association between aging and occupational well-being, even when work characteristics differed (San-Martín et al., 2017). The findings of this study, related to somatization, provide new evidence in support of both studies (Zacher and Schmitt, 2016; San-Martín et al., 2017); however, after controlling for the effect of age, a similar association was found between somatization and professional experience, indicating that both factors (age and professional experience) facilitate the reduction of somatization. This result is also in accordance with the “successful aging” work model. According to this model, successful aging at work involves a process during which workers maintain or improve favorable work outcomes, such as motivation, performance, and well-being with “increasing age” (Kooij et al., 2008; Zacher, 2015) or, as observed in this study, also “increasing experience.” The differences observed on comparison of the “occupation by sex” groups regarding the relationship between somatization and age, are in consonance with the “role theory” model, relating to the well-being of workers. According to this model, in workers who occupy multiple roles within and outside the work context, the perception and perceived importance of these roles and more specifically, tasks, expectations, and available resources within those roles, changes over time and with age (Ashforth, 2001). This conceptualization could explain why somatization in women physicians falls more drastically as they age, in comparison with the other three groups. It also explains the similar tendency observed in male nurses. It is remarkable that, in both cases, there are emerging work groups that are directly associated with a drastic change of the traditional Spanish stereotypical work roles that used to associate women with nursing and men with medicine. However, not all these changes have been happening in the same way and in the same speed. For instance, according to Bernalte-Martí (2015), in Spain only 15% of the entire population of nurses is composed by males and this situation continues along time. This fact also helps explain the important difference observed in the number of male and female nurses who participated in this study, but also differences related to empathy in male nurses in comparison with their female counterparts. In Spain, males applying to nursing studies may present some particular baseline characteristics such as, strong vocational attitudes and a resilient attitude when handling dominant social and work role stereotypes.

Overall, these findings stress the importance that the establishment of human connections have in the health and welfare of healthcare professionals, and the roles of some cultural factors and professional roles in healthcare workplaces.

## AUTHOR CONTRIBUTIONS

LV was in charge of the study’s overall design. JS-G was in charge of coordination with participating institutions in Lleida. MS-M and LV performed statistical processing of data. LV and RD-B prepared the draft manuscript. All authors contributed to the

presented work, participated in the interpretation and processing of results, and reviewed and approved the final manuscript.

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# The Reciprocal Effect of Psychosocial Aspects on Nurses' Working Conditions

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**Objectives:** Psychosocial work risks are most often considered in the context of occupational stress. The aim of this article is to evaluate the correlations between different aspects of nurses' psychosocial working conditions.

**Materials and Methods:** The study was conducted using the questionnaire: Psychosocial aspects of work. A total of 789 nurses working in inpatient health care facilities in Białystok were included in the study. Correlation analysis was performed by determining Spearman's correlation coefficient.

**Results:** Correlations between the primary scales, such as job demands, control, social support, well-being, and expectations of changes, were evaluated. The weakest correlation was shown between the assessment of job demands and other work aspects. The strongest correlation was found between the ability to control and social support. Perception of the need for changes was influenced by the assessment of job demands, components of the control scale and, most of all, the scale of social support. A strong correlation was found between physical and psychological well-being and support from superiors and coworkers.

## Conclusions:

1. The state of well-being had no effects on nurses' assessment of the demands they were faced with. Nurses' well-being depended only on social support provided by their superiors and colleagues, the sense of being able to have an effect on the performed work, minimal conflicts, and absence of overload.
2. Management should enable adequate working conditions in order to ensure nurses' physical and psychological well-being, as both these aspects were closely correlated.
3. Poor social support, lack of a sense of control over one's work, conflicts, and work overload were factors that promoted nurses' expectations of changes.

**Keywords:** psychosocial conditions, nurse, demands, well-being, stressors

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## INTRODUCTION

The main aim of the research described in the article is to evaluate the correlations between different aspects of nurses' psychosocial working conditions to investigate the factors that affect the well-being of nurses in the workplace. Further on to examine which psychosocial factors cause nurses to expect changes in their workplace. And finally, what actions should be taken

by management to ensure that the nurses have decent physical and mental conditions in their workplace.

Many researchers point out that nurses experience a great deal of stress during work because of excessive workload, role ambiguity, and interpersonal conflict. This affects negatively their mental and physical health, and can therefore lead to burnout and indirectly hamper the patient's safety (Pisanti et al., 2011, 2015, 2016; Rudman et al., 2012; Panagopoulou et al., 2015; Welp et al., 2015; Giorgi et al., 2016).

So far in Poland no standards have been set for the employment of nurses in hospitals. The financial difficulties of individual institutions and the overall decline in the number of professionally active nurses mean that the number of nurses employed per 1,000 inhabitants is 5.2 in Poland and is significantly lower than in other European countries, for example in Sweden it is 10.2 in Germany 13 and in Norway 18, 8 (Healthcare Personnel Statistics - Nursing and Caring Professionals, 2016). This is the main reason why nurses in Poland are more burdened at work than their colleagues in other European countries (Basinska and Wilczek-Rużyczka, 2011; Borowiak et al., 2011; Dåderman and Basinska, 2016).

The International Labor Organization (ILO) defines psychosocial risks as the interaction between work content, organization and management of the work process, taking into account the competences and individual needs of a person (European Agency for Safety and Health at Work Topic Centre Risk Observatory, 2007). Psychosocial work risks are most often considered in the context of occupational stress. A number of studies on the division and classification of the above mentioned risks may be found in the literature. Classification is usually based on stress models or empirical data containing lists of known potential stressors. The emerging risks associated with new forms of work, e.g., telework, temp work have not yet been covered by studies (Hasselhorn et al., 2008; Widerszal-Bazyl, 2009; Leka et al., 2010; Potocka, 2010; Parent-Thirion et al., 2012; Hegney et al., 2015; Cox et al., 2016).

There are many divisions of psychosocial risks. One of the more useful seems to be the division proposed by Cox and Cox in 1993 and modified by Hasselhorn et al. (2008). It presents the division of psychosocial risks into several groups, taking into account the work content, work pace and overload, work schedule, control, environment and equipment, the organizational culture, role in the company, the course of a career, and the work-home relationship (Hasselhorn et al., 2008; Widerszal-Bazyl, 2009).

The creators of the concept of sustainable work design based on the theory of the organization of workplace, stress, and ergonomic principles have identified several factors that may potentially lead to stress load. According to them, various organizational factors, such as demands, overload, underload, control, ergonomic mismatch, or physical factors may not be the only potential stressors. They also noticed that stressors can result from individual human characteristics: personality, health status, setting inadequate goals, and acquired experiences (Basinska and Wilczek-Rużyczka, 2011; Borowiak et al., 2011; Dåderman and Basinska, 2016). According to this theory, the imbalance between the above mentioned factors and the individual characteristics of an employee can lead to functional changes at the psychological,

physical, and behavioral level and, consequently, to stress (Cox and Cox, 1993; Leka et al., 2010; Potocka, 2010; Hegney et al., 2015).

For at least 20 years, the psychosocial work environment has been analyzed in the literature in terms of its effects on human health using Karasek's demands-control model (Karasek and Theorell, 1990). The model considers demands resulting from the performed work, taking into account the pace of work, conflict of the position, and job control, distinguishing cognitive and behavioral control. It is assumed in this model that high levels of control and low-to-medium levels of demands are perceived in a positive manner by employees and do not pose a threat to health. High levels of demands and low levels of control, on the other hand, may reduce the functioning of an employee in the working environment and entail negative health-related consequences.

Literature data indicate that full-blown stress is preceded by behavioral, psychological, and medical problems (Cieślak and Widerszal-Bazyl, 2000; Hasselhorn et al., 2008; Widerszal-Bazyl, 2009; Basinska and Wilczek-Rużyczka, 2011; Borowiak et al., 2011; Cox et al., 2016; Dåderman and Basinska, 2016). Behavioral problems, such as alcohol and/or drug abuse, smoking tobacco, aggressive behavior, which are most noticeable to the environment, are first to occur. Psychological consequences are related to family life, sexual, and sleep disorders. Finally, medical issues lead to more rapid onset of diseases.

## MATERIALS AND METHODS

### Sample

Women accounted for the vast majority of respondents (721, i.e., 90%). It can be assumed that the study population was homogenous in terms of sex. Individuals with higher education, who accounted for nearly 45% of all respondents, dominated in the study group. Approximately one in ten respondents held a managerial position. Nurses' ages ranged from 20 to 58 years, with mean age of 41 years and deviation of  $\pm 9$  years. Every fourth respondent was over 48 years old. Average seniority was about 17 years, whereas average seniority at current position was shorter than total seniority by about 2 years. The nurse professional group is strongly feminized (not only in Poland) and it is precisely this group structure, with the apparent dominance of women, that can be the basis for correct conclusions (Borowiak et al., 2011).

### Procedure

The study was conducted from June 2012 to March 2013 in Białystok. It included 789 nurses working in inpatient health care facilities. As some of the respondents did not reply to all questions in the questionnaire, the number of analyzed cases in some of the summary lists may be a few to several dozen less than the overall population. Participation was voluntary, and all procedures were approved by the Local Bioethics Committee of the Medical University of Białystok.

### Instrument

Respondents were asked to complete a standardized questionnaire: "Psychosocial aspects of work" (Cieślak and

Widerszal-Bazyl, 2000; Potocka, 2012) which included 118 questions and comprised of 6 parts:

- Part I. Scale of Demands (D). What does your work demand?—25 questions.
- Part II. Scale of Control (C). To what extent can you influence what happens at work?—20 questions.
- Part III. Scale of Social Support (SS). What support can you expect?—16 questions.
- Part IV. Scale of Well-being (W). How is your well-being?—22 questions.
- Part V. Scale of Desired Changes (DC). Do you expect any changes at work?—20 questions.
- Part VI. Metrical data. Who are you and what is your company?—15 questions.

Using the calculation methods described in the test key manual (Cieślak and Widerszal-Bazyl, 2000) the following scales are taken: Scale of Demands (D), Scale of Control (C), Scale of Social Support (SS), Scale of Well-being (W), Scale of Desired Changes (DC). These scales are numerical (continuous variable) and they take values from the range 1 to 5 points. For the purposes of our research, the results were calculated for each scale and subscale in accordance with the coding principle and key provided by Cieślak et al. Next, the scores for answers to the questions included in a given scale were summed. The resulting totals were divided by the number of questions to which the respondent answered to receive average scores for a scale or subscale. Thus obtained values were compared against standards. The higher the score after summing the scores, the higher the intensity of a given item—demands, control, social support, well-being, and desired changes. The questionnaire is in accordance with standards for eight professional groups, including nurses. Scale reliability, measured using Cronbach's alpha index, ranged between 0.82 and 0.94, and therefore is considered satisfactory.

## Analysis

The choice of statistical methods depended on the nature of the evaluated characteristics. The numerical nature of the scales based on the questionnaire determines the choice of statistical methods (descriptive statistics, correlation analysis, regression model). For the evaluation of the effects of a nominal characteristic on working condition assessment, statistical analysis involved a comparison of mean values in the chosen groups as well as an assessment of statistical significance of differences between the groups using an appropriate test. Due to the fact that distribution of working conditions ratings in each category was comparable to normal distribution, and there were no significant distribution asymmetries or deviations, the analysis of variance test was used. For the evaluation of the effects of numerical characteristics on working conditions, correlation analysis determining Spearman's correlation coefficient was used.

An attempt was made to assess the impact of selected independent factors on the assessment of psychosocial working conditions. Based on the research conducted, the following factors were selected that could influence the values of psychosocial working conditions measures: type of hospital ward,

age, education, occupied position (managerial or not). A general linear model (GLM) was used to evaluate the significance of the influence of individual factors on the psychosocial working conditions measures. The table gives the values of the estimated parameters together with the assessment of their statistical significance. The quality of fit in the form of determination coefficient ( $R^2$ ) is also given. It should be noted that attempts to include interactions of the second degree between the factors in the model shown that these interactions were not statistically significant and therefore were not included in the final version of the model.

## RESULTS

The nurses' assessment of work demands was high (mean score of about 3.5). The ability to control one's own work and the level of social support were assessed at an average level (mean scores of 3.01 and 3.06, respectively). The rating of life satisfaction was rather high (mean score of 3.62). The assessment of the scale of desired changes, which should occur in their work, according to the respondents, was also high. This factor received a mean score of 3.57.

**Table 1** shows data on all scales and subscales of the questionnaire of work condition assessment. Analyzing the results, it is worth noting significant differences between the components of some of the scales. For example, the level of psychophysical demands was highly rated (a score of nearly 4.3), while much lower scores were obtained by the level of intellectual demands, and the least scores were obtained by the factor of conflicts and overload at work due to excess responsibilities (mean score of only 2.71). As for other interesting findings, it is worth noting a higher rating of colleague support compared to superiors' support (a mean score of 3.19 vs. 2.83).

We analyzed the correlations between the ratings of different aspects of work conditions (**Table 2**). First, correlations between the main scales, i.e., demands, control, social support, well-being, and expectations of changes, were evaluated. The weakest correlation was shown between the assessment of job demands and other work aspects. It showed a very poor correlation with the assessment of social support and slightly stronger correlation with the assessment of the need for changes. Respondents who rated their work demands higher more often expected changes (leading to reduced demands?). The perception of the need for changes is also influenced by the assessment of control or rather modification of one's way of working—individuals who did not notice such opportunities wanted to change it (negative correlation coefficient  $\rho = -0.33$ ). Individuals with low levels of social support also expected changes ( $\rho = -0.41$ ). As for other correlations, it is worth mentioning that the strongest correlation was between the scale of control over one's own work and social support. Correlation between these two positive aspects of work were relatively strong ( $\rho = 0.51$ ). The strongest correlations are presented in the form of scatter plots (**Figure 1**).

This was followed by an analysis of factors influencing respondents' well-being (**Table 3**). The majority of work aspects were related to the assessment of well-being, although these



**TABLE 1 |** Subjective assessment of work conditions based on components of individual scales.

Assessment of work conditions	N	$\bar{x}$	Me	S	C25	C75	Min	Max
Scale of demands	789	3.49	3.50	0.39	3.24	3.76	1.40	4.56
Intellectual demands	789	3.29	3.22	0.54	2.89	3.67	1.11	4.89
Psychophysical demands	789	4.26	4.33	0.49	4.00	4.56	1.44	5.00
Conflictuality and overload	789	2.71	2.67	0.63	2.33	3.17	1.00	4.67
Scale of control	788	3.06	3.05	0.43	2.80	3.30	1.85	4.40
Behavioral control	788	2.45	2.40	0.54	2.10	2.80	1.20	4.40
Cognitive control	788	3.75	3.78	0.54	3.44	4.11	1.33	5.00
Scale of social support	784	3.01	3.00	0.70	2.63	3.44	1.00	5.00
Support from superiors	784	2.83	3.00	0.82	2.31	3.38	1.00	5.00
Support from colleagues	784	3.19	3.25	0.73	2.75	3.63	1.00	5.00
Scale of well-being	783	3.62	3.64	0.54	3.23	4.05	1.64	5.00
Physical well-being	783	3.71	3.73	0.63	3.27	4.18	1.64	5.00
Mental well-being	783	3.53	3.55	0.53	3.18	3.91	1.64	5.00
Scale of desired changes	779	3.57	3.60	0.63	3.15	4.05	1.00	4.90
Need for change	784	3.61	3.63	0.65	3.16	4.05	1.00	5.00

(N), number of assessments;  $\bar{x}$ , arithmetic mean—variable average; Me, median—half the measures have lower values and half higher from the median; Max, maximum value; min, minimum; S, standard deviation (s)—a measure of “average” deviation from the mean value; 25th and 75th percentile, first and third quartiles.

**TABLE 2 |** Correlations between the main scales.

Correlation	Scale of demands	Scale of control	Scale of social support	Scale of well-being	Scale of desired changes
Scale of demands	1	−0.01 ( $p = 0.8879$ )	−0.15 ( $p = 0.0000^{***}$ )	−0.06 ( $p = 0.0785$ )	0.31 ( $p = 0.0000^{***}$ )
Scale of control	−0.01 ( $p = 0.8879$ )	1	0.51 ( $p = 0.0000^{***}$ )	0.30 ( $p = 0.0000^{***}$ )	−0.33 ( $p = 0.0000^{***}$ )
Scale of social support	−0.15 ( $p = 0.0000^{***}$ )	0.51 ( $p = 0.0000^{***}$ )	1	0.22 ( $p = 0.0000^{***}$ )	−0.41 ( $p = 0.0000^{***}$ )
Scale of well-being	−0.06 ( $p = 0.0785$ )	0.30 ( $p = 0.0000^{***}$ )	0.22 ( $p = 0.0000^{***}$ )	1	−0.16 ( $p = 0.0000^{***}$ )
Scale of desired changes	0.31 ( $p = 0.0000^{***}$ )	−0.33 ( $p = 0.0000^{***}$ )	−0.41 ( $p = 0.0000^{***}$ )	−0.16 ( $p = 0.0000^{***}$ )	1

\*\*\*correlation statistically very highly significant.

correlations were rather weak (sporadically  $|R| > 0.40$ ). Among the aspects of working conditions that affected the level of well-being (in general as well as when divided into psychological and physical components), the following should be mentioned in particular:

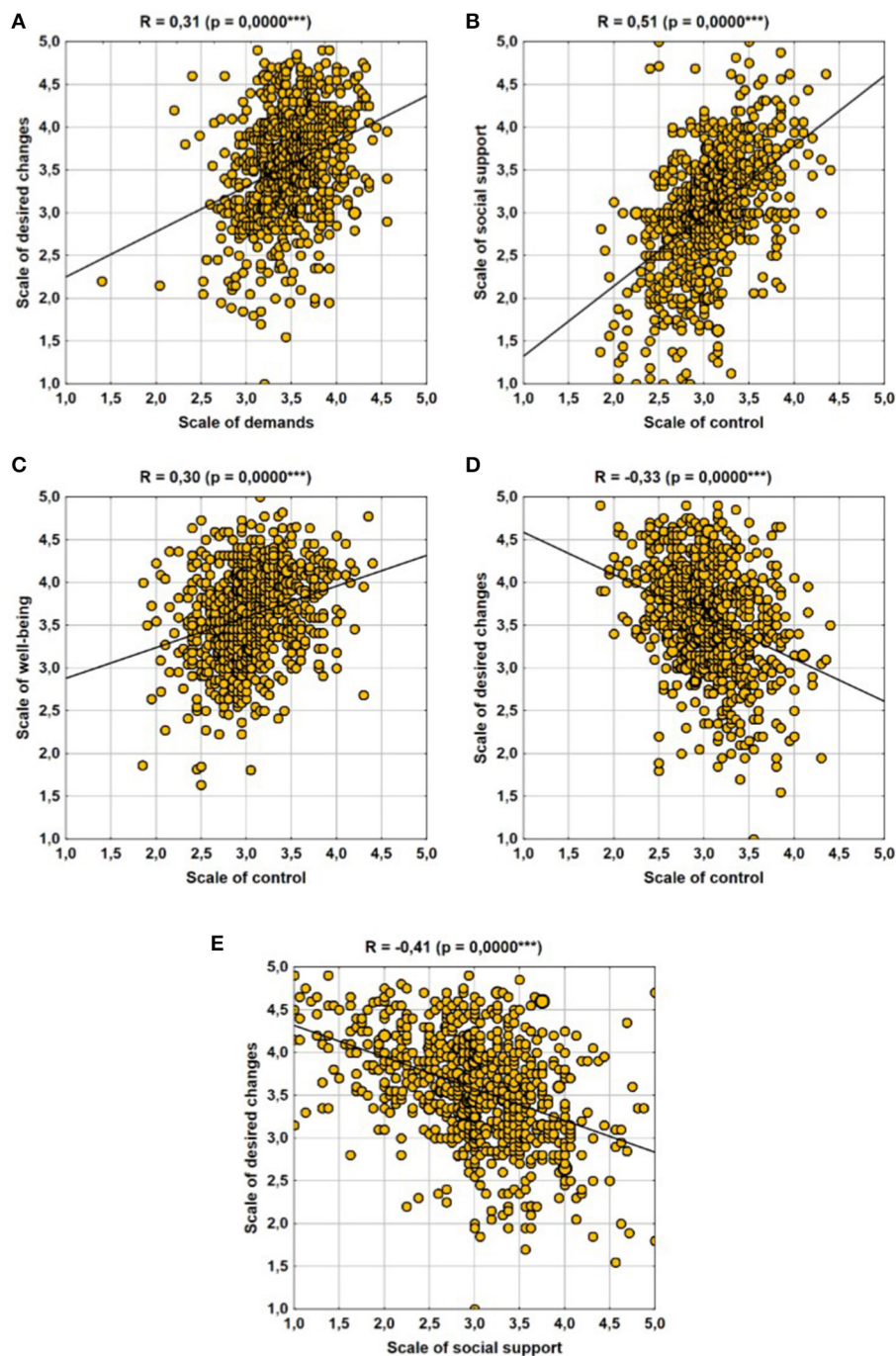
- the negative impact of conflicts and overload ( $R = -0.31$  for total well-being);
- the positive impact of the ability to influence one's own work (scale of control), with particularly significant effects of cognitive control (strongest correlation  $R = 0.37$  for psychological well-being);
- the positive impact of social support, especially on psychological well-being (it should be noted that the strength of the impact was similar for both colleague and superior support);
- the scale of desired changes was of minor importance, in general, those who expected changes showed slightly lower well-being.

Thirdly, we investigated factors that influenced expectations of change (Table 4). The perception of the need for work-related changes was affected by both the assessment of demands as well as the components of the control scale and the social support scale. The greatest impact (yet still relatively weak) was shown for support. Individuals with low social support expressed a

greater need for changes. Support from superiors was particularly important ( $R = -0.44$ ). Similarly, those who perceived the opportunity to influence and control their own work did not want changes in their work ( $R$  approx.  $-0.30$ ). A high level of demands (conflicts and overload in particular  $R = 0.36$ ) was a factor that promoted the increase of expectations related to work changes.

To investigate which nurses expect changes in work and to explain the mechanism of this phenomenon regression analysis was applied. To this end, the independent factors (age, type of hospital ward, education, and position) influence on expected changes in work was examined (Table 5). The only statistically significant factor turned out was “age”—with increasing awareness of the need for changes in the way a nurse operates at work. When comparing two groups with age differences by 10 years, it is expected to be about 0.06 points higher on the need for changes in the older age group.

Continuation of analysis of expectations of changes in work was an attempt to describe the perception of the need of changes in nurses' work in the category of socio-occupational factors and other measures of psychosocial aspects of work. Only the age was introduced into the regression model (based on analysis shown in Table 5) and the other four measures of psychosocial aspects of work. It turned out that knowing the values of: the scale of demands, the scale of control and the scale



**FIGURE 1 |** Strongest correlations between the main scales. **(A)** Scale of desired changes–Scale of demands, **(B)** Scale of social support–Scale of control, **(C)** Scale of well-being–Scale of control, **(D)** Scale of desired changes–Scale of control, and **(E)** Scale of desired changes–Scale of social support.

of social-support the influence of age and scale of well-being become non-significant on the magnitude of the desired change scale (Table 6).

An analysis of residuals in the regression model was performed in terms of their normality, randomness and other desirable properties. The results were satisfactory, which means

that the results of the regression analysis should not be falsified. An example of a graph showing the residual distribution for the model described in Table 6 is shown on Figure 2. It presents the Shapiro-Wilk normality test and the Durbin-Watson statistic test, which indicate the desirable residual distribution (normality and lack of autocorrelation).

**TABLE 3 |** Subjective assessment of respondent' well-being.

Other elements of work conditions	Assessment of well-being		
	Total	Physical well-being	Mental well-being
Scale of demands	−0.06 ( $p = 0.0785$ )	−0.07 ( $p = 0.0478^*$ )	−0.04 ( $p = 0.2697$ )
Intellectual demands	−0.01 ( $p = 0.7429$ )	−0.04 ( $p = 0.3063$ )	0.02 ( $p = 0.5998$ )
Psychophysical demands	0.05 ( $p = 0.1732$ )	0.04 ( $p = 0.2565$ )	0.06 ( $p = 0.0924$ )
Conflictuality and overload	−0.31 ( $p = 0.0000^{***}$ )	−0.28 ( $p = 0.0000^{***}$ )	−0.31 ( $p = 0.0000^{***}$ )
Scale of control	0.30 ( $p = 0.0000^{***}$ )	0.24 ( $p = 0.0000^{***}$ )	0.33 ( $p = 0.0000^{***}$ )
Behavioral control	0.10 ( $p = 0.0050^{**}$ )	0.06 ( $p = 0.1152$ )	0.13 ( $p = 0.0002^{***}$ )
Cognitive control	0.34 ( $p = 0.0000^{***}$ )	0.28 ( $p = 0.0000^{***}$ )	0.37 ( $p = 0.0000^{***}$ )
Scale of social support	0.22 ( $p = 0.0000^{***}$ )	0.15 ( $p = 0.0000^{***}$ )	0.26 ( $p = 0.0000^{***}$ )
Support from superiors	0.21 ( $p = 0.0000^{***}$ )	0.16 ( $p = 0.0000^{***}$ )	0.24 ( $p = 0.0000^{***}$ )
Support from colleagues	0.20 ( $p = 0.0000^{***}$ )	0.14 ( $p = 0.0001^{***}$ )	0.25 ( $p = 0.0000^{***}$ )
Scale of desired changes	−0.16 ( $p = 0.0000^{***}$ )	−0.14 ( $p = 0.0001^{***}$ )	−0.14 ( $p = 0.0001^{***}$ )
Need for change	−0.13 ( $p = 0.0002^{***}$ )	−0.12 ( $p = 0.0006^{***}$ )	−0.12 ( $p = 0.0007^{***}$ )

\*correlation statistically significant; \*\*correlation statistically very significant; \*\*\*correlation statistically very highly significant.

**TABLE 4 |** Effect of factors on the need for changes.

Assessment of demands, control and support	Assessment of desired changes	
	Scale of the desired changes	Need for change
Scale of demands	0.31 ( $p = 0.0000^{***}$ )	0.31 ( $p = 0.0000^{***}$ )
Intellectual demands	0.14 ( $p = 0.0001^{***}$ )	0.14 ( $p = 0.0001^{***}$ )
Psychophysical demands	0.18 ( $p = 0.0000^{***}$ )	0.19 ( $p = 0.0000^{***}$ )
Conflictuality and overload	0.36 ( $p = 0.0000^{***}$ )	0.35 ( $p = 0.0000^{***}$ )
Scale of control	−0.33 ( $p = 0.0000^{***}$ )	−0.33 ( $p = 0.0000^{***}$ )
behavioral control	−0.25 ( $p = 0.0000^{***}$ )	−0.25 ( $p = 0.0000^{***}$ )
Cognitive control	−0.27 ( $p = 0.0000^{***}$ )	−0.26 ( $p = 0.0000^{***}$ )
Scale of social support	−0.41 ( $p = 0.0000^{***}$ )	−0.41 ( $p = 0.0000^{***}$ )
Support from superiors	−0.44 ( $p = 0.0000^{***}$ )	−0.45 ( $p = 0.0000^{***}$ )
Support from colleagues	−0.28 ( $p = 0.0000^{***}$ )	−0.27 ( $p = 0.0000^{***}$ )

\*\*\*correlation statistically very highly significant.

**TABLE 5 |** Impact of independent factors on scale of desired changes.

Regression model for the scale of desired changes $R^2 = 2.2\%$ $F = 2.36, p = 0.0215^*$			
Independent factor	Rated effect	B	p
Age	1 year	0.006	0.0268*
Hospital ward	Operating block vs. internal	−0.042	0.4581
	Outpatient care vs. internal	0.002	0.9732
	Surgical vs. internal	−0.050	0.2113
Education	Higher vs. secondary	−0.017	0.6358
	Postsecondary vs. secondary	0.017	0.6311
Managerial position	No vs. yes	0.005	0.8920

B, regression coefficient; p, result of statistical significance test.

**TABLE 6 |** Impact of independent factors and other measures of working conditions on expectations regarding changes in work.

Regression model for the scale of desired change $R^2 = 27.2\%$ $F = 54.9, p = 0.0000^{***}$			
Independent factor	Rated effect	B ( $\beta$ )	p
Age	1 year	0.002 (0.03)	0.2945
Scale of demands	1 point	0.457 (0.28)	0.0000^{***}
Scale of control	1 point	−0.285 (−0.19)	0.0000^{***}
Scale of social support	1 point	−0.246 (−0.27)	0.0000^{***}
Scale of well-being	1 point	−0.010 (−0.01)	0.7914

B, regression coefficient;  $\beta$ , standardized regression coefficient; p, result significance test.  
\*\*\*correlation statistically very highly significant.

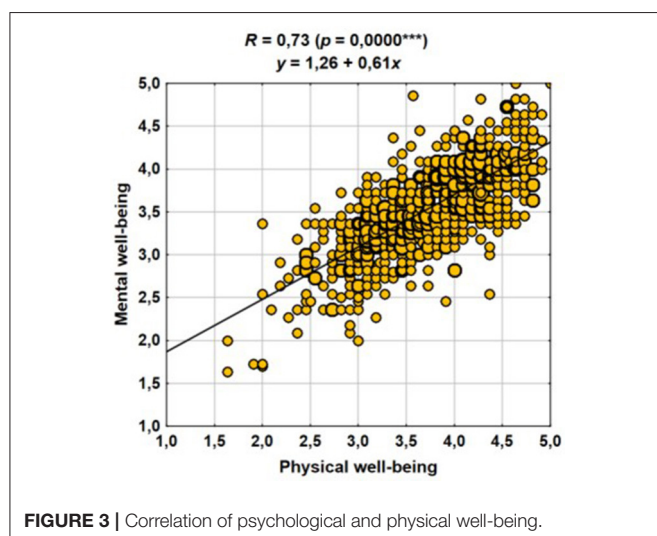
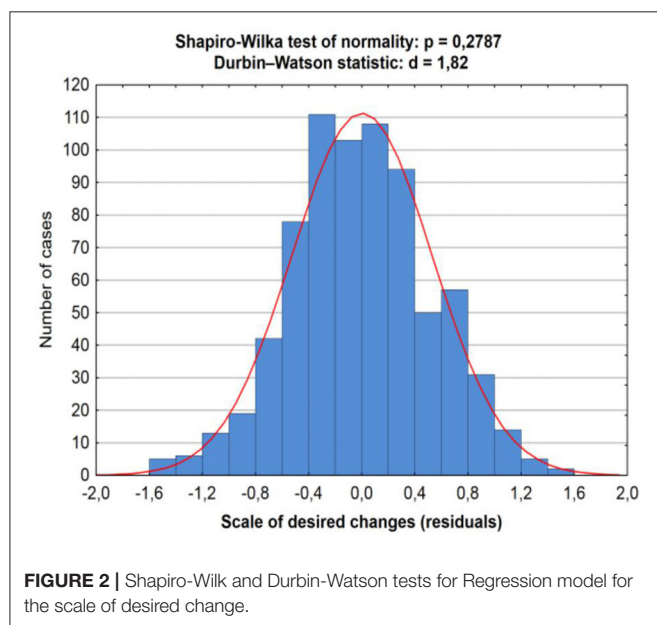
Among the factors considered, the most significant is the scale of demands—with an increase in the scale of demands by 1 point, the assessment of the necessity of changes in the work of nurses is also increasing - on average about 0.457 points. On the other hand, with the increase in the assessment of the ability to control (in a positive sense) of their work and the assessment of social support in work, the perception of the need for changes in the work of the nurse falls. A 1 point increase in scale of control translates into a 0.285 (average) decrease on scale of change, while a 1 point increase in the scale of social support is an average decrease of scale of change of about 0.246 points. The assessment of the influence of individual independent variables on the scale of change can also be carried out on the basis of standardized regression coefficients ( $\beta$ ). It turns out that the magnitude of the impact of the scale of demands and the scale of social support on the scale of desired changes is similar, and influence of the scale of control is less important.

Next, we investigated the relationship between physical and psychological well-being. Both these components of well-being were relatively closely correlated with each other. Naturally, those at the same level of physical well-being showed a relatively broad spectrum of psychological well-being ratings (and vice versa); however, it can be for example stated with a relatively

high certainty (**Figure 3**) that those who rated their physical well-being at 4.5–5.0 points would also rate their psychological well-being higher compared with those who rated their physical well-being at 2.5 or 3.0 points.

The header of the graph (**Figure 3**) contains the regression equation, which indicates that the increase in the rating of physical well-being by 1 point resulted in an increased rating of psychological well-being by  $\sim 0.6$  points.

The last identified correlation was found between superiors' and colleagues' support. A large majority of respondents rated superiors' support lower compared with colleagues' support. A regression equation was formulated, and it indicated that an increase in the rating of superiors' support by 1 point translated into an increase in the rating of colleagues' support by an average of approximately 0.6 points.



## DISCUSSION

In this study, we analyzed the relationships between the ratings of different aspects of working conditions. It seems interesting whether a high rating of demands affects the level of well-being (there are grounds to believe that this effect may be negative). Similarly, it can be expected that a high rating of the level of social support may translate into psychological well-being. Finally, it is interesting who expected changes at work: those who were pleased with themselves or perhaps it depends on the assessment of the level of demands (and if this is the case, were changes expected by those who considered the level of demands as too high or too low?). We also investigated how different components of the same scales correlated with one another; for example, if there was a correlation between physical and psychological well-being, whether the assessment of coworker support was strongly correlated to superiors' support.

The concept of control is presented in the literature from three perspectives. Control can be perceived as a feature of the job, which means that one has an effect on one's own work, which in turn enables reducing the negative effects of stress. Perceiving control as a personality trait means a way an individual assesses the situation at work based on acquired experience. In the third perspective, control exists as a psychological phenomenon, a conviction of an individual that it is possible to choose a purpose as well as the method to achieve it (Head et al., 2006; Davey et al., 2009; Adriaenssens et al., 2011; Potocka, 2012; Ferri et al., 2016). A sense of poor control or lack of control over the performed work creates stress conditions related to one's own actions in situations of threat to other's life and health. Additionally, the lack of a nurse's specific role in the professional hierarchy is a source of chaos in everyday work and causes feelings of insecurity. Tartas et al. (2009) showed that situations associated with a lack of control over the performed work were common in the work of nurses.

It seems interesting why nurses have little control over their work despite the fact that this is an independent profession. Studies conducted among Belgian nurses showed that the low levels of control over the performed work resulted from inappropriate management procedures in certain nursing situations (Adriaenssens et al., 2011). Studies, conducted by Roe (2008), Schaufeli et al. (2009), and Tang (2014) showed that high demands of employees with poor decision-making abilities and low level of social support were a source of high stress levels. A study conducted among Canadian nurses (Gelsema et al., 2016) found that high mental stress was associated with stress in a short time. It can be stated that employees have increased motivation for action and feel personal satisfaction if they have high control combined with high requirements and support (Karasek and Theorell, 1990). Studies conducted in Malaysia confirmed that the ability to control one's own work reduced the psychophysical demands, thus increasing well-being (Amin et al., 2014).

In our study, work-related control was analyzed as a feature of work that can be affected by the employee. Respondents assessed their influence on performing their work (control) as "average" (mean score of 3.06 on 1–5 scale). The performed analysis showed a strong correlation between feeling control over



one's own work and nurses' psychological and physical well-being as well as support from superiors and coworkers, which is in line with the findings of the Malaysian studies (Amin et al., 2014). The strong need for changes at work corresponds with the results of the study conducted among Belgian nurses.

In our studies, social support was presented as the concept of perceiving "from where and whom one can receive assistance in critical situations." We found that the level of social support received by the respondents from their superiors and colleagues had a positive impact on their psychological well-being. Similar results were obtained in Belgium, where the respondents were shown to receive significant support from their colleagues and less support from their superiors. According to the surveyed nurses, adequate support from their superiors would significantly increase their satisfaction and commitment to work, and thus contribute to stress reduction and increased well-being perception (Adriaenssens et al., 2011). Similarly, Tartas et al. (2009) showed that the support nurses received from their superiors and coworkers was poor, which resulted in high stress levels.

In our study, we have shown that the nurses who expected changes perceived the demands imposed on them as high. The study conducted in Belgium showed that the nurses were overloaded with quantitative and qualitative demands as well as time pressure, which was an additional predictor of physical fatigue. The surveyed nurses expected work improvements (Adriaenssens et al., 2011).

A cross-sectional study conducted in the Netherlands showed a mutual correlation between the emotional demands at work and well-being. Decreased psychological well-being may be compensated with increased fulfillment of the employee's emotional needs of, as well as increased perception of well-being and control over work. According to the authors, an increase in an employee's resources would have a positive effect on the perception of work demands and would increase well-being (De Jonge et al., 2008). In our study, we found no such correlations.

Studies conducted in Sweden showed that working with patients is associated with significant emotional exhaustion. High work overload had negative effects on the emotional and physical well-being of respondents (Sundin et al., 2007). Similar results were obtained in our studies, where we found that conflicts and overload had a negative impact on physical and psychological well-being.

Studies conducted in Klang Valley (Malaysia) among public hospital nurses showed that psychosocial factors had significant effects on the subjective feeling of somatic symptoms. Only in case of emotional job demands statistical analysis has not confirmed their influence on the occurrence of the physical symptoms. Furthermore, it was found that poor support from superiors and colleagues reduced well-being (Amin et al., 2014). This is highly consistent with our findings.

Freimann et al. (2016) showed, on the other hand, that there was no relationship between having control at nursing work and the scale of psychophysical overload. It was also found that the low levels of social support had no effects on the occurrence of

health problems. While the first finding corresponds with our outcomes, the second is completely different if we consider "the occurrence of physical symptoms" as equivalent to "physical well-being" (Sundin et al., 2007; De Jonge et al., 2008; Dziąbek et al., 2013; Amin et al., 2014; Rotter et al., 2014; Adriaenssens et al., 2015).

Conflicts in the nursing environment are similar in many countries. This is due, among other things, to the inability of the nurses to manage inequalities from the managers of nurses, improper interpersonal relationships with doctors resulting from different perceptions of responsibilities and responsiveness (Higazee, 2015). Conflict situations also cause negative emotions caused by inadequate behavior of patients and nurses themselves (Wright et al., 2013). Conflicts are associated with one's own professional group, but they also result from inappropriate interpersonal communication and perception of physician incompetence. Nurses, due to their duties, are obliged to act according to a professional code, therefore they often suppress negative emotions resulting from the specificity of their work, e.g., multiple accidents, death of a patient, contact with the family. According to Dziąbek et al. (2013), coping with difficult and conflicting situations and the ability to express emotions promote physical and psychological well-being. Our findings confirmed the thesis of many other studies that conflicts have negative effects on well-being and demonstrated a strong correlation between physical and psychological well-being.

The outcomes of the subjective assessment of psychosocial risks leave no doubt that these factors negatively affect an employee. Therefore, it is advisable to introduce psychosocial risk monitoring in the workplace using standardized tools, as well as to inform employees of the outcomes of the risk research and assessment. In the long term, programs for stress prevention at the individual and company level should be developed and implemented.

The published results of statistical analyzes do not exhaust all possible hypotheses and can be greatly expanded. It was decided to focus on the selected aspects of the problem, which was conditioned by the selection of tools and the scope of statistical analyzes. Studies may be continued in other professional medical groups such as physicians, and then the results of the groups may be compared.

## CONCLUSIONS

1. The state of well-being had no effects on nurses' assessment of the demands they were faced with. Nurses' well-being depended only on social support provided by their superiors and colleagues, the sense of being able to have an effect on the performed work, minimal conflicts, and absence of overload.
2. Management should enable adequate working conditions in order to ensure nurses' physical and psychological well-being, as both these aspects were closely correlated.
3. Poor social support, lack of a sense of control over one's work, conflicts, and work overload were factors that promoted nurses' expectations of changes.

## AUTHOR CONTRIBUTIONS

KK—concept of the article, literature research, survey, data collection, results interpretation, drafting article, approval of

the final version; EK—questionnaire approval, review of article drafts, results interpretation, approval of the final version; MS—questionnaire approval, statistical analysis, results interpretation, review of article drafts.

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# Authenticity and Subjective Wellbeing within the Context of a Religious Organization

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Although authenticity has a long history as a philosophical and psychological idea, this concept has received scarce attention in the business literature until very lately. Nevertheless, scholars belonging to a broad array of disciplines have pointed out the escalation in the individuals' search for authenticity within developed societies. Hence, the purpose of this paper is to assess the link between authenticity and subjective wellbeing within the rarely explored context of faith-driven organizations, where the management of emotions attains a particular significance. Specifically, this study links authenticity with subjective wellbeing among the distinct groups that shape a large international Catholic organization. This study uses Partial Least Squares (PLS) to test our research model and hypotheses. This paper covers two noteworthy research gaps. On the one hand, it provides evidence of the relationship between authenticity and subjective wellbeing within the context of religious organizations. On the other hand, our results suggest that this relationship is not homogeneous among the distinct groups that shape the organization. Implications of the research are finally discussed.

**Keywords:** authenticity, subjective wellbeing, religious organizations, partial least squares

## INTRODUCTION

Over the past decades, sociologists and economists have begun to pay increasing attention to the study of faith-driven organizations (Miller, 2002). Among the reasons underlying this phenomenon, we highlight that such institutions have become major actors within certain segments of the third sector that are critical to maintaining the welfare state (i.e., education, healthcare, and social work, among others). Despite the serious conceptual problem in the study of the third sector [as Sajardo and Chaves, 2006 pointed out, the literature encompasses a variety of denominations regarding this complex amalgam of organizations: third sector, voluntary sector, non-profit sector, philanthropic sector, charity sector, non-governmental organization (NGO) sector, independent sector, tax-exempt sector, and social economy], the size of the non-profit sector within the entire global economy continues to grow and is currently a meaningful part of the European economic and social context. To assimilate the relevance of the third sector, Ayensa (2011) highlights that non-profit sector provides other major aspects that are difficult to quantify: first, how the social dimension of the sector broadens as it incorporates the impact made by voluntary work; second, the sector normally offers employment opportunities to some groups that are traditionally disadvantaged labor-wise, such as women, youth, and the disabled; finally, many third sector organizations provide services locally, thus capitalizing on the social



fabric closest to home. In some specific sectors, non-profit organizations not only perform the largest proportion of the volunteer work but also tend to represent a very significant share of the paid employment (Hill, 2016). Scientific literature suggests that the division between voluntary and paid work is determined by two factors: the professionalism of the job and the time available. For this circumstance, the most complex and responsible positions are assigned to staff employed in the organization, whereas other easier and more sporadic activities are performed by volunteers with a much less stable commitment to collaboration.

Although this topic is undeniably relevant, these organizations have been rarely assessed at the organizational design and human resources management levels due to a poorly understood sense of shame or modesty, among other reasons. Sometimes a notion exists that discussions of labor contracts, wages, social benefits, work schedules, and other issues constitute taboo subjects, matters that to some extent betray the principles and values that underpin this type of organizations (Ariza-Montes and Lucia-Casademunt, 2013). This is why many non-profit organizations, including religious institutions, have been accused of making poor investments in terms of organizational infrastructure; for instance, in information technology (IT) systems, management skills, and other areas (Lowell et al., 2001). Consistent with these authors' findings, the number of non-profit organizations that have implemented managerial training programs is certainly very low. Moreover, these duties are frequently the responsibility of inexperienced people who lack the capabilities to lead and/or motivate others (Lowell et al., 2001). Probably for these reasons, some authors as Bacchiaga and Borzaga (2003), consider that non-profit organizations are only able to incorporate those employees who are not mainly influenced by remuneration of a monetary nature. The inability of non-profit organizations to attract and retain brilliant employees because of their low level of external competitiveness is a grave risk, which may put in danger its long-term survival.

The research gap with regard to the management of the distinct groups that shape faith-driven organizations seems to be clear. There is not even a general accepted definition of such organizations in the scientific literature. According to Ferris (2005), religious organizations might present one or more of the following features: affiliation with a religious group, a mission statement with explicit reference to religious values, financial support from religious sources, and/or a governance structure in which the selection of members of the Board and/or staff is based on religious beliefs or in which decision-making processes are based on religious values. These organizations represent a diffuse and plural context in which religious and lay people coexist and work together. Furthermore, the latter group also involves a certain level of heterogeneity that ranges from "professionals" to employees with labor connections and little commitment to the institutional objectives to (unpaid) volunteers who do not have contracts and who have high levels of commitment, although in many cases these individuals exhibit low levels of professionalism (Ariza-Montes and Velasco, 2006). This diversity implies an increase in the organization's complexity

due to the multiplicity of agents acting within the organization, which indicates the need for more scientific assessment of this topic.

Under this framework, it should be noted that most of the people who are professionally linked to the third sector, and especially to religious organizations, may be driven by ideological motivations – service vocation, personal self-actualization, identification with a set of values, and others (Elson, 2006). A fundamental part of the commitment to an organization's ideology involves an expectation that the organization's members accept the peculiarities that shape this type of institution: few professional staff, whose compensation tends to be low relative to the market and independent of payments or contributions from customers; strong dependence on volunteer and part-time work; and the existence of a congregational structure that reduces the need for full-time professionals while providing a source of support and reliability for the services they deliver (Iannaccone, 1992). The way in which faith-driven organizations develop their non-profit activities also involves several unique and idiosyncratic features. The objective of these organizations lies more in how they conduct their work than in how much work they accomplish. This style defines the character of a religious institution, a character that in some cases is formalized through internal documents aimed at serving as a guide for employees; for instance, the letter of identity (OHSJD, 2000) of the Brothers Hospitallers of Saint John of God or the Jesuits' characteristic pedagogical letters (*Compañía de Jesús*, 1986). In the absence of formalization, the transmission of charisma happens through informal procedures such as socialization, which may be strengthened by some type of structure or supported by consecrated members and the rest of the staff.

Besides, according to Roof (2015), there is evidence to sustain the existence of a clear connection between spirituality and employee engagement. The intensification of the attention devoted to spirituality and employee engagement is due to a convergence of the following ten cultural dynamics: (i) recent ethical concerns, (ii) contemporary enlightened leadership theories, (iii) reaction to increasing materialism, (iv) more humanistic organizational environments, (v) a spiritual awakening in the workplace, (vi) a search for personal values, (vii) the rejection of greed, (viii) a shift toward wholeness and empowerment, (ix) a quest for employee meaning and purpose, and (x) the focus on positive psychology, meaningfulness, and wellness (Roof, 2015).

Given these idiosyncratic peculiarities, understanding how the members of this type of organization feel constitute a basic pillar for its long-term survival. Specifically, this study links authenticity or authentic behavior with subjective wellbeing among the distinct groups that shape a major religious organization. Being authentic involves being yourself, i.e., acting in a manner consistent with your beliefs and personal experiences. A growing body of research highlights the importance of being authentic for human functioning (Boucher, 2011; Grandey et al., 2012). This work adopts as a framework the tridimensional model of a person proposed by Wood et al. (2008) that suggests people are shaped by self-alienation,

an authentic life and external influence acceptance. Although interest in authenticity has always existed, only recently has its connection with human wellbeing been elucidated (Addison, 2008). According to the current research in positive psychology, authenticity is considered to be at the core of wellbeing, as it not only constitutes a prior component or requisite to achieving wellbeing but is itself the essence of wellbeing (Wood et al., 2008).

Hence, the purpose of this study is to assess the link between authenticity and subjective wellbeing within a rarely explored context, the one shaped by faith-driven organizations, in which the management of emotions attains a particular significance. To this aim, we focus on a large international Catholic organization with a strong presence in the south of Spain and the Canary Islands. The labor performed by this organization is centered in the education sector (pre-university education) and in the social work sector, which is mainly composed of residences for elder people, orphanages and social dining rooms. Distinct groups coexist within this institution that differ in terms of their type of linkage with the organization: consecrated members, managerial laypeople and non-managerial laypeople (hereafter religious, managers and employees). The results obtained identify the main differences with regard to the feelings of authenticity among the distinct members and the link between authenticity and the level of subjective wellbeing the members attain. Ultimately, this study seeks to cover the research gap that exists for the authenticity-subjective wellbeing tie within the context of religious organizations.

To this aim, this paper continues as follows: in Section “Theoretical Background and Research Hypotheses” we present a review of the most relevant literature and posit our research model and hypotheses. Section “Materials and Methods” describes the methodology we followed in this study. Section “Results” presents the main results obtained from the empirical assessment of the hypothesized links. In Section “Discussion,” we discuss the most critical empirical results. The paper ends with the main implications, limitations and suggestions for future lines of research.

## THEORETICAL BACKGROUND AND RESEARCH HYPOTHESES

### Authenticity

Liedtka (2008, p. 237) posits that “Scholars across a wide variety of disciplines have called attention to what they see as an intensifying search for authenticity on the part of individuals in developed societies.” According to Knoll et al. (2015), authenticity has a long history as a philosophical and psychological idea but a short one as an empirical research concept. In fact, the study of authenticity constitutes a relatively recent endeavor. The first author referring to authenticity is Rogers (1961) who considers it, from a humanistic perspective, an attitude that enables the complete functioning of human beings. Since then, a growing body of research has stressed the importance of being authentic (for instance, Grandey et al., 2012) to the extent that currently it can be considered a central topic of

research in psychology and other related fields (Van den Bosch and Taris, 2014a).

Authenticity can be broadly understood as the ability of an individual to act according to his or her true feelings, beliefs and core values (Harter, 2002). In other words, it refers to the thoughts, emotions, needs, desires, preferences, and beliefs about oneself, which are translated into actions that are consistent with those experiences (de Carvalho et al., 2015). According to these authors, being oneself is important because it produces beneficial effects for the development of individuals and groups, thus contributing to generating healthier organizations and social environments. A lack of authenticity produces anxiety and psychopathologies among individuals due to the necessity to develop forced or anti-natural behaviors. Moreover, several studies posit that fostering authenticity generates positive effects among the employees, as they experience greater enjoyment from and find more meaning in their job (Ménard and Brunet, 2011; Reich et al., 2013). However, the scientific literature suffers from a lack of empirical research on the assessment of authenticity in the workplace due primarily to the confusion that exists regarding this concept; in addition, until recently there have been few reliable measures of this construct (Sheldon, 2004; Wood et al., 2008). Most of the existing measures consider authenticity more as a stable trait than as a state related to a specific context (Metin et al., 2016).

Taking as a point of reference Rogers’s (1961) model that is centered on the person, Wood et al. (2008) define the tridimensional structure of authenticity, which is currently the most widely accepted model in the scientific community. The tridimensional construct posited by Wood et al. (2008) points to congruence as the critical element of authenticity, which is understood by Barrett-Lennard (1998) as the consistency between the three levels of (a) a person’s primary experience, (b) their symbolized awareness, and (c) their outward behavior and communication. The three dimensions of authenticity in the model by Wood et al. (2008) are self-alienation, an authentic life and external influence acceptance. **Self-alienation** is understood as the extent to which an individual experiences a certain level of incongruence between his or her conscience and an actual experience. If applied to the workplace setting, this notion would involve the subjective experience of not knowing very well who one is while at work. An **authentic life** involves being faithful to oneself in the majority of circumstances and living and acting in accordance with one’s own values and beliefs. Last, **external influence acceptance** refers to the degree to which one accepts the influence of other people at the same time that one is obliged to comply with the expectations of others (Wood et al., 2008). The optimal level of authenticity may be reached through a combination of high levels of authentic life and low levels of self-alienation and external influence acceptance.

In practice, being completely authentic becomes utopic, since as social beings all individuals are influenced in a way or another by their surrounding environment, which might in turn reduce authentic life while increasing the individual’s level of self-alienation. Indeed, the environmental pressures – real or imaginary – that saturate the atmosphere of some of

these organizations might determine the degree of authenticity exhibited by the members of religious organizations (Chickering et al., 2015). Some people might presume that if they reveal themselves exactly as they are, they would be at risk of being recognized as different and banned or penalized in one way or another. The array of penalties is wide, ranging from social condemnation to the erosion of the possibilities for promotion and development of a professional career within the organization to an “invitation” to abandon the institution (Mengers, 2014). Consequently, individuals’ wellbeing tends to be severely damaged when they are forced to exhibit behaviors that are dissonant with their innermost feelings and patterns of acting while in the workplace (or in any other context of their life) and that compel them to renounce who they are. In this vein, Sheldon et al. (1997) suggest that individuals experience their behaviors as an expression of their true being in different contexts. Thus, greater authenticity might be positively related with superior levels of wellbeing and health.

## Subjective Wellbeing

Subjective wellbeing is a multifaceted and complex construct investigated in different scientific fields. In the framework of the self-determination theory, the assessment of wellbeing has developed into two distinct theoretical perspectives: hedonic and eudemonic (Deci and Ryan, 2008). Whereas the first relates to happiness, the latter is linked to a person’s potential development. The hedonic view of wellbeing identifies subjective happiness with personal pleasure, enjoyment and comfort. Therefore, as maintained by Diener (1984), there exists a direct tie between the hedonic approach and subjective wellbeing that is explained through three basic components: life satisfaction, the presence of positive feelings and the absence of negative feelings (Diener et al., 2003). Moreover, the eudemonic vision of wellbeing differs from subjective wellbeing, as the first focuses on the subjective experience of personal growth, self-actualization and life meaning or purpose, rather than on broad happiness (Ryan and Deci, 2001). Nonetheless, there are several authors who note the overlap that exists between both streams of thought (for instance, Huta and Ryan, 2010) to the extent that they have proposed that wellbeing is a multidimensional concept that covers aspects from both streams.

Assuming that any study of the topic of wellbeing demands the integration of both the eudemonic and hedonic approaches, this study relies on the use of the integrative perspective proposed by Diener et al. (2010). These authors consider that subjective wellbeing is a tridimensional construct shaped by two dimensions linked with the hedonic perspective (life satisfaction and the presence/absence of positive and negative feelings) and a third dimension grounded in both approaches (flourishing). Flourishing may reflect the essential components of wellbeing as revealed in the most recent theories (Sumi, 2014). From this point of view, flourishing describes an individual’s subjective perception of central areas of human activity that range from positive relationships to feelings of competence and self-esteem, as well as life meaning and purpose (Diener et al., 2010). Melé and Cantón (2014) describe human flourishing as the pursuit and fulfillment of the most noble human talents. This comprises a

subjective feeling of happiness or personal joyfulness experienced by virtuous people. In any case, it is a mental health state characterized by high levels of subjective psychological and social wellbeing and associated with a significant proportion of positive affectivity (Cortina and Berenzon, 2013).

## The Authenticity-Wellbeing Link

The tie between being oneself and wellbeing represents a rather young research topic (Mengers, 2014). In fact, several psychological streams consider authenticity the most critical aspect of wellbeing given that, as Wood et al. (2008) note, being authentic is not only a prior component or requisite of wellbeing but also constitutes its core or essence. This interest has been intensified by the advent of positive psychology, a branch of psychology devoted to the scientific assessment of wellbeing that complements classic psychology by defining, researching and promoting “human flourishing” with regard to the study of mental health (Addison, 2008).

Several studies highlight that highly engaged employees tend to be more happy and productive (Rich et al., 2010; Leroy et al., 2013). In this vein, Avolio and Gardner (2005) suggest that authenticity involves being aware of one’s self and hence, adapting and behaving oneself in accordance. In this vein, Leroy et al. (2013) posit that when employees behave with authenticity at the workplace, thus experiencing that they behave as they wish, they will be more autonomously motivated for work-related issues, being hence, more likely to show personal engagement in those activities (Meyer and Gagné, 2008). Additionally, following Ariza-Montes et al. (2015), individuals who are authentically committed to work tend to be people meaningfully engaged in their setting –in a broad sense– rather than determined by their working conditions.

The link between authenticity and wellbeing seems evident to the extent that, as suggested by Sheldon et al. (1997), wellbeing may depend on the degree to which individuals show themselves authentically under different circumstances and with different people. Authenticity generates wellbeing by providing individuals with a clear and concise sense of themselves. In contrast, the absence of authenticity provokes disorientation and dissatisfaction, since individuals might be forced to act against their innermost values and aspirations. For instance, a study by Goldman and Kernis (2002) finds a strong correlation between authenticity, self-esteem and subjective wellbeing. Likewise, Wood et al. (2008) link authenticity with the increase of subjective wellbeing and the reduction of stress levels. Similarly, Neff and Harter (2002) identify lower levels of self-esteem and more depressive symptoms among individuals who subordinate or renounce their own interests with the aim of avoiding conflict, thus accepting external influence and feeling less authentic. Moreover, López and Rice (2006) measured authentic life and external influence acceptance (although not the self-alienation factor) and found significant correlations with depression, self-esteem, anxiety, and life satisfaction. The relationship between authenticity and life satisfaction has also been addressed in a study by Boyraz et al. (2014), which was carried out with a sample of students in two different periods of time. Specifically, the main drawback of most of these studies lies in the fact that they are not

carried out within workplace contexts and they frequently rely on the use of samples of students; therefore, the constraints around the possibility of being authentic might differ.

In the labor context, Ménard and Brunet (2011) interviewed more than 300 executives, observing that those who scored higher in authenticity presented higher levels of subjective wellbeing in the workplace, although this relationship was partially mediated by the meaning that the executives found in their jobs. In the Australian healthcare sector, a study by Grandey et al. (2012) reveals that the most authentic workers present lower levels of strain than less authentic workers, who presented in turn higher emotional erosion.

Furthermore, a study by Van den Bosch and Taris (2014a), carried out with a wide sample of nearly 700 German employees, notes that authenticity in the workplace context explains a substantial quantity of the variance when predicting wellbeing. Applying a hierarchical regression model, these authors conclude that self-alienation constitutes the most determinant dimension of the authenticity construct. Hence, these authors maintain that authenticity is primarily grounded in the consistency between individuals' primary experience and their symbolized awareness, that is, self-alienation.

All of the above leads to the formulation of the first research hypothesis of this work.

**Hypothesis 1.** *Authenticity is positively related to subjective wellbeing.*

As far as we know, there are no empirical studies linking authenticity with subjective wellbeing within the specific context of religious organizations, which constitutes a research gap that this work attempts to cover. The assessment of authenticity within this particular context is important because consistency between the behaviors – ways of acting – and beliefs of an individual constitutes a delicate and treacherous topic, especially in contrast to other types of organizations in which personal beliefs exclusively belong to the individual's private dimension. Moreover, in these organizations, two types of collaborators coexist: (i) religious members who have professed vows and assume the role of owners–employees and (ii) lay members who present heterogeneous levels of identification with the institution's ideology. The latter might in turn occupy executive positions with high responsibility or perform the role of base employees with lower responsibility and jurisdiction.

Similar to any other organization that acts within a certain environment, the survival and growth of religious institutions depends upon access to the resources existing within the environment. Their resources are frequently of a physical or financial nature, yet capacity to attract and retain members also becomes critical, as does those members' levels of effort and commitment (Miller, 2002). This circumstance acquires even more relevance within the current scenario, which is characterized by the scarcity of religious vocations, leading to greater involvement by laypeople in the management of religious congregations. At this point, a fundamental question arises: Are laypeople actually free to act consistently with their personal beliefs and experiences or is their conduct determined by what

they think their institution expects from them? Mengers (2014) asserts that a possible consequence of an “excess of authenticity” is being distinguished from others and labeled as different, which could lead to social rejection and ostracism. Furthermore, it should be noted that religious groups tend to confer greater status on those individuals who possess a deeper knowledge about religious practices, those who comply with norms and those who show that they are aligned with the values and charisma of the institution. According to Mengers (2014), intense social interaction together with the processes of training and mentoring are the principal instruments employed by these institutions to identify potential candidates who may be able to occupy positions of leadership and responsibility. As posited by Sosik et al. (2011), many of these managers cope with considerable pressure due to the necessity to satisfy everyone. A natural adaptive response might be that lay managers within religious institutions adapt their conduct to what they think the institution expects from them, which could later result in a crisis of authenticity that might hinder subjective wellbeing.

Therefore, this study expects that the level of authenticity, as well as its relationship with subjective wellbeing, might be different among the distinct members or groups that shape faith-driven organizations: religious members, lay managers, and lay employees. In this sense, we propose the following research hypothesis:

**Hypothesis 2.** *The authenticity-subjective wellbeing link varies among the groups considered.*

The **Figure 1** illustrates the theoretical model and the research hypotheses.

## MATERIALS AND METHODS

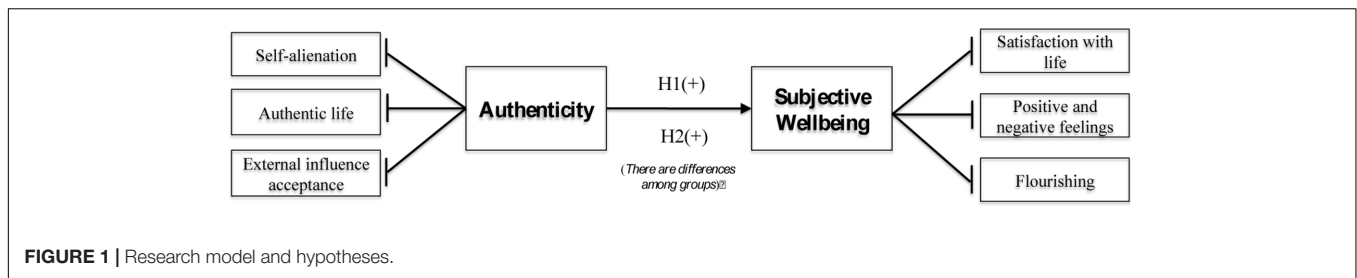
### Sample

To carry out this research, we prepared a survey that was sent to all the members of the target catholic organization (1942 in total) with several branches across Spain. The questionnaire was administered through Google Forms and was accompanied by a letter explaining the objectives of this study.

Google forms permits create and analyze surveys. This tool provides a fast way to create an online survey. After, the scholar can invite respondents by email. People answer questionnaire items from almost any web browser, including mobile smartphone and tablet browsers. Furthermore, survey responses gather in a spreadsheet saved to your Google Drive.

All subjects gave their informed consent for inclusion before they participated in the study. The study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the Ethics Committee of Universidad Loyola Andalucía (Spain). The data collection was carried out between April and May 2016. Our two mailing efforts yielded a total of 1014 answered questionnaires; of those, we rejected 51 that contained some incomplete sections, resulting in a final sample of 963 valid questionnaires, which represents a 49.6% response rate. Of the respondents, 20.2% are religious, 6.1% are lay managers, and 72.7% are lay employees. In terms of sectors of activity, 55.2%





work in the education sector (27.3% of the religious members, 86.7% of the lay managers, and 61% of the lay employees), and the remaining 44.8% work in the social assistance sector, which is composed primarily of residences for elderly people, homes for orphans and social dining rooms (72.7% of the religious members, 13.3% of the lay managers, and 39% of the lay employees).

The majority of the survey respondents are women (84.2% of the total sample, 91.4% of the religious members' subsample, 73.3% of the lay managers' subsample, and 83% of the lay employees' subsample), with an average age of 44.9 years old ( $SD = 11.8$ ) (51.9, 46.7, and 42.8, respectively) and an average seniority of 17.7 years ( $SD = 9.6$ ) (21.8, 17.7, and 12.8, respectively). Of those surveyed, 69.4% reported that they had completed university studies, 19% had finished secondary studies, and 11.6% have primary education. Finally, 58.2% of those surveyed live with a partner, 22.9% live alone, and the remaining 18.9% live in community.

## Measures

The authenticity variable was measured using the IAM (*Individual Authenticity Measure at Work*) developed by Van den Bosch and Taris (2014a). This instrument, composed of 12 items, is an adaptation for the workplace context of the authenticity scale developed by Wood et al. (2008). Consistent with the original scale, the IAM comprises three dimensions: self-alienation (i.e., "At work, I feel out of touch with my true self"), authentic life (i.e., "At work, I am faithful to myself in most situations"), and external influences acceptance (i.e., "At work, I feel the need to do what others expect me to do"). All the items were measured using a Likert scale ranging from 1 (totally agree) to 5 (totally disagree). Later, we recoded the self-alienation and external influence acceptance scales. Therefore, consistent with the scale for an authentic life, a higher score represents a higher degree of authenticity. The scale's reliability can be found in studies by Van den Bosch and Taris (2014a) and Metin et al. (2016). The reliability estimates in this study for the three dimensions ranged from 0.741 (authentic life) to 0.782 (external influences acceptance).

To measure subjective wellbeing, we relied on the use of a scale developed by Diener et al. (2010). This instrument encompasses three dimensions: (a) satisfaction with life (*Satisfaction With Life Scale-SWLS*), (b) positive and negative experiences (*Scale of Positive and Negative Experience-SPANE*), and (c) flourishing (*Flourishing Scale-FS*). The Cronbach's alpha for this scale was 0.814.

- Satisfaction with life (SWLS) is measured through five items that assess the global judgment that people make concerning their level of satisfaction with their life. Example items from the scale include "I am satisfied with my life" and "Until now I have achieved all the important goals that I have set in life." The respondents answered using a scale ranging from 1 (totally disagree) to 5 (totally agree). The psychometric properties of this scale are detailed in studies by Diener et al. (2010), Dogan and Totan (2013), or Moyano et al. (2013). The Cronbach's alpha for SWLS scale was 0.874.
- The scale of positive and negative experiences (SPANE) consists of a questionnaire of 12 items including six positive feelings (feeling well, happy, kind, etc.) and six negative feelings (feeling bad, frightened, sad, etc.). The respondents indicated the extent to which they feel one way or another using a scale ranging from 1 (very rarely or never) to 5 (very often or always). Studies by Silva and Caetano (2013) or Sumi (2014) validate this measurement instrument. Our research obtained an alpha coefficient of 0.900 (positive feelings) and 0.793 (negative feelings).
- The flourishing scale (FS) used is an adaptation for the workplace context that Mendonça et al. (2014) developed from the original scale proposed by Diener et al. (2010). This instrument comprises eight items that measure the respondents' perception of critical aspects of human functioning such as relationships, purpose in life or optimism. Example scale items include "My work contributes to having a meaningful life and purpose" or "At work, people respect me." The respondents may indicate the extent to which they agree with the different statements using a scale ranging from 1 (totally disagree) to 5 (totally agree). The psychometric properties of this scale can be found in the study by Mendonça et al. (2014). In our study, the Cronbach's alpha was 0.906.

## Data Analysis

The research model described in **Figure 1** has been tested through the use of partial least squares (PLS) path modeling, a variance-based structural equation modeling (SEM) technique (Roldán and Sánchez-Franco, 2012). PLS simultaneously enables the assessment of the reliability and validity of measures of theoretical constructs (outer model) and the estimation of the relationships among these constructs (inner model) (Barroso et al., 2010).

The PLS methodology is suitable for studies conducted within the social sciences research field for the following reasons: (i)

the measurement scales are frequently poorly developed; (ii) the phenomena investigated are relatively new or in progress and theoretical frameworks lack solid development; (iii) the data tend to be non-normally distributed; (iv) there are sufficient ordinal and categorical data; (v) the focus is more on the prediction of the dependent variables than in the confirmation and fit of the model; and (vi) the research model happens to be very complex relative to the type of relationships stated in the hypotheses (Roldán and Sánchez-Franco, 2012). The PLS methodology is suitable for studies conducted within the social sciences research field for the following reasons: (i) the phenomena investigated are relatively new or in progress and theoretical frameworks lack solid development; (ii) the focus is more on the prediction of the dependent variables than in the confirmation and fit of the model; and (iii) this technique enables the use of component scores in a subsequent analysis for modeling multidimensional constructs, applying the two-stage approach (Chin, 2010; Roldán and Sánchez-Franco, 2012). We used the SmartPLS 3.0 software to statistically test the measurement and structural models (Ringle et al., 2015).

We followed a two-step approach to operationalize the multidimensional superordinate constructs (Chin, 2010). Accordingly, the items for each dimension were optimally weighted and combined using the PLS algorithm to create a latent variable score. Consequently, the dimensions or first-order factors became the observed indicators of the second-order constructs, which are the authenticity and subjective well-being variables (Chin and Gopal, 1995).

## RESULTS

### Descriptive Statistics

With regard to the central variables in this study, **Table 1** presents the main descriptive statistics, the Cronbach alpha for each analyzed construct, and the bivariate correlations between the main research variables. As it can be observed, the surveyed show elevated levels of authenticity (3.97 on a maximum of 5). At the same time, these subjects denote a high level of subjective wellbeing in all its dimensions (flourishing: 4.44; satisfaction with life: 3.92; and positive-negative feelings balance: 2.18).

**Table 1** also reveals that the main variables are significantly related between each other, which is consistent with the most relevant research theories and hypotheses mentioned above.

### PLS Models

Partial least squares models are assessed in two stages: (i) verifying the reliability/validity of the measurement model and (ii) weighing the significance of the paths within the structural model.

#### Measurement Model

The assessment of the measurement model shows acceptable results. First, the indicators and dimensions satisfy the requirement of reliability because their loadings are, in general, greater than 0.707 (see **Table 2** for the general model with second-order constructs of AU and SW, and see **Table 3** for

the same model but using the first-order dimensions of the AU construct). Only a few of the outer loadings are slightly below this critical level. Nevertheless, the decision was made to retain them to support the content validity of the scale.

Second, all the second-order reflective (superordinate) and first order constructs meet the requirement of construct reliability because their composite reliabilities (CR), Cronbach's alpha and Dijkstra-Henseler's indicator ( $\rho_A$ ) are greater than 0.7.

Third, these latent variables attain convergent validity because their average variance extracted (AVE) surpasses the 0.5 critical level (**Tables 2, 3**). Lastly, **Tables 2, 3** reveal that all the variables achieve discriminant validity according to both the Fornell-Larcker and the HTMT criterion (Henseler et al., 2015). According to Fornell-Larcker criterion, diagonal elements (italics in **Table 2**) are the square root of the variance shared between the constructs and their measures (AVE). For discriminant validity, diagonal elements should be larger than off-diagonal elements. Off-diagonal elements are the correlations among the constructs. Finally, Heterotrait-Monotrait Ratio (HTMT) criterion should be under the threshold of 0.85 (Kline, 2015).

### Structural Models

Consistent with Hair et al. (2011), a bootstrapping technique (5,000 re-samples) is employed to generate standard errors and t-statistics that permit the assessment of the statistical significance of the links considered within the two research models: Model 1 using second-order constructs for the total sample and Model 2 using the dimensions of authenticity, both for the total sample (Model 2A) and for each one of the distinct groups (Models 2B, 2C, and 2D). **Table 4** includes the main parameters obtained for the five models.

The main criterion that we use to evaluate the explained variance of the endogenous construct is the  $R^2$  coefficient. In this vein, the results presented in **Table 4** validate the different structural models assessed in this study, showing that they present acceptable predictive relevance for the dependent construct.

Model 1 describes the significant direct effect (path coefficient: 0.582\*\*\*;  $t$ -value: 20.106) of authenticity on subjective wellbeing for the entire sample (religious members, lay managers, and lay employees). This result leads us to conclude that there is empirical evidence to sustain our first hypothesis (H1).

Subsequently, in Model 2, we explore how each of the three dimensions of authenticity (external influence acceptance, authentic life and self-alienation) impact subjective wellbeing, and we assess these effects for the total sample – Model 2A – and for the three different subsamples that compose each of the categorized groups: Models 2B (religious members), 2C (lay employees), and 2D (lay managers).

As shown in **Table 4**, there are substantial differences with regard to the sign and significance of the three direct links represented within Models 2A–D. This fact contributes support for our second hypothesis (H2), which with exploratory character states that there are differences among groups with regard to the relationship between authenticity and subjective wellbeing. We explore and discuss such differences in depth in the discussion section.

**TABLE 1 |** Descriptive statistics, Cronbach's alpha and inter-correlations for the study variables.

Variable	Mean	SD	Cronbach's alpha	1	2	3	4
1. IAM	3.97	0.656	0.793	1			
2. SWLS	3.92	0.796	0.874	0.216***	1		
3. SPANE	2.18	1.199	0.900	0.285***	0.473***	1	
4. FS	4.44	0.712	0.906	0.369***	0.449***	0.353***	1

\*\*\* $p < 0.001$ .**TABLE 2 |** Measurement Model 1.

Outer loadings		Construct reliability and validity				
AU	SW		Cronbach's alpha	rho_A (Dijkstra-Henseler's indicator)	Composite reliability	AVE (average variance extracted)
EIA	0.629	AU	0.781	0.743	0.702	0.565
AL	0.853	SW	0.738	0.729	0.812	0.592
SA	0.607	Discriminant validity				
LS	0.813	Fornell-Larcker		Heterotrait-Monotrait Ratio (HTMT)		
PF	0.764	AU	SW	AU	SW	
NF	-0.587	AU	0.752	AU		
FL	0.761	SW	0.511	0.769	SW	0.691

AU, authenticity; SW, subjective wellbeing; EIA, external influence acceptance; AL, authentic life; SA, self-alienation; LS, life satisfaction; PF, positive feelings; NF, negative feelings; FL, flourishing.

## DISCUSSION

The current study addresses this matter directly by focusing on the analysis of the relationship between authenticity and subjective wellbeing. Although interest in authenticity has existed for centuries, only recently has its link with wellbeing been empirically tested (Mengers, 2014). Individuals who feel more authentic and remain faithful to their own feelings and values exhibit more positive signs of wellbeing (Wood et al., 2008). This topic, which has been rarely addressed in general terms, presents an even more important research gap in the context of faith-driven organizations, as, to our knowledge, there are no studies that have framed the authenticity-wellbeing link within the religious institutions context. The absence of results from empirical analyses are certainly paradigmatic. On the one hand, these organizations have a significant presence within critical welfare sectors (i.e., social services, education, or healthcare). On the other hand, feeling comfortable and acting consistently with one's own personal beliefs and experiences might be determinant of the development of feelings of belonging to the distinct groups that shape faith-driven organizations.

Given the above, this study has gathered information from nearly a thousand members of the education and social service sections of an international Catholic-inspired religious organization.

The notion underlying our first research hypothesis is that a positive link exists between feeling more authentic and subjective wellbeing. The PLS path-modeling used to test the hypotheses revealed that the more authentic members, those who reveal themselves as they truly are and how they truly feel without acting or behaving with hypocrisy, exhibit higher levels of subjective wellbeing and the construct shaped by satisfaction with life; a better balance between positive and negative experiences; a more positive self-perception of relationships; and more positive feelings regarding competence, self-esteem and purpose in life (flourishing). This result provides evidence to support Hypothesis 1. Thus, the first major contribution of this study lies in demonstrating that the tridimensional model for authenticity (concretely, the short version of the IAM) constitutes a significant predictor of subjective wellbeing in the workplace in the specific and rarely explored context of religious organizations. This evidence is consistent with the results found by other authors in different contexts such as that of bank employees (Metin et al., 2016), German employees within distinct sectors of activity (Van den Bosch and Taris, 2014b), managers of public organizations (Ménard and Brunet, 2011), and employees within the building industry in Singapore (Toor and Ofori, 2009).

The second main objective of this research was to assess whether the three components of authenticity – authentic life, external influence acceptance and self-alienation – exert a direct influence on an individual's level of subjective wellbeing and, if

**TABLE 3 |** Measurement Model 2.

	Outer loadings				Construct reliability and validity				
	EIA	AL	SA	SW	Cronbach's alpha	rho_A (Dijkstra-Henseler's indicator)	Composite reliability	AVE (average variance extracted)	
V1	0.666				EIA	0.777	0.789	0.899	0.817
V2	0.903				AL	0.783	0.788	0.874	0.699
V3	0.886				SA	0.835	0.87	0.901	0.752
V4	0.633				SW	0.772	0.735	0.81	0.589
V5		0.858			Discriminant validity: <i>Fornell-Larcker</i>				
V6		0.543			EIA	AL	SA	SW	
V7		0.838			EIA	0.904			
V8		0.771			AL	0.202	0.836		
V9			0.426		SA	0.445	0.241	0.867	
V10			0.803		SW	0.21	0.64	0.229	0.767
V11			0.905		Discriminant validity: <i>Heterotrait-Monotrait Ratio (HTMT)</i>				
V12			0.893		EIA	AL	SA	SW	
LS				0.809	EIA				
PF				0.764	AL	0.258			
NF				−0.519	SA	0.542	0.295		
FL				0.772	SW	0.301	0.814	0.287	

AU, authenticity; SW, subjective wellbeing; EIA, external influence acceptance; AL, authentic life; SA, self-alienation; LS, life satisfaction; PF, positive feelings; NF, negative feelings; FL, flourishing.

they do, to explore whether this relationship is homogeneous among the distinct groups assessed or if there are differences among them.

Overall, Model 2A, as presented in the results section, indicates that the three components of authenticity determine the level of subjective wellbeing of the members of the religious institution under study, particularly with respect to remaining faithful to oneself (*t*-statistic: 14.898), although external influence acceptance (*t*-value: 1.728) and self-alienation (*t*-statistic: 2.196) are also significant. This result suggests that the core component of authenticity, the element that heavily influences subjective wellbeing, is authentic life, specifically, the extent to which the members of an organization are able to act consistently with their own values and personal beliefs. This component of the tridimensional model of authenticity is the strongest one within the general model and the one that determines with the greatest intensity the level of authenticity among the three groups under research: religious members, lay managers, and lay employees. Therefore, the probability of experiencing wellbeing in the workplace may be higher among those members who can act in an authentic way.

This tridimensional conceptualization of authenticity, applied in the context of a faith-driven organization, is consistent with the one developed by de Carvalho et al. (2015) in a study of a sample of approximately 500 Brazilian employees. In that study, the three elements of authenticity correlated with some of the

measures of subjective wellbeing utilized by these authors: with flourishing in three cases and with satisfaction with life in all the cases except for external influence acceptance. Moreover, the strongest correlations were found for self-alienation, followed by authentic life and then by external influence acceptance, which had a much weaker link. Whereas our study highlights authentic life as the pivotal component of authenticity, in the study by de Carvalho et al. (2015) that component is self-alienation; the same result is found in studies by Barrett-Lennard (1998) and Van den Bosch and Taris (2014a), who conclude that consistency between individual awareness and an individual's primary experience (namely, self-alienation) constitutes the fundamental element of being authentic.

There are several motives that could lead us to justify that self-alienation occupies a core position in the authenticity construct, as proposed by Barrett-Lennard (1998), Van den Bosch and Taris (2014a), and de Carvalho et al. (2015). Firstly, it is more likely to find self-alienation among the members of lucrative organizations, such as the ones assessed by the above mentioned authors. In such organizations, it is more probable to identify the features representative of alienation posited by Seeman (1959), such as powerlessness, meaninglessness, normlessness, isolation, or self-estrangement. The members of these organizations adhere to them, in the majority of occasions, as a purely commercial matter, and they remain, endure and face alienating situations because there are not better alternatives in the



TABLE 4 | Structural Models.

Relationship	Model 1 $R^2_{SWB} = 0.338$		Model 2A $R^2_{SWB} = 0.382$		Model 2B $R^2_{SWB} = 0.294$		Model 2C $R^2_{SWB} = 0.406$		Model 2D $R^2_{SWB} = 0.335$	
	Path coefficient (t-statistic)	p-value	Path coefficient (t-statistic)	p-value	Path coefficient (t-statistic)	p-value	Path coefficient (t-statistic)	p-value	Path coefficient (t-statistic)	p-value
AU→SWB	0.582*** (20.106) [0.530; 0.625]	0.000								
AEI→SWB			0.077* (1.728) [0.013; 0.132]	0.052	−0.128ns (0.774) [−0.323; 0.168]	0.168	0.051ns (1.335) [−0.022; 0.105]	0.091	−0.304ns (0.993) [−0.709; 0.063]	0.160
AL→SWB			0.577*** (14.898) [0.507; 0.634]	0.000	0.499*** (5.951) [0.345; 0.616]	0.000	0.583*** (12.079) [0.492; 0.650]	0.000	0.488*** (3.769) [0.220; 0.653]	0.000
SA→SWB			0.073* (2.196) [0.017; 0.127]	0.014	0.012ns (0.157) [−0.108; 0.145]	0.145	0.123** (2.917) [0.054; 0.194]	0.002	0.053ns (0.374) [−0.077; 0.4331]	0.354

t-values in parentheses. Bootstrapping 95% confidence intervals bias corrected in square brackets (based on  $n = 5000$  subsamples).

\*\*\* $p < 0.001$ ; \*\* $p < 0.01$ ; \* $p < 0.05$  (based on  $t(4999)$ , one-tailed test);  $t(0.05, 4999) = 1.645$ ;  $t(0.01, 4999) = 2.327$ ;  $t(0.001, 4999) = 3.092$ ; ns, not significant.

market. By contrast, research has shown that employees of faith-based organizations are strongly motivated by religious belief (Goldsmith, 2006). This religious motivation leads to a vocational feeling that hinders the development of alienation. Secondly and after all, if between some members of religious organizations emerge feelings of alienation, the natural consequence would be the exit. Regarding lay people, because the market tends to offer better working conditions than faith based organizations. With regard to religious members, because there is not a single instrumental motive that retains them in case of alienation. On the contrary, the order under study in this research is atypical with this regard, since religious members fail to profess perpetual vows, but have to renew them every year if they wish so. Hence, opportunities for abandonment in the event of self-alienation are more likely to occur. Lastly, in this organization there are plenty of family or affective linkages between religious and lay members (nephews, members of the community, and former users of their services that have helped providing an alternative through decent employment. . .). Such a network of emotional relationships surely stifles the development of the self-alienation between members of the community.

In another sense, the fact that authentic life occupies a core position in the context of a faith-driven organization could be motivated by the existence of a well-defined and rich ideology within this type of organization (with more than three centuries of history in our case), a charisma that is shared and disseminated throughout the entire organization, and a gift that the religious members aspire to share and that extends to the rest of members. Following the path of Jesus, they proclaim the Gospel in serving those who are poor, in other words, God awaits them in those who suffer. To support this goal, the institution combines informal socialization processes with more formal actions oriented to training and mentoring in the Order's own charisma. In some circumstances, the atmosphere might result in oppression to the extent that particular lay members (school teachers, healthcare professionals within the residences for elderly people, cooks in the social dining rooms, and others) assume – based on reality or imagination – that their survival within the institution would be threatened if they showed themselves as they truly are. As a means of survival, or perhaps because promotion possibilities are different depending on the degree of identification with the institutional ideology, some lay members might feel tempted to hide their feelings or, in other words, behave in an inauthentic manner. In this setting, being authentic perhaps constitutes a poor strategy, as it could lead to rejection by the rest of members (Mengers, 2014).

The fact that the ability to be authentic varies according to the group assessed (which then leads to happiness enhancement, the balance of positive–negative feelings and flourishing) is manifested in Models 2B (religious members), 2C (lay managers), and 2D (lay employees) presented above. Model 2B indicates that for religious members' wellbeing, there is a single component of authenticity that exerts a significant impact: authentic life (t-statistic: 5.951). However, neither self-alienation (t-value: 0.157) nor external influence acceptance (t-statistic: 0.774) show statistically significant results. This means that to feel well, religious members ought to live in a manner that is consistent

with their own values and beliefs, which may be easier to achieve given their condition as the “owners” of the Order, enabling them to develop an authentic and fully realized life at every moment.

Additionally, and although it is not a statistically significant result, it is certainly curious that the relationship between external influence acceptance and subjective wellbeing presents a negative sign (path coefficient:  $-0.128$ ), which suggests a result that differs from the one obtained in the general model. This would mean that among the religious members, external influences would induce different behavior than that which the literature considers to be typical (i.e., Schmid, 2005), since being highly influenced by others would enhance the religious members' individual well-being. The only study we found that is consistent with this result is that of Van den Bosch and Taris (2014a). These authors found that, in contrast to what they expected, external influence acceptance correlated positively with certain measures of wellbeing such as work satisfaction or the dedication dimension of “work engagement.” The explanation for this anomalous behavior in the case of the religious members might be related to the vocation to serve that permeates the doctrine of the Order. Within the religious members' charisma, the vocation to serve the poorest human beings is implicit; hence, adjusting and complying with others' expectations (namely, accepting external influences) not only generates negative effects but also could be considered as acting against the Order's inspirational principles. Moreover, behaving in accordance with what others desire and complying with their demands and expectations might elicit their gratitude, which might in turn lead to the enhancement of religious members' subjective wellbeing.

Besides, the majority of the existing theoretical views concerning work-related and occupational issues yield on a vision of individuals who are rather autonomous and that deliberately pursue to make visible what are their objectives, interests, values, and skills at the workplace. In this vein, Blustein (2011) proposes a considerable shift in the understanding of work, which depicts vocational behavior as an intrinsically relational act. This conceptualization of work as a relational act entails that every choice, experience, and link with the work reality is assumed, predisposed, and formed by relationships. The set of advantages and positive features regarding career choice and career development opportunities are strictly constrained to those individuals who experience a certain degree of freedom in their choices – both personal and professional. However, this is not the case for many people, for whom self-determined elections concerning the direction of one's professional life are not that likely (Blustein, 2006; Savickas et al., 2009).

Duffy et al. (2011) define the term work-calling –namely the personal calling to a particular area of work– to refer to those individuals that perceive it as coming from a superior or “beyond the self” force (i.e., God, a social need, a family legacy). This personal attraction to work comprises the feeling that work might be helpful to people or the broader society, even if it is through an indirect effect. This conceptualization also suggests that a calling enables the attainment of a broader sense of purpose in life. These authors conceptualize work-calling as an ongoing process instead of considering it a singular or isolated event. Hence, rather than

applying as a binary concept –you experience it or not at all–, work-calling applies to individuals as a matter of degree. Our results are in line with the previous work of Duffy and Dik (2013), that states that fostering a sense of calling and engaging at the work-place may be an important course to enrich individuals' well-being.

Model 2C, which focuses on the lay employees, differs somewhat from the religious members' model. Authentic life remains the main determinant of the model (t-statistic: 12.079); however, in this case, its influence on subjective wellbeing is complemented by the influence of self-alienation (t-statistic: 2.917). Thus, a person's wellbeing may be principally a mixture of an authentic life and the absence of self-alienation. Similarly, as in the case of the religious members, allowing external opinions to influence oneself is not a significant element of the lay employees' wellbeing. However, there are two differences between the groups in this respect: first, the non-significance in this case is a very low margin (t-statistic: 1.335), and second, the sign of the relationship is now negative (path coefficient:  $-0.051$ ), which is more consistent with what the literature has found in this respect. This circumstance might suggest that the service vocation toward others that permeates the religious members' charisma is perhaps less developed among the lay members who occupy operative jobs within the more than eighty programs that the Order organizes in southern Spain and the Canary Islands.

Finally, Model 2D represents the behavior of lay managers. The results obtained indicate that this group's wellbeing is exclusively determined by its members' capacity to be authentic under different circumstances and to be faithful to themselves on most occasions (t-statistic: 3.769). Again, authentic life emerges as the fundamental pillar of the authenticity construct, given that neither self-alienation (t-statistic: 0.374) nor external influence acceptance (t-statistic: 0.993) determine the level of subjective wellbeing of the lay managers. It is paradigmatic that the results obtained for this model are quite similar to those found for the religious members' model, in terms of both the central and exclusive influence exerted by authentic life and the negative relationship between external influence acceptance and wellbeing (path coefficient:  $-0.304$ ); thus, the more receptive individuals are to such influences, the greater subjective wellbeing they may attain. This circumstance leads us to presume that the group of lay managers has internalized feelings and ways of acting that are inherent to those of the religious members of the Order, perhaps because assuming managerial positions implicitly leads to the development of a service vocation similar to that of the religious members while serving to the poorest and most vulnerable members of society. In this sense, Sosik et al. (2011) note the existence of a high degree of pressure on lay members who assume managerial positions within religious organizations because they feel compelled to satisfy everyone. This feature, which presents homogeneously among the religious members and lay managers, induces us to argue that the latter are well trained in the Order's charisma once they occupy a managerial position or they are selected and promoted according to their level of identification and fit with the institution's ideology. This issue may constitute a research line to develop in future studies.

In conclusion, this study covers two noteworthy research gaps. On the one hand, it provides evidence of the relationship between authenticity and subjective wellbeing within the specific and rarely explored context of faith-driven organizations. On the other hand, it suggests that this relationship is not homogeneous but that it differs among the distinct groups that shape the organization. Our results suggest that within the tridimensional model of authenticity centered on the person, authentic life stands as the central element and bond of the three groups under study; they simultaneously reveal similar behavior between the religious members and the lay individuals who occupy managerial positions, probably because a dedication serving to the poor permeates both groups.

## IMPLICATIONS AND LIMITATIONS

The concept of authenticity has received scarce attention in the business literature until very recently (Liedtka, 2008). Hence, this research involves some relevant implications, both for theory and for practice. The most important theoretical implications are linked to the role authenticity plays in predicting subjective wellbeing in the context of religious organizations. Understanding how authenticity operates in these organizations might contribute to generating healthier work environments, with members who are more self-aware and who act consistently with their values instead of primarily complying with societal and contextual pressures. In addition, our results are also consistent with the relational approach of leadership proposed by Maak and Pless (2006). Following Freeman and Auster (2011), authenticity is not uniquely shaped by one's personal values, but by the convergence of our personal values, our background, our network of connections with others, and our own aspirations, which comprise not only individual but also organizational or community goals.

Similarly, from a practical point of view, the results of this study could serve to identify those members within religious organizations who exhibit poor levels of authenticity, in which case preventive policies should be designed to increase individual wellbeing, both in its hedonic and eudemonic forms. Any progress in the management of emotions at work may contribute to the improved functioning of these organizations and may promote enhanced services to aid the community, which is

ultimately the reason for the existence of these organizations. Our results also suggest the need to design policies for mentoring and training lay members and collaborators to help them share in and embrace the Order's charisma. This charismatic training does not have to be carried out in classrooms; instead, it should be approached through coaching and mentoring mechanisms that may enable leaders to guide other members by example. Finally, it should be highlighted that the mimetic connection that seems to exist between the religious members and lay managers represents a source of hope for the future of religious organizations given the current context of vocational scarcity that complicates the maintenance of charismatic faith-driven organizations with lower numbers of religious members.

Nevertheless, this study is not without some methodological limitations, and its results should be interpreted cautiously. Firstly, it should be noted that all the data were obtained through self-reports, which might lead to the existence of common method bias in contrast to the use of objective measures (de Carvalho et al., 2015). The problem of social desirability is another issue that is significant in the study of authenticity and subjective wellbeing, particularly within the type of organization studied in this paper. Moreover, the sample is composed of a single organization, which, although it has an international focus, is located in a specific geographic area (Spain). Therefore, we should be very cautious when attempting to generalize these results to different contexts. Finally, given the transversal design of this study, we cannot affirm the existence of a causal relationship between authenticity and subjective wellbeing.

## CONCLUSION

Although the PLS methodology is suitable for studies conducted within the social sciences research field present also cautions (e.g., McIntosh et al., 2014) that need to be considered in the results interpretation.

## AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication.

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**Conflict of Interest Statement:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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# Work Engagement in Serbia: Psychometric Properties of the Serbian Version of the Utrecht Work Engagement Scale (UWES)

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Work engagement is defined as a positive, affective-motivational state of work-related well-being characterized by vigor, dedication and absorption. The Utrecht Work Engagement Scale (UWES) is the most frequently used measure of work engagement. The aim of this study was to analyze the psychometric properties of the Serbian versions of the UWES-17 and UWES-9. The sample consisted of 860 employees from a number of organizations and jobs across Serbia. Based on the UWES-17 findings, the data confirm both the three-factor and one-factor solutions by giving a slight advantage to the three-factor solution. As for the UWES-9, based on the PCFA and CFA, the one-factor solution was obtained as the preferred one. Taking into account the UWES-9 reliability and correlation patterns of its subscales with other well-being variables, both one- and three-factor solutions of the UWES-9 are suggested for future research. Serbian versions of both the UWES-17 and UWES-9 have satisfactory psychometric properties with high reliability, factorial structure in line with the theoretical model, and good predictive validity. The study contributes to enhanced understanding of work engagement by offering an insight from the Serbian cultural and economic context, significantly different from the UWES originating setting. There is still a need for exploring how employees from Serbia conceptualize work engagement, as well as for further, more stringent investigating of the cultural invariance of the UWES factorial structure.

**Keywords:** work engagement, The Utrecht Work Engagement Scale (UWES), Serbia, burnout, validity

## INTRODUCTION

Since its introduction in 1990 (Bakker, 2017), work engagement has been an inspiration for researchers and practitioners around the world (e.g., Shimazu et al., 2008; Seppälä et al., 2009; Balducci et al., 2010; Nerstad et al., 2010; Fong and Ng, 2012; Littman-Ovadia and Balducci, 2013; Panthee et al., 2014; Zecca et al., 2015; Lovakov et al., 2017). Moreover, it has been regarded as a “societal challenge” (Schaufeli and De Witte, 2017, p. 58) with far reaching effects on the economy. It is widely accepted that, in order to be competitive, contemporary organizations need engaged employees (Bakker, 2017).

As suggested by Schaufeli (2017), based on analyzing the 6<sup>th</sup> European Working Conditions Survey data from 35 countries, work engagement should be studied not only at the individual level, but also at the national level. Comparing countries with different levels of engagement, Schaufeli

demonstrated that work engagement was positively related with national economic activity and productivity. On the European engagement map, the Netherlands, the originating country of the mostly used and cited theoretical model and instrument for assessing work-engagement, the Utrecht Work Engagement Scale (UWES, Schaufeli and Bakker, 2003), was the most engaged country. On the other side, Serbia, the country where the current research takes place, was the least engaged among the 35 surveyed European countries (Eurofound, 2016).

Since the 1990s, Serbia has been encountering a deep, long-lasting socioeconomic crisis, strongly influenced by the wars in the former Yugoslavia, UN sanctions and political instability. On the economic scene, the country went through several models of privatization, including a high failure rate of approximately 25% of unsuccessful privatizations (Vujačić and Petrović-Vujačić, 2011). Similar to other world countries, Serbia was exposed to the deep global financial crisis that had a negative impact on employees and their health and well-being across the world (Giorgi et al., 2015; Mucci et al., 2016; Lopez-Valcarcel and Barber, 2017). Continuously struggling with the hostile conditions, workplace in Serbia has been fluctuating with the numbers of new organizations, new business owners, either as a part of privatization or green-field investment, different work contracts, new technologies and work processes. Nevertheless, contemporary Serbian economy is still characterized by low economic activity (Petrović et al., 2017). GDP per capita is among the bottom 6% of the countries covered by the 2015 European Working Conditions Survey (Eurofound, 2016). The unemployment rate is 18.2% among population aged 15–64 (Statistical Office of the Republic of Serbia, 2016). Bearing all this in mind, in this paper, we deal with work engagement concept in the specific Serbian socio-economic context.

Work engagement is defined as a positive, fulfilling, affective-motivational state of work-related well-being (Bakker et al., 2008). It is characterized by vigor – higher levels of energy, mental resilience and investment of effort; dedication – involvement in work and the sense of meaningfulness and enthusiasm, and absorption – full concentration and engrossment in work (Schaufeli et al., 2002, 2006; Bakker, 2017). In a nutshell, work engagement is about giving “hands, head, and heart” at work (Ashforth and Humphrey, 1995, p. 110).

The concept of work engagement is deeply embedded in job demands–resources theory (JD–R), which sees engagement as a function of an interplay between job demands and resources (Bakker and Demerouti, 2007; Bakker, 2017). Work engagement is, thus, a mediator between job demands/resources and job performance. Job resources such as career opportunities, organizational support, job security, and positive work climate lead to high work engagement and, consequently, to outstanding performance. On the other hand, job demands such as high work pressure, poor physical conditions, negative work climate and challenging interpersonal relations are associated with negative psychological consequences. If a person does not pull together the personal and organizational resources in order to recover from pressures at work, job demands can lead to burnout and exhaustion.

The Utrecht Work Engagement Scale (UWES) developed by Arnold Bakker and Wilmar Schaufeli is the most frequently used measure of work engagement (Bakker and Demerouti, 2016). Systematic literature review shows the UWES was almost exclusively applied as a valid basis for developing work engagement interventions (Knight et al., 2017). The UWES is a self-report scale, with 17-item and 9-item versions widely used in independent national research studies all over the world. There is also an emerging three-item version that was applied in the 6<sup>th</sup> European Working Conditions Survey (Schaufeli, 2017). Both long and short versions of the UWES cover all three theoretically postulated dimensions: vigor, dedication and absorption. In the 9-item version of the UWES each dimension is covered by three items, while in the 17-item version vigor is covered with six items, dedication with five items and absorption with six items (Schaufeli et al., 2002). Since two items of the original 17-item version were considered as problematic (item 6 from the vigor subscale, and item 6 from the absorption subscale), the 15-item version of the UWES has also been applied in research (Schaufeli and Bakker, 2003). The newest three-item version of the UWES covers all three dimensions of work engagement with one item each (Schaufeli, 2017): for vigor ‘At my work I feel full of energy’ (V1, modified); for dedication ‘I am enthusiastic about my job’ (DE2), and for absorption ‘Time flies when I am working’ (AB1). There are 30 language versions of the UWES, available at the Schaufeli’s web site.

Previous national validation studies gave somewhat conflicting results about the structure of the UWES and its demographic correlates, while findings about well-being correlates have been quite consistent. Besides the initial Dutch version (Schaufeli and Bakker, 2003), confirmatory factor analysis supported theoretical conceptualization of the three-factor structure (vigor, dedication and absorption) for both the UWES-17 and the UWES-9 Finnish (Seppälä et al., 2009) and Norwegian (Nerstad et al., 2010) language versions. The UWES-9 three-factor structure was confirmed in Chinese (Fong and Ng, 2012); French (Zecca et al., 2015); Hebrew (Littman-Ovadia and Balducci, 2013); Italian (Balducci et al., 2010); Nepali (Panthee et al., 2014); Russian (Lovakov et al., 2017), and Swedish (Hallberg and Schaufeli, 2006) language versions. The one factor UWES-17 was found in the Japanese validation study (Shimazu et al., 2008). Moreover, it is interesting to note that based on the data from a large single company sample from South Africa, applying six UWES-17 language versions, i.e., Afrikaans, English, Nguni, Tshivenda (Venda), Sotho and Xitsonga (Tsonga), based on item response modeling, the one-factor solution has also been suggested (Goliath-Yarde and Roodt, 2011; de Bruin et al., 2013). The one factor UWES-9 solution was found in the Brazilian (Ferreira et al., 2016); Chinese (Fong and Ng, 2012); Japanese (Shimazu et al., 2008); Russian (Lovakov et al., 2017), and Swedish (Hallberg and Schaufeli, 2006) UWES versions. By analyzing the data from 10 different countries, Schaufeli et al. (2006) concluded that work engagement was weakly positively related with age, with correlations about 0.15 or less. Furthermore, the differences between men and women in relation to work engagement were ambiguous, with the lack of differences in some countries (Australia, Canada,

and France), and low significant differences with low effect size in other countries (e.g., women from Netherlands, Spain, and South Africa showed higher engagement, whereas men from Belgium, Germany, Finland, and Norway expressed higher engagement than women). Managers scored higher on engagement than general staff (Andreassen et al., 2012; Littman-Ovadia and Balducci, 2013; Panthee et al., 2014).

Of all well-being measures, work engagement is usually linked with burnout. There are two different approaches regarding this relationship (Schaufeli and Bakker, 2003). The first one postulates that burnout is the opposite pole of work engagement (Maslach and Leiter, 1997). The second proposes that these constructs should be regarded as different (Schaufeli and Bakker, 2003). Schaufeli and Bakker (2003) support their argument by the thesis that the correlation between these concepts is not full, and that evaluating both concepts with the same instrument is not empirically justified. Some later tendencies postulate the thesis that burnout and engagement constitute 'dual unity,' which is at the same time 'real and redundant' (Schaufeli and De Witte, 2017, p. 58). Apart from burnout, work engagement factor structure is usually studied in relation with job satisfaction (e.g., Shimazu et al., 2008; Panthee et al., 2014; Lovakov et al., 2017).

The aim the current study was to analyze the psychometric properties of the UWES-S, the Serbian adaptation of the Utrecht Work Engagement Scale (UWES, Schaufeli and Bakker, 2003). In particular, the aims were to: (1) Investigate factorial structure, both for the 17-item and 9-item versions of the UWES-S; (2) Verify theoretically based structure of the long and short versions of the UWES-S, i.e., to compare the theoretically based three-dimension model of vigor, dedication, and absorption with the one-dimension solution supported by some validation studies (e.g., Shimazu et al., 2008); (3) Investigate Cronbach's Alpha reliability of the different versions of the UWES and corresponding subscales; (4) Investigate the construct validity through the relationship between work engagement and selected well-being indicators (burnout, organizational support, job satisfaction, job insecurity), and (5) Explore work engagement across demographic variables. By doing so, we wanted to deepen our understanding of work engagement by offering an insight from the Serbian cultural and economic setting, specifically different from the Western-European UWES originating setting, and the settings where mainstream work engagement research and validation studies took place.

## MATERIALS AND METHODS

### Translation

In order to develop the Serbian version of the UWES, we conducted a number of small-scale studies between 2014 and 2017. The first step was translating and adapting the UWES. After consolidating the Serbian adaptation of the UWES, we started collecting data for the present study.

The UWES-17 was translated to Serbian through the committee technique in three iterations (Brislin et al., 1973). In the process of translation, we used English, French, and Russian versions of the UWES (Schaufeli and Bakker, 2003). In

each step, we carried out back translation into English. Since some problems in understanding of the items were presumed during the translation phase, the final version was fine-tuned based on the individual interviews and a focus group discussion<sup>1</sup> with employees with medium and higher education. We asked the employees about their understanding of each item, the subordinate concept, and the concrete examples of situations at work related to each item. Two absorption items proved to be particularly challenging for the production workers: "When I am working, I forget everything else around me" (AB2), and "I get carried away when I'm working" (AB5). They considered absorption as expressed in these items to be dangerous and unsafe work behavior. Hence, the aim was to make these items comprehensible for each professional group. Thus, the back translation of AB2 was "When I am working, I forget everything that is not related to work," and for AB5 "I get so much into the job when I'm working." Before the final version was produced, some research studies with the preliminary versions of the UWES were performed (e.g., Mladenović and Petrović, 2015), showing, for example, high reliability, with the Cronbach's alpha 0.91 for the short version of the UWES-9.

### Participants

The sample consisted of 860 employees (63% women) from a variety of organizations and jobs across Serbia. Participants' age ranged from 21 to 73 years ( $M = 40$ ;  $SD = 11.44$ ). Majority of respondents had a university diploma (56.7%), 33.0% completed secondary school, 9.7% completed trade school/college, and 0.6% had elementary education. There were 85.9% subordinates and 14.1% participants on managerial or supervisory positions. There was an almost equal number of participants from the state-owned (48.7%) and private organizations (45.3%). Only 5.1% of participants came from an organization with mixed ownership, and 0.8% from civil sector organizations. More than two thirds of the respondents came from the educational sector (27.5%), health sector (19.3%), processing industry (13.2%), and IT sector (8.5%), while the remaining 31.5% came from other sectors. All respondents were formally and permanently employed. Participation was voluntary and not compensated. This study was carried out in accordance with the Code of Ethics of the Serbian Psychological Society, and approved by the Committee on Ethical Issues of the Society of Psychologists of Serbia Ethics Commission at the Department of Psychology, Faculty of Philosophy, University of Belgrade, with written informed consent from all participants.

### Instruments

Work Engagement was assessed by the Serbian version of the Utrecht Work Engagement Scale, UWES-S. The long version of the UWES (Schaufeli and Bakker, 2003) consists of 17 items followed by a seven-point scale (from 0 = *Never*, to 6 = *Always*). The items are divided into subscales: Vigor, Dedication, and Absorption. **Table 1** contains the English wording of the items from Schaufeli and Bakker's (2003) Manual. The short version

<sup>1</sup>We would like to express gratitude to Jelena Branković and Tamara Jevtić for organizing and moderating focus group discussion.



**TABLE 1** | Summary of PCFA with promax rotation for the UWES-17 scale.

Items	Rotated Factor Loadings				
	<i>M</i>	<i>SD</i>	Component 1	Component 2	Component 3
(2) I find the work that I do full of meaning and purpose ( <i>DE1</i> )	4.68	1.38	<b>0.876</b>	−0.093	−0.135
(10) I am proud on the work that I do ( <i>DE4</i> )	4.42	1.56	<b>0.800</b>	0.071	−0.026
(13) To me, my job is challenging ( <i>DE5</i> )	4.15	1.55	<b>0.739</b>	0.039	0.028
(7) My job inspires me ( <i>DE3</i> )	3.90	1.54	<b>0.651</b>	0.344	−0.055
(14) I get carried away when I'm working ( <i>AB5</i> )	4.83	1.11	<b>0.637</b>	−0.235	0.458
(11) I am immersed in my work ( <i>AB4</i> )	4.47	1.28	<b>0.615</b>	−0.039	0.346
(5) I am enthusiastic about my job ( <i>DE2</i> )	3.79	0.96	<b>0.542</b>	0.489	−0.128
(6) When I am working, I forget everything else around me ( <i>AB2</i> )	3.57	1.00	<b>0.384</b>	0.225	0.199
(9) I feel happy when I am working intensely ( <i>AB3</i> )	3.52	1.09	−0.239	<b>0.809</b>	0.121
(1) At my work, I feel bursting with energy ( <i>VI1</i> )	3.86	1.24	0.193	<b>0.726</b>	−0.085
(4) At my job, I feel strong and vigorous ( <i>VI2</i> )	3.76	1.34	0.229	<b>0.709</b>	−0.018
(8) When I get up in the morning, I feel like going to work ( <i>VI3</i> )	3.36	1.63	0.234	<b>0.676</b>	−0.072
(16) It is difficult to detach myself from my job ( <i>AB6</i> )	2.63	1.50	−0.109	<b>0.649</b>	0.242
(3) Time flies when I'm working ( <i>AB1</i> )	4.56	1.29	0.288	<b>0.390</b>	0.082
(17) At my work I always persevere, even when things do not go well ( <i>VI6</i> )	4.59	1.19	0.187	−0.161	<b>0.728</b>
(12) I can continue working for very long periods at a time ( <i>VI4</i> )	4.06	1.39	−0.302	0.351	<b>0.718</b>
(15) At my job, I am very resilient, mentally ( <i>VI5</i> )	3.83	1.33	−0.001	0.15	<b>0.636</b>
Eigenvalues			6.73	6.26	3.86

The highest loading for each item is given in bold face.

**TABLE 2** | Summary of PCFA for the UWES-9 scale.

Items	Item-component correlation	Variance explained
(7) My job inspires me ( <i>DE3</i> )	0.871	0.758
(5) I am enthusiastic about my job ( <i>DE2</i> )	0.869	0.755
(4) At my job, I feel strong and vigorous ( <i>VI2</i> )	0.837	0.700
(8) When I get up in the morning, I feel like going to work ( <i>VI3</i> )	0.784	0.615
(1) At my work, I feel bursting with energy ( <i>VI1</i> )	0.782	0.611
(10) I am proud on the work that I do ( <i>DE4</i> )	0.776	0.602
(11) I am immersed in my work ( <i>AB4</i> )	0.720	0.518
(14) I get carried away when I'm working ( <i>AB5</i> )	0.636	0.404
(9) I feel happy when I am working intensely ( <i>AB3</i> )	0.590	0.348

of the UWES consists of 9 items, with three items for each of the three factors (Table 2, English version of items, Schaufeli and Bakker, 2003).

## Well-being Measures

The following measures of well-being were included in this research: burnout, job satisfaction, job insecurity and perceived organizational support. Burnout was assessed by the Serbian adaptation of the Oldenburg Burnout Inventory (OLBI, Demerouti and Bakker, 2008). The first version of the instrument was constructed for measuring burnout among German employees. The English version of the instrument was validated on 2,599 employees from the United States, where it showed acceptable reliability and validity (Halbesleben and

Demerouti, 2005). With 16 positively and negatively worded items, the OLBI covers two dimensions of burnout: exhaustion and disengagement from work. Items were assessed on a seven-point rating scale, from 1 (strongly disagree) to 7 (strongly agree). The OLBI was translated to Serbian applying committee technique and back translation (Brislin et al., 1973). The reliability of the OLBI in this research measured with Cronbach's alpha was 0.81.

The perceived organizational support was assessed using the Serbian translation of the 8-item version of the Survey of Perceived Organizational Support, SPOS, by Eisenberger et al. (1986). The SPOS has been previously used in research on a large sample of employees from Serbia (Vukelić et al., 2015). The SPOS measures employees' perception of the extent to which an organization cares about their well-being and respects their contribution to its development. Each item is followed by a 7-point Likert scale. The reliability of the SPOS in this research was very high, with Cronbach's alpha coefficient of 0.97.

The overall job satisfaction and overall job insecurity were assessed by single-item measures. Job satisfaction was assessed through a question "All in all, how satisfied are you with your job?", followed by a five-point Likert-type scale, ranging from 1 (not satisfied at all), to 5 (completely satisfied). The item has been previously used in job satisfaction research in Serbia (Kovačević and Petrović, 2007). Job insecurity was assessed through a question "All in all, how secure is your job?", rated on a three-point scale, ranging from 1, meaning that job was insecure, 2, meaning that job was as secure as other jobs, to 3, implying that job was secure. It is ubiquitous that single-item measures are of an inferior validity to scale measures. Nevertheless, it has been shown that one-item job satisfaction measures are of satisfactory validity for assessing general job satisfaction (Wanous et al.,

1997). Moreover, they are considered to be more acceptable and face valid in organizational context, less time consuming and thus more cost-effective (e.g., Wanous et al., 1997; Nagy, 2002). The single-item measure of job satisfaction in relation to the UWES scale was previously used in the research of Shimazu and Schaufeli (2009). The one-item measure of job (in)security has been previously used within the JD–R framework by Demerouti et al. (2001) and within the framework of the JD–C (Job Demand–Control Model) by de Jonge et al. (2000).

## Statistical Analysis

Exploratory factor analysis and hierarchical regression analysis were conducted using IBM SPSS 21.0. Confirmatory factor analysis (CFA) of both the 17-item and 9-item versions of the UWES-Serbian was performed in IBM SPSS AMOS 21 using structural equation modeling (SEM). We used the Asymptotically Distribution-free Estimates method to examine goodness of fit of the models as it was more sensitive to non-normal distribution of scores (Benson and Fleishman, 1994; Maydeu-Olivares et al., 2007). The CFA was carried out without cross-loadings or correlation between errors.

## RESULTS

### Factorial Structure of the UWES and Inter-correlations among Factors

In order to reveal the factorial structure of the UWES-17, all items were subjected to principal components factor analysis (PCFA) with promax rotation (Table 1, items' means and standard deviations are also presented). Previously, data were analyzed in order to estimate adequacy for the PCFA. The value of Kaiser-Meyer-Olkin (KMO) measure was 0.940 and all KMO values for the individual items were greater than 0.896, which is above the acceptable limit of 0.5 (Field, 2013). Bartlett's sphericity test showed statistical significance ( $\chi^2 [136] = 8027.578; p < 0.001$ ).

The Guttman–Kaiser's criterion revealed three components with eigenvalues over one that explained 61.42% of the total variance. Cattell's scree test was in line with Guttman–Kaiser's criterion and showed gradations that would justify using three components. Horn's parallel analysis also suggested a three principal component solution with eigenvalues higher than the threshold value taken out from the equally large matrix of random numbers – 17 variables \* 860 respondents. In line with all these analyses, we retained three factors. Table 1 shows the factor loadings after rotation. The first component is a combination of dedication and absorption that point to intrinsic motivation and involvement in one's job. The original UWES dedication items all load on the first component. The second component is the combination of vigor and absorption, indicating fortitude and general activity associated with the job. We can see that the original vigor and absorption dimensions split into two components each. The third component is loaded only by vigor items that point to stamina while the rest of the vigor items that load on the second component point to fortitude.

All 9 items of the UWES-9 were subjected to PCFA. First, data were analyzed in order to estimate adequacy for the

PCFA. The value of KMO measure was 0.915 and all KMO values for the individual items were greater than 0.878. Bartlett's sphericity test showed statistical significance ( $\chi^2 [36] = 4758.681; p < 0.001$ ). The Guttman–Kaiser's criterion revealed one component with eigenvalues over one that explained 60% of the total variance (Eigenvalue = 5.31). Both Cattell's scree test and Horn's parallel analysis ( $9 * 860$ ) were in line with Guttman–Kaiser's criterion, justifying the one-component solution. Table 2 shows the summary of the PCFA for the UWES-9 scale – the correlations with the first principal component, and variance explained by the component. Contrary to the original three-dimensional model of the short, 9-item UWES scale, the analysis of the ratings of the Serbian sample produced a one-factor solution.

The UWES-17 and UWES-9 factorial structures were tested with the CFA. Questionnaires with missing data were excluded from the analysis. Based on Bakker and colleagues' original model (Schaufeli and Bakker, 2003), we tested both the 17-item and 9-item versions for the one and three-factor models. Additionally, based on exploratory factor analysis of the Serbian data, we tested the three-factor model for the UWES-17 scale.

The goodness of fit indices for the tests of factorial validity of the UWES-17 and UWES-9 models are presented in Table 3. Since the values of CMIN/df were in the range up to 5 for almost all tested models, they were acceptable according to Wheaton et al. (1977). Only the UWES-9 one-factor model did not produce the acceptable CMIN/df value. Based on the RMSEA cut-off value of 0.08, all tested models indicate a mediocre fit (MacCallum et al., 1996). As an absolute measure of fit, the standardized root mean square residual (SRMR) of 0.08 indicates a good fit (Hu and Bentler, 1999). This means that the models based on the 17-item scale produce a good fit, whereas testing the 9-item version did not produce an acceptable fit, either as a one-factor or as a three-factor solution. The CFI, GFI and AGFI did not reach desirable values close to 1 (Blunch, 2013). However, GFI values were closest to a good fit.

Descriptive analyses including means, standard deviations, values of skewness and kurtosis and Cronbach's alpha coefficients of the UWES-17 and UWES-9 versions with the corresponding dimensions of vigor, dedication and absorption and the Serbian dimensions based on the UWES-17 factorial structure are presented in Table 4. Cronbach's alpha scores indicated high internal consistency of all checked scales and subscales, except for the subscale “absorption” on the UWES-9 scale. The skewness and kurtosis values indicate that the distributions of all tested scales could have been regarded as normal, except the subscale “absorption” on the UWES-9.

The inter-correlations of the UWES long and short scale versions and their component scales, including the Serbian PCFA solution, are presented in Table 5. As expected, the majority of observed correlations are very strong (above 0.70). The highest correlation is among long and short forms' totals. The totals of both forms strongly correlate with their original component subscales. The correlations of Serbian component scales with the scale total are very strong for the first two components and strong for the third component. The long and the short UWES corresponding sub-scales share more than 79% of variance.

**TABLE 3 |** Goodness of fit indices for tests of factorial validity of the UWES-17 and UWES-9 models.

Model	No. of items	$\chi^2$	df	p	CMIN/df	RMSEA [90% CI]	SRMR	CFI	GFI	AGFI
One factor	17	465.565	119	0.000	3.912	0.059 [0.053–0.064]	0.0785	0.695	0.920	0.897
Three factor – Serbian structure	17	415.349	116	0.000	3.581	0.055 [0.049–0.061]	0.0695	0.736	0.929	0.906
Three factor – original structure	17	420.498	116	0.000	3.625	0.056 [0.050–0.061]	0.0766	0.732	0.928	0.905
One factor	9	144.957	27	0.000	5.369	0.072 [0.060–0.083]	0.0831	0.832	0.951	0.918
Three factor – original version	9	116.546	24	0.000	4.856	0.067 [0.055–0.080]	0.1002	0.868	0.960	0.926

CMIN/df, Chi-square/degrees of freedom; RMSEA, Root Mean Square Error of Approximation; SRMR, Standardized Root Mean Square Residual; CFI, Comparative Fit Index; GFI, Goodness-of-Fit Index; AGFI, Adjusted Goodness-of-Fit Index.

**TABLE 4 |** Means, standard deviations, skewness and kurtosis values, and Cronbach's alphas of the UWES Serbian adaptation scales and dimensions.

	No. of items	M	SD	Skewness (SE)	Kurtosis (SE)	Cronbach's alpha
UWES-17	17	4.01	0.97	−0.459 (0.08)	0.056 (0.17)	0.924
UWES-17, vigor	6	3.91	0.96	−0.361 (0.08)	0.393 (0.17)	0.799
UWES-17, dedication	5	4.19	1.25	−0.644 (0.08)	−0.078 (0.17)	0.872
UWES-17, absorption	6	3.94	1.03	−0.377 (0.08)	0.469 (0.17)	0.787
UWES-17, SF1	8	4.25	1.11	−0.634 (0.08)	−0.008 (0.17)	0.901
UWES-17, SF2	6	3.60	1.13	−0.291 (0.08)	0.120 (0.17)	0.838
UWES-17, SF3	3	4.16	1.00	−0.419 (0.08)	0.250 (0.17)	0.650
UWES-9	9	3.97	1.11	−0.419 (0.08)	−0.169 (0.17)	0.904
UWES-9, vigor	3	3.66	1.24	−0.375 (0.08)	−0.258 (0.17)	0.846
UWES-9, dedication	3	4.04	1.36	−0.604 (0.08)	−0.081 (0.17)	0.874
UWES-9, absorption	3	4.23	1.13	0.262 (0.08)	6.167 (0.17)	0.623

SF1, Factor 1 from this research (Table 2); SF2, Factor 2 from this research (Table 2); SF3, Factor 3 from this research (Table 1); VI, Vigor; DE, Dedication; AB, Absorption.

**TABLE 5 |** Inter-relationships among work engagement three-dimensional and one-dimensional models based on the UWES-17 and UWES-9.

	UWES-17 SF2	UWES-17 SF3	UWES-17 VI	UWES-9 VI	UWES-17 DE	UWES-17 AB	UWES-17 VI	UWES-9 DE	UWES-9 DE	UWES-9 AB
UWES-17, SF1	0.755**	0.509**	0.940**	0.920**	0.747**	0.961**	0.841**	0.748**	0.937**	0.772**
UWES-17, SF2		0.519**	0.910**	0.921**	0.864**	0.738**	0.878**	0.923**	0.771**	0.781**
UWES-17, SF3			0.670**	0.537**	0.823**	0.446**	0.564**	0.470**	0.443**	0.533**
UWES-17				0.970**	0.906**	0.900**	0.915**	0.866**	0.900**	0.832**
UWES-9					0.860**	0.897**	0.880**	0.902**	0.927**	0.850**
UWES-17, VI						0.717**	0.761**	0.888**	0.733**	0.684**
UWES-17, DE							0.725**	0.751**	0.967**	0.664**
UWES-17, AB								0.724**	0.742**	0.912**
UWES-9, VI									0.781**	0.631**
UWES-9, DE										0.679**

\*\*Correlation is significant at the 0.01 level.

## Work Engagement and Well-being

In order to explore the validity of the tested models of work engagement we analyzed the relationships of work engagement models with the selected indicators of well-being, i.e., burnout, organizational support, job satisfaction, and job insecurity. Pearson product-moment correlations between work engagement and well-being indicators (burnout, organizational support, job satisfaction and job insecurity) are presented in Table 6. It should be noted that correlation analyses were performed on different subsamples, thus the sizes of the samples differ. The general tendency is that the long and short forms of the UWES Serbian adaptation produce similar correlations

with well-being indicators. The total scores both for the long and short versions produced the strongest correlations. Among indicators, the total score for job burnout was the strongest correlate, whereas job insecurity was the lowest correlate of work engagement. At the level of engagement dimensions, the original UWES-17 solution produced higher correlations than the solution suggested based on exploratory factor analysis of the Serbian sample data. Although PCFA of the UWES-9 produced a one-factor solution (Table 2), inter-correlations of the short version original factors with well-being measures are similar to those based on the 17-item version factors that suggest the UWES-9 dimensions could still develop meaningful results.

**TABLE 6 |** Pearson product-moment correlations between work engagement (three-dimensional and one-dimensional and models based on the UWES-17 and UWES-9) and well-being indicators (burnout, organizational support, job satisfaction and job insecurity).

	Burnout total	Burnout exhaustion	Burnout disengagement	Organizational support	Job satisfaction	Job insecurity
<i>N</i>	84	84	84	290	219	577
UWES-17	−0.758**	−0.583**	−0.723**	0.642**	0.686**	0.241**
UWES-17, VI	−0.691**	−0.556**	−0.597**	0.607**	0.631**	0.239**
UWES-17, DE	−0.728**	−0.564**	−0.721**	0.631**	0.656**	0.237**
UWES-17, AB	−0.649**	−0.470**	−0.653**	0.500**	0.605**	0.161**
UWES-17, SF1	−0.710**	−0.520**	−0.736**	0.609**	0.635**	0.219**
UWES-17, SF2	−0.704**	−0.590**	−0.626**	0.600**	0.662**	0.215**
UWES-17, SF3	−0.466**	−0.323**	−0.380**	0.383**	0.448**	0.154**
UWES-9	−0.753**	−0.588**	−0.728**	0.657**	0.683**	0.243**
UWES-9, VI	−0.709**	−0.613**	−0.632**	0.621**	0.659**	0.243**
UWES-9, DE	−0.721**	−0.565**	−0.712**	0.637**	0.667**	0.251**
UWES-9, AB	−0.634**	−0.423**	−0.657**	0.503**	0.507**	0.140**

\*\* Correlation is significant at the 0.01 level.

To examine whether work engagement explained incremental variance above job burnout, we performed hierarchical multiple regression analysis (with both the UWES-17 total scores and the UWES-9 total scores) with job satisfaction as an outcome variable. Hierarchical regression analysis for the effect of burnout and work engagement on job satisfaction is presented in **Table 7**, for the cases when engagement was assessed by the UWES-17, and in **Table 8** for the cases when engagement was assessed by the UWES-9. Demographic variables were not included as their relations with work engagement were not considered meaningful (**Table 9** and next section). The first step included the OLB subscales Burnout exhaustion and Burnout disengagement, and the second step added the UWES-17 total score (**Table 7**) or the UWES-9 total score (**Table 8**). The UWES total scores were used because of the high inter-correlations among the UWES subscales (**Table 5**).

In both cases, when the UWES was included it gave better prediction of job satisfaction (**Tables 7, 8**). The UWES-17 total explained 7% of the variance in job satisfaction, while the UWES-9 total explained 6.6% of the job satisfaction variance. It is also notable that adding the UWES (in both analyses) lowers the coefficients of burnout disengagement and makes them insignificant. Taken together, the results demonstrate the predictive value of the UWES.

## Work Engagement in Different Groups of Employees

Means and standard deviations of the UWES-17 and UWES-9 total scores across demographic subgroups are presented in **Table 9**. Comparing women and men on the UWES total scores revealed that women were more engaged than men, both on the long form [ $F(1,846) = 11.145$ ;  $p = 0.001$ ,  $\eta^2 = 0.013$ ] and short form [ $F(1,848) = 19.301$ ;  $p < 0.001$ ,  $\eta^2 = 0.022$ ]. The UWES scores had significant but low correlations with employees' age, both for the long ( $r = 0.157$ ,  $p < 0.001$ ) and short form ( $r = 0.164$ ,  $p < 0.001$ ). Higher educated employees were more engaged

[long form:  $F(2,751) = 7.340$ ;  $p = 0.001$ ,  $\eta^2 = 0.020$ ; short form:  $F(2,753) = 8.910$ ;  $p < 0.001$ ,  $\eta^2 = 0.023$ ]. Employees on supervisory positions were more engaged than others [long form:  $F(1,829) = 6.186$ ;  $p = 0.013$ ,  $\eta^2 = 0.010$ ; short form:  $F(1,831) = 7.592$ ;  $p = 0.006$ ,  $\eta^2 = 0.010$ ]. Employees working at state-owned organizations were more engaged than those working at privately owned companies based on the UEWS short form [long form:  $F(1,822) = 3.551$ ;  $p = 0.060$ ,  $\eta^2 = 0.004$ ; short form:  $F(1,824) = 7.704$ ;  $p = 0.006$ ,  $\eta^2 = 0.010$ ].

## DISCUSSION

The overall aim of the present study was to provide evidence of the psychometric properties of the Serbian versions of the UWES, the long and short one, by exploring their factor structure, internal consistency and criterion validity.

A detailed analysis confirmed that both the UWES-17 and UWES-9 were applicable in the Serbian cultural context. Based on the UWES-17 findings, our data have confirmed both the three-factor and one-factor solutions, giving a slight advantage to the three-factor solution. As for the UWES-9, based on the PCFA and CFA findings, we obtained one-factor as a preferred solution. Based on a systematic review of research papers dealing with the UWES factorial validity within the CFA approach, the one-factor solution of the UWES-9 was also suggested by Kulikowski (2017). Taking into the account all other analyses presented in this paper, we would opt for applying both one and three-factor solutions for the UWES-9 Serbian version.

The PCFA of the 17-item version of the UWES-S showed a three-factor structure with the content somewhat different from the original model. The first component was majorly loaded by dedication items (including absorption items), the second component was loaded by vigor and absorption items, while the third component was clearly loaded only by vigor items. The most “problematic” were the absorption items that actually spread across two dimensions. The first component pointed



**TABLE 7 |** Hierarchical regression analyses for the effect of burnout (exhaustion and disengagement) and work engagement assessed by the UWES-17 on job satisfaction.

	<i>R</i> <sup>2</sup>	Adj. <i>R</i> <sup>2</sup>	<i>R</i> <sup>2</sup> change	<i>B</i>	Beta	<i>F</i> (df1, df2)
<b>Model 1</b>						
Burnout exhaustion	0.493	0.480		−0.037	−0.315**	38.90 (2, 80)
Burnout disengagement				−0.052	−0.445***	
<b>Model 2</b>						
Burnout exhaustion	0.563	0.547	0.070**	−0.030	−0.255*	33.98 (3, 79)
Burnout disengagement				−0.024	−0.206	
UWES-17 Total				0.024	0.389**	

\**p* < 0.05, \*\**p* < 0.01, \*\*\**p* < 0.001.

**TABLE 8 |** Hierarchical regression analyses for the effect of burnout (exhaustion and disengagement) and work engagement assessed by the UWES-9 on job satisfaction.

	<i>R</i> <sup>2</sup>	Adj. <i>R</i> <sup>2</sup>	<i>R</i> <sup>2</sup> change	<i>B</i>	Beta	<i>F</i> (df1, df2)
<b>Model 1</b>						
Burnout exhaustion	0.493	0.480		−0.037	−0.315**	38.90 (2, 80)
Burnout disengagement				−0.052	−0.445***	
<b>Model 2</b>						
Burnout exhaustion	0.559	0.542	0.066**	−0.030	−0.256*	33.41 (3, 79)
Burnout disengagement				−0.025	−0.210	
UWES-9 Total				0.038	0.380**	

\**p* < 0.05, \*\**p* < 0.01, \*\*\**p* < 0.001.

to involvement in one's job, the second could indicate general activity, while the third component indicated stamina. The item that was particularly problematic was the DE2 item ("I am enthusiastic about my job") that loaded almost equally on both the first and the second component. The PCFA of the 9-item version showed the existence of only one component, with loadings above 0.590.

Overall, CFA revealed better fit indices for the UWES-17 than the UWES-9. The long version of the UWES showed the best fit when three factors were taken into account. The fit indices were somewhat better for the structure that was obtained by PCFA, but the indices for the original three factor model were also acceptable. The UWES-9 showed a somewhat better fit when the one-factor solution was tested. Nevertheless, taking into consideration the fit indices of all tested models, we can conclude that we only gained an acceptable, but not a preferred fit. Even though these indices are acceptable when comparing with other international samples (e.g., Schaufeli and Bakker, 2003; Schaufeli et al., 2006), this finding could be also interpreted as an "invitation" for making some culturally more sensitive forms of the UWES. Bearing in mind qualitative data from the focus group discussion about understanding the UWES items, the presented data suggest it is reasonable to question whether the employees from Serbia conceptualize work engagement similarly to Dutch employees. In a broader perspective, obtained results point to the need for more extensive and precise multicultural comparisons, which is in line with Balducci et al.'s (2010) conclusions about the need for more stringent cross-cultural research.

Contrary to the ambiguities brought by PCFA and CFA, the reliabilities, inter-correlations and the pattern of correlations of

the UWES (short and long) with the corresponding well-being variables clearly met all theoretical expectations. The reliabilities of the UWES-17 and UWES-9 total scores were higher than 0.90. All the originally postulated subscales on both forms, except for the UWES-9 absorption, showed reliability above 0.78. The inter-correlation between subscales of both forms showed that the corresponding sub-scales shared more than 79% of variance. In addition, the correlation of both UWES forms with burnout, job satisfaction, organizational support and job insecurity showed an almost equal pattern of correlations when analyzing total scores and the scores on particular subscales. Finally, when taking into account the incremental validity of work engagement above job burnout, assessed by both the UWES-17 and the UWES-9, in both cases, when UWES was included, it gave better prediction of job satisfaction with almost equal values of all parameters. These positive and theoretically expected findings indicate that both the UWES-17 and the UWES-9 can be used with equal success in research of work engagement in Serbia.

Observed relationships between work engagement (assessed both by UWES-17 and UWES-9) and demographic variables add to the muddled picture of the previously published correlations that are clearly inconsistent (e.g., Schaufeli et al., 2006; Fong and Ng, 2012; Littman-Ovadia and Balducci, 2013; Lovakov et al., 2017). Generally, when comparing the employees' levels of engagement across gender, education, hierarchical position, as well as the ownership of organization, it should be noted that observed statistically significant differences have fallen under the shadow of the low effect size. As underlined by Schaufeli et al. (2006), these differences lack practical significance.

The obtained results are more interesting and valuable because they come from the Serbian socio-economic context,

**TABLE 9** | Means and standard deviations of the UWES-17 and UWES-9 total scores across demographic subgroups.

		Gender		Education			Hierarchical position		Ownership of the organization	
		Men	Women	High school	Trade school, college	University, undergraduate and more	Subordinate	Superior	State	Private
UWES-17	M (SD)	65.63 (17.89)	69.55 (15.59)	65.57 (17.81)	69.57 (14.80)	70.35 (14.90)	67.19 (16.74)	71.29 (14.93)	68.69 (15.71)	66.51 (17.50)
UWES-9	M (SD)	33.86 (10.76)	36.96 (9.40)	34.25 (10.52)	36.73 (9.23)	37.42 (9.67)	35.19 (10.14)	37.93 (8.90)	36.42 (9.29)	34.48 (10.76)

in which, for the past quarter of the century, employees have been confronted with privatizations, restructuring, downsizing, closing down and the collapse of a great number of companies (Petrovic and Cizmic, 2010). For many it meant either losing their job or early retirement. Losing a job subsequently led to long-term unemployment and exponentially declining chances of finding a job. As for the employees who stayed at work as the 'survivors' of organization and society-wide negative processes, it is questionable whether staying at work sustained their work engagement or eroded it. As noted in our previous research, the mechanisms which helped the workers to cope with the crisis could be a serious threat for readapting to working under the 'normal' conditions (Čizmić et al., 1995). The third work engagement component obtained by PCFA, loaded by three vigor items, named 'stamina,' could be related to the specificities of the Serbian social and economic context. Further, different factor solutions yielded based on different UWES language versions could be an impulse for exploring cultural specificities of work engagement and searching for culturally invariant factors of the UWES.

Some potential limitations may exist in the presented research. Although we had a large sample from different companies, economy sectors and occupational groups that were chosen to represent Serbian workforce well, the sample was not composed as statistically representative. It can pose the limitation for comparing the presented findings with the findings of other validation studies, more so because the majority of these studies were also not carried out on statistically representative samples. The cross-sectional nature of the study can also be regarded as a limitation for generalizing and fully utilizing the findings that at present do not give grounds for inferring about the directions of the presented relationships. As suggested by other researchers, future longitudinal studies should uncover causal relationships of work engagement with other well-being correlates (e.g., Schaufeli et al., 2006; Shimazu et al., 2008; Fong and Ng, 2012). Moreover, as noted by Littman-Ovadia and Balducci (2013), the restriction of range in this kind of research design could be expected for work engagement and especially in the Serbian work context. The restriction of range should also be taken into account in those countries with high rates of emigrating workforce. Keeping in mind that work engagement is one of the building blocks of the JD-R model, to develop a full understanding and validation of the model, engagement should be more fully explored in the relationship with other features of the model. Finally, as noted by some researchers (e.g., Fong and Ng, 2012), self-report nature of applied measures is prone to common method variance. Thus, future studies could include some more objective measures of work engagement.

## CONCLUSION

The current study highlights the validity of the UWES in the specific social and economic context of Serbia. The presented results have shown that both the UWES-17 and the UWES-9 Serbian versions have satisfactory psychometric

properties with high reliability, factorial structure in line with theoretical model and good predictive validity, thus confirming that these UWES versions are applicable in the Serbian context, both for use in research and for practical purposes. Nevertheless, there is a need for exploring how employees from Serbia as well as other countries perceive work engagement. As suggested by PCA, it is reasonable to question whether the employees from Serbia conceptualize work engagement in the same way as the workers from other cultures and economies. Future cross-cultural research should further investigate the cultural invariance of the UWES factorial structure under more controlled conditions. The presented research could be regarded as a contribution to a positive approach to evolving international economic cooperation. Shedding light on work engagement contributes to a positive psychology approach that is essential for

successful work transformation and organizational transitions in globalizing economy.

## AUTHOR CONTRIBUTIONS

All three authors, IP, MV, and SČ contributed equally to the research design and writing of this paper.

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# Aging and Work Ability: The Moderating Role of Job and Personal Resources

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**Objective:** Demographic changes involving western countries and later retirements due to the recent pension reforms induce a gradual aging of the workforce. This implies an increasing number of workers with health problems and a decreasing of ability to work. In this direction, the present study aims at examining the role of job and personal resources between age and work ability within nurses.

**Method:** The study was cross-sectional and not randomized; data were collected by a self-report questionnaire during a multi-center survey conducted in two Italian hospitals in 2016. In this way, 333 nurses were reached.

**Results:** Multiple linear regression showed that age is significantly and negatively associated to work ability, and that job resources (e.g., decision authority and meaning of work) and personal resources (e.g., hope and resilience) moderate the relationship between age and work ability.

**Discussion:** These results highlight that investing in work and personal resources to support WA is even more relevant for those professions where high physical effort is required.

**Keywords:** aging workers, work ability, job resources, personal resources, nurses

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## INTRODUCTION

Aging is mainly considered from an individual perspective as the process involving any human being throughout his or her lifespan. Alternatively, it can be considered a global phenomenon that is now affecting entire countries and populations: processes and changes must be considered in this “new” perspective (new: for the first time in history, older people have become the largest part of the population) not as single trajectories but in a systemic manner, taking into account the individual and the social changes as well as their interactions.

It is renowned that western countries (and in the near future, many others in the east and in the south) are getting older: the decline of fertility and low birth rates on one hand and rising life expectancies on the other are determining the increase in the mean age of the population. The higher mean age and growing of the “old-old” cohort (+80) imply problems for the sustainability of the welfare and the pension systems. Later retirements due to the consequent reforms adopted and the aforementioned demographic changes induce in turn a gradual aging of the workforce: in Europe the employment rate in the 55–64 years’ cohort increased 9.8% points (Eurostat, UE28, 2008–2016); the percentage of workers over 55 in Italy was 46.2% in 2014 (Eurostat, 2016).

The aging of workers requires attention on two major issues, that in the sustainability perspective (Miglioretti et al., 2016; Gragnano et al., 2017) are kept together: the first one involves workers' health, the second one job productivity and performance.

A larger number of older workers implies, for example, an increasing number of people at work with minor and major health problems that occur more frequently after 55 years of age (Knoche et al., 2012; Maricchio et al., 2013). In this view, over the next several years organizations will be faced with a prevalence rate of chronic diseases (e.g., musculoskeletal disorders, diabetes, or cardiovascular diseases, cancer) close to 20/30% of the entire workforce (Gragnano et al., 2017), with an attendant strong impact on work ability (WA) (Camerino et al., 2006, 2008a; Golubic et al., 2009; Milosevic et al., 2011; Carel et al., 2012; Monteiro et al., 2012; Loera et al., 2013; Guglielmetti et al., 2014; Leijten et al., 2014; Converso et al., 2015b; Viotti et al., 2017a). Therefore, aging requires workers' health and diseases to be reconsidered from the perspective of a "work-health balance" (WHB; Miglioretti et al., 2016; Gragnano et al., 2017) to promote interventions (age management policies, job design from an ergonomic perspective, job redesign addressing psychological changes: Truxillo and Zaniboni, 2017) aimed at supporting workers' mental and physical health, WA, and job productivity over the entire working lifecycle, and over: higher-quality jobs (e.g., complex and challenging works) can impact cognitive development, reducing the risk of dementia and enhancing cognitive ability in later life (Andel et al., 2005; Finkel et al., 2009), and in general strengthening physical and psychological health during work-life is of great relevance even for late-life health and function (Nilsen et al., 2017).

## Work Ability (WA)

The Work Ability Index (WAI) is a widely used tool that measures the perception of sustainability at work derived from the construct of WA, developed by Ilmarinen and the research group of Finnish Institute of Occupational Health in the 1980s. In the past, this construct was used mainly by occupational physicians, but it is now fully integrated in the occupational health psychology (OHP) literature (Brady et al., 2016).

WA describes the physical and intellectual resources on which individuals can rely to respond to the emotional, cognitive, and physical demands posed by their work (Tuomi et al., 1991, 2001). WA has a strong health-related nature; hence, it inevitably decreases with age, even if there is a high rate of variability among individuals, as widely demonstrated by international research (Ilmarinen et al., 1997; Pojonen, 2001; Goedhard and Goedhard, 2005; Camerino et al., 2006; Lin et al., 2006; Monteiro et al., 2006; van den Berg et al., 2008, 2009; Converso et al., 2015b; Godinho et al., 2016) that highlights, for example, the same trend within different European countries (Camerino et al., 2006). Ilmarinen and Ilmarinen (2015) explained that this decline is due to the imbalance between the individual resources and the demands of the job, namely the work and the organizational context are not aligned to the age-related changes in personal resources. Poor WA is predictive of sickness absences, early retirement, disability pension, intention to leave (Goedhard and Goedhard,

2005; Camerino et al., 2006; Monteiro et al., 2006; Emberland and Knardahl, 2015), work stress, depression (Tuomi et al., 1991; van den Berg et al., 2008; Bethge et al., 2009; Godinho et al., 2016), and emotional exhaustion (Viotti et al., 2017a). Conversely, good WA is associated with a high quality of work, high productivity, and enjoyment of time at work. WA also predicts good quality of life, well-being, and active and meaningful retirement (Tuomi et al., 2001).

## WA in the Working Life Span

A recent review of the WA model, appropriate for an aging workforce process, the WA-PR (Work Ability Personal Radar), assumes a multidimensional view of WA based on the self-assessment of subjective experiences of personal resources, working context, and work-life interface and proposes the metaphor of a house, whose floors represent the four main dimensions of WA (Ilmarinen et al., 2005, 2015). Health and Functional Capacity is the first floor of the house and consists of physical, mental, and social resources; Occupational Competence, the second floor, consists of expertise, skills, and knowledge acquired through experience, years of work, training, and education; Attitude and Motivation, situated on the third floor, are the reasons people work and are influenced by previous work experiences; Working Conditions correspond to the fourth floor and consist of work and all of its dimensions. If the resources of the individual (floors 1–3) are in balance with the fourth floor, the WA is good. If the individual resources are in imbalance with the working conditions, WA is deteriorating. Organizational support is of great importance in relation to the fourth floor, while the personal resources are of great importance in relation to the first three floors.

Altogether, the floors of the WA house are in relation to a context of life that consists of work, family, and spare-time activities, representing the fifth floor (Ilmarinen et al., 2015).

This new multidimensional model of WA overcomes the previous conceptualization, mainly focused on an individual state, and coherently with other OHP models (Job-Demand-Control, JD-C, of Karasek, 1979 and Job-Demand-Resources, JD-R, of Demerouti et al., 2001) consider the interaction between personal resources (the first three floors) and the job demands and resources (the fourth floor). As it is assumed by the JD-R model (Demerouti et al., 2001), work factors which could affect workers' psychological health can be classified into two categories: job demands and job resources. Job demands refer to those aspects of job that require the workers to sustain psychological or physical effort and are associated with cost in terms of health. Job resources refer to those physical, psychological, social, or organizational aspects of the job that may help to achieve work goals, reduce job demands and the related physiological and psychological costs, and stimulate personal growth and development.

The structure of WA changes during a person's life and career as, for example, aging affects the individual's resources or personal resources like competence and experience that may completely or partially compensate for physical "losses" and changes (Baltes and Baltes, 1990). Moreover, when people perceive their time as limited (as older workers

do), emotional goals take priority and workers tend to focus their attention on affective rewards and resources (Carstensen et al., 1999; Truxillo et al., 2012) rather than on material or career-based rewards. As Demerouti et al. (2001) have affirmed, each work environment includes different demands and resources that interact with personal resources (Xanthopoulou et al., 2007) developing a dual process, the health impairment process and the motivational process, which may vary throughout the lifespan, when the same job demand may be perceived as more demanding, or the same resource may be perceived as less supportive. In other words, job well-being along the entire work lifespan is the result of an ever-changing balance between individual resources and job demands.

## WA in Relation to Job and Organizational Characteristics

Several studies have shown that WA is influenced by individual, job-related, and lifestyle factors (Tuomi et al., 1998; Camerino et al., 2006; Bethge et al., 2009; Matzolumi et al., 2012; McGonagle et al., 2014, 2015; Airila et al., 2014; Converso et al., 2015a; Godinho et al., 2016; Li et al., 2016; Sottimano et al., 2017; Viotti et al., 2017b). To understand the factors that sustain WA, researchers have analyzed specifically the role of job resources in supporting WA, both directly (Tuomi et al., 1991; Larsson et al., 2012; Matzolumi et al., 2012; Airila et al., 2014; McGonagle et al., 2014; Emberland and Knardahl, 2015; Li et al., 2016) and indirectly, by buffering the negative effects of job demands on WA (McGonagle et al., 2014; Viotti et al., 2017b). Specifically, studies have highlighted the direct effect of decision authority, skill discretion, social support, and the meaning of work on WA in various working populations (van den Berg et al., 2008, 2011; Weigl et al., 2013; McGonagle et al., 2014; Li et al., 2016; Sottimano et al., 2017). For example, Li et al. (2016) showed that social support was positively and directly associated with WA, while Weigl et al. (2013) and McGonagle et al. (2015) underlined the importance of control in maintaining WA. In particular, Weigl et al. (2013) have shown that job control moderates the negative impact of aging on WA. In this direction, in a study by McGonagle et al. (2014) among healthcare workers, supervisor support and skill discretion were found to moderate the negative relationship between job demands and WA. Schulz et al. (2017) have highlighted similar findings: team health climate emerged as particularly important for older employees' WA because the social context may support those compensation strategies that older workers may employ when job demands exceed their physical or mental capabilities.

Furthermore, the lifespan perspective on work design (Truxillo et al., 2012; Zacher and Schmitt, 2016) proposes that some job resources are more positively related to indicators of occupational well-being among older workers. More specifically, the literature shows that decision authority (Zacher and Frese, 2009; Zacher et al., 2010; Truxillo et al., 2012; Zaniboni et al., 2016; Viotti et al., 2017b), skill discretion (Truxillo et al., 2012; Zaniboni et al., 2013, 2014; Viotti et al., 2017b), social support (Truxillo et al., 2012; Drabe et al., 2014; Li et al., 2016),

and meaning of work (Sottimano et al., 2017; Viotti et al., 2017b) are very important dimensions to promote WA and, more generally, well-being at work, in particular within older workers.

## WA in Relation to Personal Resources

Personal resources are considered positive self-evaluations that are linked to resilience and refer to an individual's sense of ability to successfully control or impact his or her environment (Hobfoll et al., 2003); they may have similar motivational potential to those of job resources (Xanthopoulou et al., 2007). For example, Youssef and Luthans (2007), in the psychological capital model perspective, found that hope had a positive effect on employee satisfaction and work happiness (Luthans, 2002; Luthans and Youssef, 2004); other researchers have shown that optimism correlates with employee engagement and performance (Medlin and Faulk, 2011), while resilience positively correlates with workplace performance and work happiness (Luthans et al., 2008).

Few studies have specifically considered the relationship between WA and personal resources. In this context, Airila et al. (2014) highlighted that personal resources predicted WA both directly and indirectly via work engagement, whereas the studies by Larsson et al. (2012), specifically conducted within nurses and nurse aides, and Ng et al. (2015) revealed that self-efficacy contributed to increased WA.

## WA in the "High Touch" Professions: When Physical and Emotional Demands Cannot Be Reduced

As previously stated, the topic WA changes across the lifespan and needs to be addressed differently according to the job characteristics, the job demands, and the organizational context. According to Warr (1994), four main types of work emerge from the interaction between age/experience and job demand: (a) the first one includes jobs in which the required skills do not decline with age and experience is an added value to the work; (b) in the second one, the skills required do not decline with age, but experience does not constitute an added value to the work; (c) the third type includes workers whose skills decline with age, but for which experience can partially compensate; (d) in the fourth, the required skills decline with age and experience cannot adequately compensate. In this direction, the literature shows that the relationship between age and ability to work is more critical when the workers are engaged in jobs with high physical demands (McGonagle et al., 2015). Often, for these professions, an early retirement is provided or a transition to less-physically demanding job tasks is made available within the same organization. In addition, WA can be supported through prevention activities and radical job redesign interventions: a famous example of good practice is the BMW intervention developed in 2007 (Loch et al., 2010), where a relatively low-cost project mainly directed toward preventing musculoskeletal disorders in a high-physically demanding job where the workforce was significantly aging, increased the productivity by 7%. Introducing in the

first experiment 70 ergonomic changes, like installing special chairs at several workstations, allowed workers to spend the majority of their working hours sitting down or relaxing for short periods; vertically adjustable tables to adapt the workstations to each worker's height, and so reducing back strain; special lenses to help workers distinguish among small parts, reducing eyestrain and mistakes due to the decline of sight. As scholars affirmed, BMW “defused the demographic time bomb” redesigning its factory for and with older workers, who were involved asking them to imagine how to ameliorate their working conditions in light of the aging process (Loch et al., 2010).

When the job demands are mainly cognitive, as in most of the type A or B jobs, WA decreases slowly and a large number of interventions devoted to sustainability in the organizational context can be developed. Regarding emotionally demanding jobs, they may be included in types A or C as, for example, job experience can be helpful in contrasting customer-related stress. One specific case is represented by jobs having both high physical and emotional demands, as in healthcare and pre-school contexts, where job redesign interventions or the adaptation of work environment are more complex or impossible to promote because of the specific nature of the work. Taking care of patients, babies, children, and sick people represent the core activity of these jobs that cannot be reduced or changed, and the continuous exposure to bio-mechanical risks may increase musculoskeletal disorders (Phongamwong and Deema, 2015), especially during aging, and negatively impact WA (Prochnow et al., 2013). As highlighted by previous studies conducted among preschool teachers aged 50 or over, the perception of poor WA (associated with physical problems) can mediate the relationship between demands/resources and worker well-being (Viotti et al., 2017a).

In light of the above, the present study aims then at examining the role of job and personal resources between age and WA within a typical “*high touch*” profession: nurses. We considered as *job resources* three dimensions on the basis of the previously described WA-PR house model and of the studies on the relationship between job resources and WA (Weigl et al., 2013; McGonagle et al., 2015; Li et al., 2016): decision authority that describes the autonomy in making job-related decisions (as autonomy), skill discretion (Viotti and Converso, 2016) that describes the opportunity to use certain skills at work (as competence), and social support (Li et al., 2016), as WA in the nursing context can be supported by job resources of an interpersonal nature, such as social support (Häggglund et al., 2011; Airila et al., 2014) expressed by colleagues, superior and patient as well (Converso et al., 2015a); meaning of work that can be considered as a type of intrinsic reward referred to job meaningfulness and constructiveness (Viotti et al., 2017b), for its importance in the field of the “helping professions.”

Concerning *personal resources*, we considered the following factors: self-efficacy, hope, optimism, and resilience. Self-efficacy refers to people's beliefs in their capabilities to produce desired effects by their own actions (Bandura, 1977); hope refers to a positive motivational state; optimism refers to the tendency

to expect positive events in one's life; and resiliency refers to successfully coping with adversity or stress.

We hypothesize the following:

- (H1) Age is negatively associated with WA.
- (H2) Job and personal resources are positively associated with WA.
- (H3) Job and personal resources moderate the negative relationship between age and WA. That is to say, the relationship between age and WA is stronger in conditions of low resources and weaker in conditions of high resources, both job and personal resources.

## MATERIALS AND METHODS

### Data Collection and Participants

The study was cross-sectional and non-randomized. Data were collected by means of a self-report questionnaire during a multi-center survey conducted in two hospitals in a region of North-West Italy in 2016. Questionnaires were distributed during working hours. Workers were asked to enclose the completed questionnaire in an envelope and leave it in a box that the research team had placed in each unit/service. In total, 524 nurses were reached and 333 questionnaires were returned to the research team (response rate: 63.54%). The majority were women (female = 85.9%; male = 14.1%), with an age ranging from 23 to 64 years ( $M = 44.65$ ,  $SD = 16.02$ ). The average job seniority in the health sector was 19.53 years ( $SD = 10.61$ ) and ranged from less than 1 to 42 years. Finally, 64% of the sample worked on the night shift.

The distribution of the socio-demographic data in this sample is analogous to the distribution in the Italian nursing workforce employed in the public health sector in which 65% are women and 35% are men, the average age is 44.6, and the average job seniority is 17 years<sup>1</sup>.

### Ethical Considerations

Hospital administrations evaluated, endorsed, and authorized the research, allowing researchers to use the data for scientific purposes. Upon approval, department chiefs and nursing coordinators from each unit/service were asked for authorization to administer the questionnaire to the nurses. An additional ethical approval was not required since there was no treatment, including medical, invasive diagnostics, or procedures, causing psychological or social discomfort for the participants, nor were patients the subject of data collection.

Participation in the survey was voluntary. The research conforms to the provisions of the Declaration of Helsinki in 1995 (as revised in Edinburgh 2000), and all ethical guidelines were followed as required for conducting human research, including adherence to the legal requirements of the study countries.

<sup>1</sup>[http://www.salute.gov.it/portale/news/p3\\_2\\_1\\_1\\_1.jsp?lingua=italiano&menu=notizie&p=dalministro&id=688](http://www.salute.gov.it/portale/news/p3_2_1_1_1.jsp?lingua=italiano&menu=notizie&p=dalministro&id=688)



## Measures

The questionnaire was developed specifically for this study. It included items aimed at collecting age, other socio-demographic information (i.e., gender, job seniority, and night shift) and sub-scales aimed at measuring study variables (i.e., work ability, job resources, personal resources, and physical demands).

## Job Resources

Four subscales from the Job Content Questionnaire (JCQ, Karasek, 1985) were employed to measure skill discretion (SD, five items,  $\alpha = 0.83$ , e.g., “My job requires that I learn new things”), decision authority (DA, three items,  $\alpha = 0.62$ , e.g., “My job allows me to make a lot of decisions on my own”), support from colleagues (SC, five items,  $\alpha = 0.82$ ; e.g., “People I work with are competent in doing their jobs”), and support from superiors (SS, four items,  $\alpha = 0.85$ ; e.g., “My supervisor is helpful in getting the job done”). Finally, meaning of work (WM, three items,  $\alpha = 0.75$ , e.g., “My work is meaningful”) from the Copenhagen Psychosocial Questionnaire (COPSOQ, Kristensen et al., 2005) was considered. Responses on all sub-scales were given on a 4-point scale with a range from 1 = strongly disagree to 4 = strongly agree.

## Personal Resources

Work-related self-efficacy was measured using a scale developed by Caprara (2001), consisting of five items (SE, e.g., “At work, I’m able to manage any emergency and deal with unexpected tasks,”  $\alpha = 0.74$ ). Hope (HO, e.g., “I’m grateful to my past experiences, which have prepared me well to succeed in the face of challenges,”  $\alpha = 0.79$ ), and optimism (OPT, e.g., “Even when facing work hardships, I expect things to turn out for the best,”  $\alpha = 0.66$ ), contained seven items each, and were developed by Snyder et al. (1996) and Carver et al. (2009), respectively. Resilience (RES, e.g., “At work, I am able to adapt to any change required by the situation,”  $\alpha = 0.83$ ) contained 10 items and was developed by Campbell-Sills and Stein (2007). Responses on these scales were given on a 4-point scale with a range from 1 = not true to 4 = completely true.

## Outcome

Work ability was measured with the Work Ability Index (WAI, Tuomi et al., 1998), which contains seven sections, each of which gives a partial score that contributes to forming the overall WA score (ranging from 7 to 49). The seven sections measure: (1) current WA compared with lifetime best (range of the score: 1–10); (2) WA in relation to mental and physical demands (range of the score: 2–10); (3) number of current diseases diagnosed by a physician (range of the score: 1–7); (4) estimated work impairment due to diseases (range of the scores 1–6); (5) sick leave during the past 12 months (range of the scores: 1–5); (6) self-prognosis of WA for the next 2 years (scores: 1–4 or 7); and (7) mental resources (range of the score: 1–4). Cronbach  $\alpha$  is equal to 0.73.

## Control Variables

Gender, job seniority, and night shift were included as control variables in the models as it is recognized that they may represent

**TABLE 1 |** Discriminant analyses between work ability and job and personal resources – Confirmatory factor Analyses: Goodness-of-fit indexes.

Resource	One-factor model (a)					Two-factor model (b)					Model comparison (a-b)			
	$\chi^2$ (df)	$\chi^2$ /df	CFI	GFI	SRMR	RMSEA (CI)	$\chi^2$ (df)	$\chi^2$ /df	CFI	GFI	SRMR	RMSEA (CI)	$\Delta\chi^2$	p
Decision authority (DA)	93.18 (33)	2.82	0.86	0.94	0.06	0.07 (0.06–0.09)	71.17 (32)	2.22	0.91	0.96	0.05	0.06 (0.04–0.08)	22.01	0.001
Skill discretion (SD)	291.69 (52)	5.61	0.76	0.85	0.11	0.12 (0.10–0.13)	150.47 (51)	2.95	0.90	0.93	0.07	0.07 (0.06–0.09)	141.22	0.001
Meaning of the work	198.71 (33)	6.02	0.74	0.87	0.11	0.12 (0.11–0.14)	68.78 (32)	2.15	0.94	0.96	0.05	0.06 (0.04–0.08)	129.93	0.001
(MWM) Support from superior (SS)	260.13 (42)	6.19	0.81	0.85	0.13	0.12 (0.11–0.14)	97.12 (41)	2.36	0.95	0.95	0.07	0.06 (0.05–0.08)	163.01	0.001
Support from colleagues (SC)	228.81 (42)	5.44	0.78	0.87	0.11	0.12 (0.10–0.13)	89.06 (41)	2.17	0.94	0.95	0.05	0.06 (0.04–0.08)	139.75	0.001
Optimism (OPT)	234.23 (62)	3.77	0.80	0.88	0.08	0.09 (0.08–0.10)	150.20 (61)	2.46	0.90	0.93	0.07	0.06 (0.05–0.08)	84.03	0.001
Hope (HO)	257.66 (63)	4.09	0.78	0.87	0.10	0.10 (0.08–0.11)	137.98 (62)	2.22	0.92	0.94	0.07	0.06 (0.05–0.07)	119.68	0.001
Resilience (RES)	335.94 (113)	2.97	0.86	0.88	0.07	0.08 (0.07–0.09)	233.45 (112)	2.08	0.92	0.92	0.06	0.06 (0.05–0.07)	102.49	0.001
Self-efficacy (SE)	236.06 (52)	4.54	0.72	0.88	0.10	0.10 (0.09–0.12)	120.30 (51)	2.35	0.90	0.94	0.06	0.06 (0.05–0.08)	115.76	0.001

df = degree of freedom; CFI, comparative fit index; GFI, goodness of fit index; SRMR, standardized root mean square residual; RMSEA, root mean square error of approximation.

**TABLE 2 |** Means (*M*), standard deviations (*SD*), and univariate analyses (Pearson's correlations and *t*-tests) between study variables.

	<i>M (SD)</i>	<i>WA</i>	<i>Age</i>	<i>DA</i>	<i>SD</i>	<i>MW</i>	<i>SS</i>	<i>SC</i>	<i>OPT</i>	<i>HO</i>	<i>RES</i>	<i>SE</i>	<i>JS</i>
Work ability ( <i>WA</i> )	38.27 (5.67)	1											
Age	44.65 (10.02)	-0.34**	1										
Decision authority ( <i>DA</i> )	2.85 (0.59)	0.22**	-0.12*	1									
Skill discretion ( <i>SD</i> )	3.24 (0.59)	0.22**	-0.03	0.40**	1								
Meaning of the work ( <i>MW</i> )	3.26 (0.62)	0.29**	-0.12*	0.26**	0.47**	1							
Support from superior ( <i>SS</i> )	3.48 (0.86)	0.09	0.10	0.09	0.16**	0.23**	1						
Support from colleagues ( <i>SC</i> )	2.83 (0.59)	0.23**	-0.02	0.21**	0.28**	0.31**	0.27**	1					
Optimism ( <i>OPT</i> )	2.72 (0.44)	0.26**	-0.13*	0.07	0.16**	0.24**	0.09	0.09	1				
Hope ( <i>HO</i> )	2.94 (0.42)	0.25**	-0.05	0.17**	0.20**	0.24**	0.03	0.03	0.47**	1			
Resilience ( <i>RES</i> )	2.90 (0.41)	0.35**	-0.07	0.22**	0.27**	0.32**	0.05	0.17**	0.47**	0.75**	1		
Self-efficacy ( <i>SE</i> )	2.98 (0.38)	0.21**	0.05	0.11*	0.18**	0.35**	0.16**	0.30**	0.23**	0.35**	0.40**	1	
Job seniority ( <i>JS</i> )	10.25 (8.18)	-0.19*	0.75**	-0.00	0.14**	0.01	0.17**	0.08	-0.05	-0.00	-0.02	0.01	1
Gender ( <i>t</i> -test)	—	-1.12	1.46	1.18	0.12	-1.03	-0.24	1.80	-0.31	-0.98	-0.71	0.60	2.74**
Night shift ( <i>t</i> -test)	—	-2.14*	8.18**	-0.93	-0.84	0.13	0.92	0.29	0.24	0.10	-0.20	0.77	9.39**

\*\* $p \leq 0.01$  (two-tailed), \* $p \leq 0.05$  (two-tailed).**TABLE 3 |** Moderated regression analyses to assess the effect of job resources (*JR*) in affecting the relationship between age and work ability.

Step	JR 1: Decision authority				JR 2: Skill discretion				JR 3: Meaning of the work				JR 4: Support from superior				JR 5: Support from colleagues			
	$\beta$	<i>t</i>	<i>p</i>		$\beta$	<i>t</i>	<i>p</i>		$\beta$	<i>t</i>	<i>p</i>		$\beta$	<i>t</i>	<i>p</i>		$\beta$	<i>t</i>	<i>p</i>	
1	-0.35	-6.25	0.001		-0.34	-6.14	0.001		-0.30	-5.42	0.001		-0.36	-6.42	0.001		-0.33	-5.94	0.001	
	0.20	3.57	0.001		0.20	3.68	0.001		0.20	3.58	0.001		0.11	1.93	0.055		0.21	3.85	0.001	
2	-0.34	-6.43	0.001		-0.34	-6.28	0.001		-0.33	-6.08	0.001		-0.36	-6.54	0.001		-0.34	-6.20	0.001	
	0.22	4.06	0.001		0.21	3.87	0.001		0.20	3.57	0.001		0.09	1.76	0.079		0.20	3.50	0.001	
	0.16	3.00	0.003		0.08	1.51	0.131		0.14	2.57	0.011		0.08	1.43	0.152		0.09	1.511	0.132	
3	-0.40	-4.99	0.001		-0.39	-4.64	0.001		-0.42	-5.05	0.001		-0.48	-5.71	0.001		-0.41	-5.07	0.001	
	0.21	3.86	0.001		0.19	3.39	0.001		0.18	3.29	0.001		0.10	1.80	0.072		0.19	3.32	0.001	
	0.16	2.89	0.004		0.07	1.34	0.182		0.14	2.47	0.014		0.08	1.38	0.168		0.08	1.46	0.145	
	0.03	0.51	0.608		0.03	0.48	0.626		0.03	0.53	0.595		0.03	0.49	0.626		0.05	0.93	0.356	
	0.14	1.56	0.119		0.11	1.17	0.241		0.16	1.81	0.071		0.22	2.40	0.017		0.15	1.76	0.079	
	0.09	1.57	0.117		0.08	1.23	0.220		0.08	1.28	0.202		0.10	1.57	0.116		0.08	1.29	0.199	
1	$R^2$	0.16***			0.16***					0.15***				0.13***				0.15***		
2	$R^2$	0.20***			0.17***					0.19***				0.14***				0.16***		
3	$R^2$	0.21***			0.18***					0.21***				0.16***				0.19***		

\*\*\* $p \leq 0.001$ .

potential confounders in the relationship between age and WA (Ilmarinen et al., 1997; Camerino et al., 2008b).

## Data Analyses

### Data Analyses Were Performed Using SPSS Statistics 22

In order to provide evidence for the adequacy of the psychometric proprieties for the scales used, Confirmatory Factor Analysis (CFA) was employed. For the WA measure a first-order CFA was executed, whereas for job and personal resources two second-order CFAs were performed.

Discriminant validity between the variable conceptualized as an outcome (i.e., WA) and the variables conceptualized as moderators (i.e., job and personal resources) was assessed by performing a series of CFAs aimed at testing two alternative factorial structures. The first included a single latent factor on which were loaded items from WA and from a resource conceptualized as a moderator. The second included two related factors, in which the seven items of WA were loaded on one factor and the items of a resource conceptualized as a moderator on the other factor. As a result, eighteen models were carried out, two for each resource considered as a moderator in our hypotheses.

The goodness of fit of the model was assessed with: the ratio of  $\chi^2$  to the degrees of freedom (df), the Comparative Fit Index (CFI), the Goodness-of-fit Index (GFI), the Standardized Root Mean Square Residual (SRMR), and Root Mean Square Error of Approximation (RMSEA). According to Kline (2005), a  $\chi^2$ /df ratio of 3 or less indicates a good model fit, and less than 2 an excellent model fit. For the GFI and CFI indices, values equal to or higher than 0.90 are considered to be indicators of a satisfactory model fit (Hoyle, 1995). A value of SRMR less than 0.07 indicates good fit (Hu and Bentler, 1999). Finally, a value of RMSEA that is lower than 0.08 indicates an acceptable model fit (Byrne, 1998). In addition, for discriminant validity, the Chi-square difference test ( $\Delta\chi^2$ ) was used to compare the alternative models.

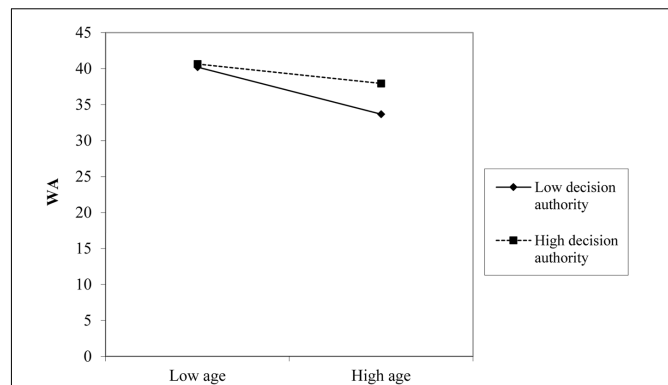
Preliminary analyses also included means, standard deviations, Pearson's correlations (to examine the relationship between continuous variables), and *t*-test (to examine the relationship between nominal variables and a continuous variable).

For each moderated hierarchical regression performed, predictor variables were entered into three successive steps. In the first step, the standardized indices of age and a resource was entered. In the second step, the interaction term, which is the product between the age and a resource, was incorporated in the model. In the third step, the model was adjusted for the control variables (i.e., gender, job seniority, and night shift). In cases in which the interaction term showed a significant value, the simple slope procedure recommended by Aiken and West (1991) was adopted to further examine the pattern of the relationship.

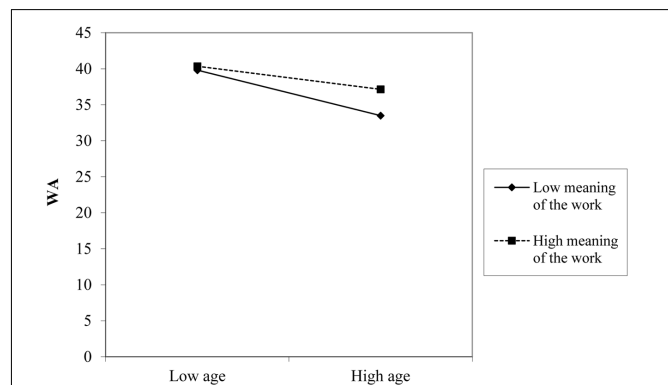
## RESULTS

### Measurement Models

Psychometric proprieties of the measures used were found to be adequate. Regarding work ability, CFA showed an excellent fit,



**FIGURE 1 |** The effect of decision authority (DA) in the relationship between age and work ability (WA).



**FIGURE 2 |** The effect of meaning of work (MW) in the relationship between age and work ability (WA).

after adding two covariances between two couples of error terms:  $\chi^2 = 35.86$ ,  $df = 12$ ;  $\chi^2/df = 2.98$ ; CFI = 0.92; GFI = 0.97; SRMR = 0.05; RMSEA = 0.07(0.05–0.10). The second-order CFA including all personal resources revealed an adequate structure, after incorporating four covariances between error terms (i.e., three covariances between error terms of four observed variables loaded on the resilience factor and one covariance between two error terms of two items loaded on the optimism factor):  $\chi^2 = 512.93$ ,  $df = 267$ ;  $\chi^2/df = 1.92$ ; CFI = 0.91; GFI = 0.90; SRMR = 0.05; RMSEA = 0.05(0.05–0.06). Finally, the second-order CFA for job resources showed an excellent fit as well:  $\chi^2 = 344.20$ ,  $df = 147$ ;  $\chi^2/df = 2.34$ ; CFI = 0.92; GFI = 0.90; SRMR = 0.05; RMSEA = 0.06(0.05–0.07).

In all the CFAs, all the observed variables significantly loaded on its corresponding latent factor and in the expected direction. Moreover, as regarded the second-order CFA, all the first-order factors positively and significantly loaded on the second-order factor.

Discriminant validity between WA and each resource of personal and job type was proved. As shown in **Table 1**, in all cases, the two-factor model, where each item loaded on its corresponding factor (**Table 1**, a column), fitted significantly better than the one-factor model, where items from work ability

and a resource considered loaded on the same factor (Table 1, b column).

## Preliminary Analyses

Table 2 shows the univariate relationships between the variables under study, including control variables. As expected, WA showed a significant and negative correlation with age. Moreover, WA was found to be positively associated with all resources considered, with the exception of support from superiors. Regarding control variables, WA was significantly and negatively associated with job seniority. Finally, *t*-test showed that those who worked on the night shift reported significantly higher levels of WA ( $M = 39.27$ ;  $SD = 5.38$ ) when compared with those who did not work on the night shift ( $M = 37.38$ ;  $SD = 5.80$ ).

## Moderated Regression Analyses

Table 3 shows the results of moderated regressions assessing the moderating role of job resources in the relationship between age and WA. In the first step, in all models,  $R^2$  was significant, and age was significantly and negatively associated with WA; moreover, all the resources considered were found to be associated with WA, except for support from superiors. In the second step, the interaction effect between age and job resources was found to be significant in two of the five models carried out, suggesting that decision authority ( $\beta = 0.16$ ,  $p = 0.003$ ) and meaning of work ( $\beta = 0.14$ ,  $p = 0.011$ ) moderate the effects of age on WA. In the third step, when the models were adjusted for the control variables, both of the interaction terms kept showing significant  $\beta$  values (i.e., age \* decision authority:  $\beta = 0.16$ ,  $p = 0.004$ ; age \* meaning of the work:  $\beta = 0.14$ ,  $p = 0.014$ ). Regarding control variables, job seniority was found to be positively associated with WA ( $\beta = 0.22$ ,  $p = 0.017$ ) in one model only (JR4: support from superiors).

Slope test analyses were performed in order to further examine the direction of the effects of decision authority and meaning

of work in the relationship between age and WA. As regards decision authority (Figure 1), simple slope analysis showed that when this resource was high (+1 standard deviation, SD), the relationship between age and WA ( $t = -2.28$ ,  $p = 0.023$ ), albeit significant, was weaker if compared with a condition of low job resource ( $-1$  SD,  $t = -5.93$ ,  $p = 0.001$ ). Similarly, (Figure 2), the relationship between age and WA was stronger in the condition of low meaning of work ( $-1$  SD,  $t = -5.24$ ,  $p = 0.001$ ) rather than in the condition of a high meaning of work (+1 SD,  $t = -3.01$ ,  $p = 0.03$ ).

Table 4 shows the moderated regressions assessing the moderating role of personal resources in the relationship between age and WA. Both in the first and in the second step, all the models reported a significant  $R^2$ , age was found to be significant in all models, and all personal resources considered were found to be positively associated with WA. Moreover, in two models, the interaction term was found to be significant at both steps 1 and 2, supporting the moderating role for hope (step 1:  $\beta = 0.14$ ,  $p = 0.011$ ; step 2:  $\beta = 0.12$ ,  $p = 0.027$ ) and resilience (step 1:  $\beta = 0.11$ ,  $p = 0.022$ ; step 2:  $\beta = 0.12$ ,  $p = 0.029$ ), but not for optimism and self-efficacy, in the relationship between age and WA. As regards control variables (step 3), no significant relationships with WA were reported.

Simple slope analysis (Figures 3, 4) showed the relationship between age and WA was stronger in conditions of low personal resources ( $-1$  SD, hope:  $t = -7.34$ ,  $p = 0.001$ ; resilience:  $t = -5.02$ ,  $p = 0.001$ ) as opposed to conditions of high personal resources (+1 SD, hope:  $t = -1.42$ ,  $p = 0.15$ ; resilience:  $t = -2.11$ ,  $p = 0.035$ ).

## DISCUSSION

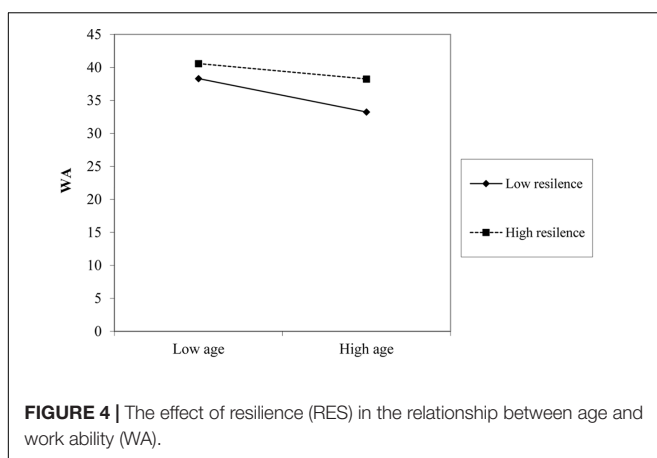
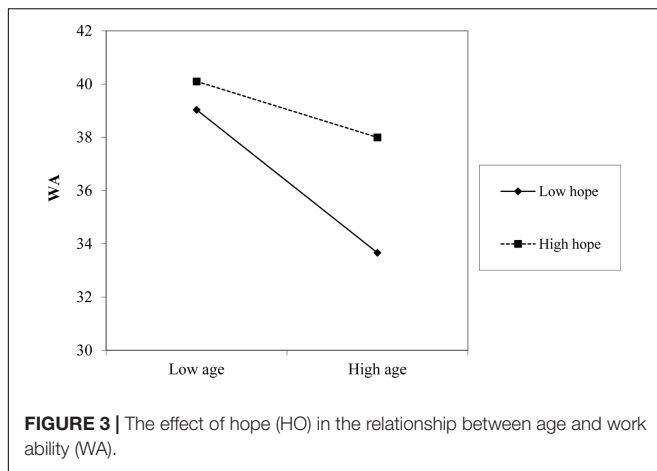
This study had two main purposes. The first was to examine the relationship between age and WA among nurses. Regarding this point, the results confirmed H1, indicating that age is significantly

**TABLE 4 |** Moderated regression analyses to assess the effect of personal resources (PR) in affecting the relationship between age and work ability.

Step		PR 1: Optimism			PR 2: Hope			PR 3: Resilience			PR 4: Self-efficacy		
		$\beta$	<i>t</i>	<i>p</i>	$\beta$	<i>t</i>	<i>p</i>	$\beta$	<i>t</i>	<i>p</i>	$\beta$	<i>t</i>	<i>p</i>
1	Age	-0.30	-5.22	0.001	-0.32	-5.83	0.001	-0.32	-5.95	0.001	-0.36	-6.58	0.001
	Personal resource	0.22	3.96	0.001	0.25	4.52	0.001	0.31	5.68	0.001	0.24	4.32	0.001
2	Age	-0.30	-5.42	0.001	-0.31	-5.74	0.001	-0.32	-6.21	0.001	-0.356	-6.56	0.001
	Personal resource	0.23	4.13	0.001	0.23	4.26	0.001	0.32	6.22	0.001	0.212	3.74	0.001
	Age $\times$ personal resource	0.07	1.24	0.216	0.14	2.56	0.011	0.12	2.31	0.022	0.102	1.80	0.073
3	Age	-0.30	-4.44	0.001	-0.39	-4.68	0.001	-0.40	-5.13	0.001	-0.382	-5.90	0.001
	Personal resource	0.24	4.12	0.001	0.22	4.04	0.001	0.31	5.95	0.001	0.208	3.66	0.001
	Age $\times$ personal resource	0.073	1.30	0.193	0.14	2.53	0.012	0.12	2.20	0.029	0.106	1.87	0.062
	Gender (1 = male)	0.030	0.54	0.592	0.032	0.57	0.568	0.024	0.452	0.652	0.046	0.83	0.405
	Job seniority	0.076	1.23	0.221	0.135	1.49	0.138	0.135	1.623	0.106	0.097	1.62	0.107
	Night shift (1 = yes)	0.069	1.12	0.265	0.053	0.81	0.419	0.058	0.938	0.349	0.025	0.41	0.679
1			0.15***			0.17***			0.20***			0.18***	
2	$R^2$		0.16***			0.19***			0.25***			0.20***	
3	$R^2$		0.17***			0.22***			0.26***			0.23***	

\*\*\* $p \leq 0.001$ .





and negatively associated with WA, confirming previous studies in various occupational sectors (Ilmarinen et al., 1997; Pojonen, 2001; Goedhard and Goedhard, 2005; Camerino et al., 2006; Lin et al., 2006; Monteiro et al., 2006; van den Berg et al., 2008, 2009; Godinho et al., 2016) and in the nursing profession (Camerino et al., 2006, 2008b; Golubic et al., 2009; Carel et al., 2012; Monteiro et al., 2012).

The second aim was to investigate whether job resources (decision authority, skill discretion, social support from colleagues and superiors and meaning of work) and personal resources (self-efficacy, hope, optimism, and resilience) moderate the relationship between age and WA.

All the job resources, with the exception of the support from superiors, and the four personal resources were found to be positively associated with WA. Moreover, the buffering hypothesis (H3) was partially confirmed. Two of the job resources showed a moderating effect on the relationship between age and WA. In particular, decision authority and work meaning moderate the negative effect of age on WA. Concerning personal resources, the present study confirmed that they contribute to maintaining WA (Larsson et al., 2012; Airila et al., 2014; Ng et al., 2015), specifically hope and resilience.

If health promotion and prevention represent core targets for any occupational health researcher, the considerable impact that

the aging process is having on the western workforce requires more substantial efforts. In this view, these results are very important because the identification of the organizational and the personal resources that can moderate the negative effect of age on WA may support health practitioners in developing more effective and specific interventions. In this perspective, a recent campaign of the European Agency for Occupational Safety and Health (2016–2017) has been devoted to the creation of “Healthy workplaces for all ages,” stating that, due to the aging of workforce, workplace health promotion interventions cannot be postponed. As scholars and practitioners affirm, it is necessary to adopt “holistic approaches” (Brady et al., 2016) and invest in job and personal resources developing multilevel interventions focused on age-related changes (Fraccaroli et al., 2017). These interventions may include ergonomic solutions when possible, but also individual support services, which have proved to be quite useful in preventing the minor mental disorders that increase physiologically with aging (Rothermund et al., 2016), to manage crises in the transitions (i.e., retirement or changes in health status). Moreover, our study suggests that interventions that have shown a special efficacy to raise hope, resilience, and the ability to endure stress, such as mindfulness (Hülshager et al., 2013; Malinowski et al., 2017) might be implemented.

Generally speaking, the findings from this study may contribute to human resource management, specifically in the age management perspective (Marcaletti and Garavaglia, 2014), defining human resource retention policies and practices, by emphasizing the role of job and personal resources in remedying the consequence of increasingly older workers. In particular, our findings suggest that the “importance” of a resource for a worker tends not to be absolute but relative, changing throughout the work lifespan. In this direction, the role played by the meaning of work and decision authority is very interesting and important for older workers. This confirms the literature on older workers’ motivation, which suggests that the lifespan approach should be applied to work motivation (Kanfer and Ackerman, 2004). This approach proposes that there are age-related changes in motivation toward jobs (Schalk et al., 2010) and that older workers are more motivated by the intrinsic dimensions of their job, such as the meaning of their work and their decision authority, than younger workers, who tend to be more motivated by extrinsic aspects of their job (Guglielmi et al., 2016).

This study has several limitations. The first is the cross-sectional design, as it assumes that job and personal resources are antecedents of WA; however, the opposite could also be true. For example, high levels of WA could affect the level of hope. To define the direction of the relationship, a longitudinal study design should be employed in the future. Another limitation is that all measures are self-reporting. In the future, it might be more useful to associate subjective and physical indicators to measure health and well-being at work. Finally, the healthy worker effect, which refers to the tendency of the actively employed to be in better health than the general population (Eisen et al., 2001), could act as a potential bias in the interpretation of results, as in the past, nurses with poor WA may have changed jobs or chosen early retirement.

## AUTHOR CONTRIBUTIONS

Research conception and design/acquisition of data: DC, SV, IS, GG, and BL. Data analysis: SV, DC, IS, GG, BL,

and MC. Interpretation of data: DC, IS, SV, GG, BL, and MC. Drafting the article: IS, DC, SV, GG, BL, and MC. Critical revision of the article content: DC, IS, SV, GG, BL, and MC.

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# An Experimental Evaluation of Competing Age-Predictions of Future Time Perspective between Workplace and Retirement Domains

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Future time perspective (FTP) is defined as "perceptions of the future as being limited or open-ended" (Lang and Carstensen, 2002; p. 125). The construct figures prominently in both workplace and retirement domains, but the age-predictions are competing: Workplace research predicts decreasing FTP age-change, in contrast, retirement scholars predict increasing FTP age-change. For the first time, these competing predictions are pitted in an experimental manipulation of subjective life expectancy (SLE). A sample of  $N = 207$  older adults (age 45–60) working full-time (>30-h/week) were randomly assigned to SLE questions framed as either 'Live-to' or 'Die-by' to evaluate competing predictions for FTP. Results indicate general support for decreasing age-change in FTP, indicated by independent-sample  $t$ -tests showing lower FTP in the 'Die-by' framing condition. Further general-linear model analyses were conducted to test for interaction effects of retirement planning with experimental framings on FTP and intended retirement; While retirement planning buffered FTP's decrease, simple-effects also revealed that retirement planning increased intentions for sooner retirement, but lack of planning increased intentions for later retirement. Discussion centers on practical implications of our findings and consequences validity evidence in future empirical research of FTP in both workplace and retirement domains.

**Keywords:** subjective life expectancy (SLE), future time perspective (FTP), experiment, rival hypotheses, theory elaboration

## INTRODUCTION

Because of longer life expectancies, adults are working or retiring longer, or both (Ilmarinen, 2005). In contrast, foreshortened life expectancies reduce employment or retirement experience. Which phase is impacted, however, is likely influenced by one's motivation to work longer or not. To date, empirical evidence has indicated positive effects of age on both, retirement planning and retirement intentions, i.e., later retirement (Montalto et al., 2000). Functionally, workplace and retirement scholars similarly locate future time perspective (FTP), defined as "perceptions of the future as being limited or open-ended" (Lang and Carstensen, 2002; p. 125), as a mediator between age and respective focal criteria. For example, workplace researchers regard FTP as mediating age effects for retirement intentions (RetirIntent; Henry et al., 2017).

Consequently, workplace researchers suggest workplace solutions may reduce FTP's decline and, thereby, retain older knowledge workers by *prolonging* retirement intentions. On the other hand, retirement scholars regard FTP as mediating age effects for retirement planning (RetirPlan; Hershey and Mowen, 2000)<sup>1</sup>. Consequently, retirement researchers suggest mindfulness solutions may strengthen FTP's increase and, thereby, prompt earlier retirement planning by accelerating preparations for wellbeing in retirement.

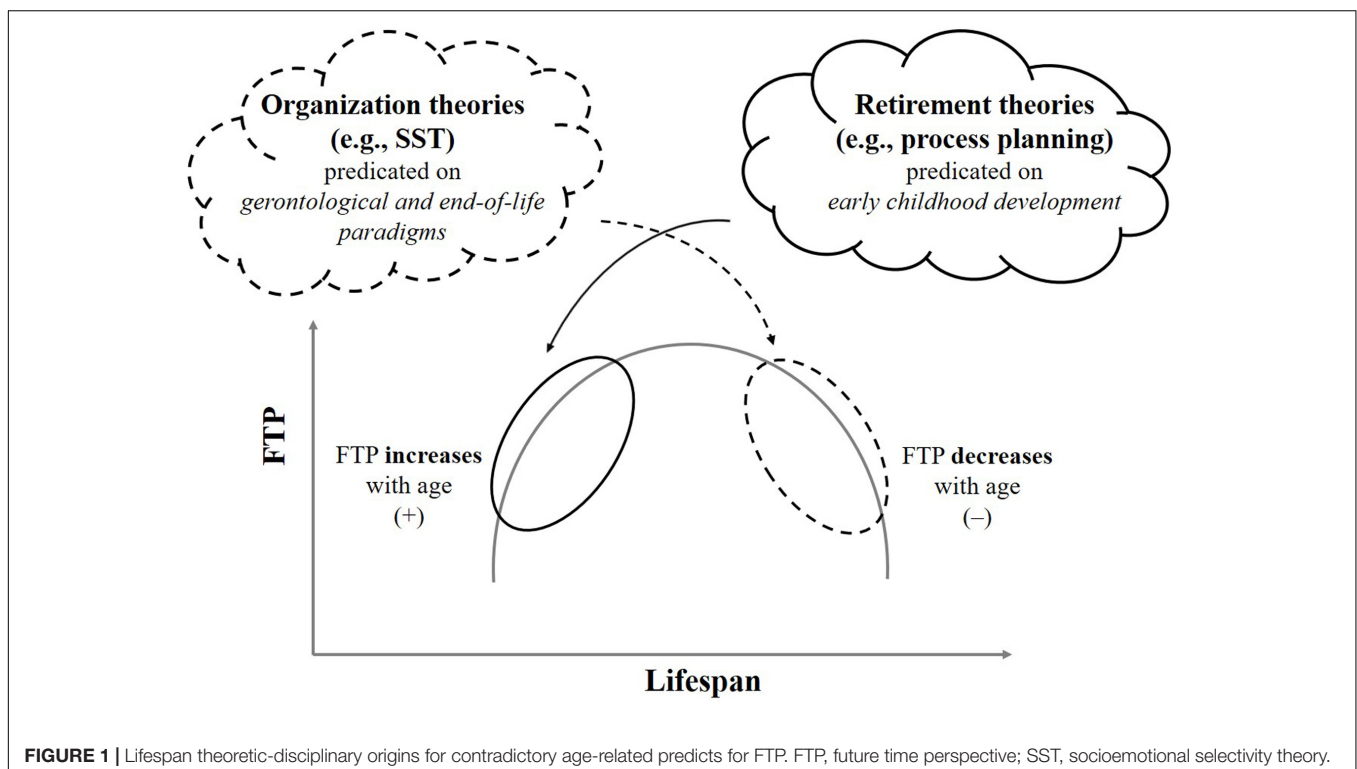
The predicted directions of the FTP-mechanism with age, however, are competing, such that retirement scholars predict increasing FTP with age (Hershey and Mowen, 2000), whereas workplace scholars predict decreasing FTP with age (Griffin et al., 2012), consistent with inveterate lifespan theories (Carstensen and Lang, 1996, Unpublished). Effectively, the rival hypotheses can be understood from two valid perspectives on workforce aging, (1) Relative aging (as cohort effect), and (2) Absolute aging (as longer life expectancies). Although both perspectives are reasonable, the implication from 'absolute' aging is that chronological age's explanatory value for developmental predictions will deteriorate continuously (proxy indicator detaches further from longevity complexions). This is evidenced by the fact that absolute aging (work-life and post-work life) will likely continue after the relative aging (graying from Baby Boomer cohort) subsides. Consequently, the substantive value of age-related predictions in both workplace and retirement researches is depreciating. Causally, however, **Figure 1** displays the disciplinary sources for the competing

age-related predictions for FTP. To date, the competing predictions have not been evaluated (c.f., see Rudolph et al., 2017). As Wang and Schultz (2010, p. 176) described the disjunction between workplace and retirement fields of research, "...very few studies that examined outcomes of retirement have incorporated factors that influenced the original retirement decision...This creates a logic gap because the reasons why people decide to retire would naturally influence how they evaluate outcomes."

**Figure 1** is a good example of how narrow disciplines and misinterpretation of external correlates for construct meaning (rather than internal validity sources) converge to yield static domain structures. That is, conditioning predictions on age for meaningful interpretation of relevant criteria across workplace and retirement domains, requires independence assumptions between work and retirement contexts. Independence of work – retirement domains is intuitively flawed, given the dependence of retirement from a previous worklife. Consequently, age is limitedly meaningful for the growing complexity and overlap of work and retirement contexts. This practical disconnect evidences in probabilistically opposing (directionally competing) age-predictions for FTP concerning the focal criteria of interest (delaying intentions/advancing preparations for retirement).

In contrast to age effects on employment and retirement, much less research attention has been given to its counterpoint, that is, subjective life expectancy (SLE; Griffin et al., 2013). Empirical evidence has indicated that perceptions of remaining time in later stages of life are comparatively better predictors than age for decision processes and transitions, e.g., retirement,

<sup>1</sup> See Supplementary Appendix Table S1 of FTP-criteria correlates.



**TABLE 1** | Summary of directional empirical findings.

Antecedents	Mechanisms	Consequences
Age	(+) Retirement planning	(−) Intended retirement
Age	(+/-) FTP	(+) Intended retirement
SLE	(?) Retirement planning	(−) Intended retirement
SLE	(?) FTP	(+) Intended retirement

(van Solinge and Henkens, 2010). Interestingly, workplace and retirement scholars locate FTP in similar nomological networks vis-à-vis intended retirement (**Table 1**).

Taken together, current empirical findings suggest that RetirPlan (accelerator) and FTP (delayer) may operate as competing mechanisms on retirement decisions. Empirical support for the first mechanism, RetirPlan as-accelerator of workforce withdrawal is well-illustrated by the design of Thaler and Benartzi's (2004) 'Save for Tomorrow' United States retirement pension program. Its dynamic feature, to auto-increase savings contributions over employment, is premised on counteracting increasing discount rate (and retirement delays) as a function of aging. This reasoning is further consistent with recent empirical findings that substantively distinguishes between temporal quantification and domain-specific goal strivings as mechanisms to specific facets of developmental self-regulation (Kornadt et al., 2017).

Regarding the second mechanism, FTP as-delayer of retirement intentions, it has received empirical support from a study that indicated, future-oriented prospections induced escalations-of-commitment (i.e., sunk-cost biases; Strough et al., 2016). Additional, indirect evidence from a meta-analysis of FTP and procrastination reported a moderate-negative association of  $r = -0.45$  (Sirois, 2014). Moreover, mediation tests of perceived stress and positive-affect suggested that positive-affect operates as a significant-mediator between FTP and procrastination; Inclusion of the mediator resulted in the unconditional-direct effect of FTP-procrastination to switch signs (from negative to positive).

Retention of older workers, by aligning workplace conditions with growing 'stability preferences' is premised on counteracting the opportunity cost from workforce continuation at older age; Indeed, workplace conditions typically govern worker wellbeing, and poor quality workplaces render their occupants decremented in wellbeing to levels comparable to, both the unemployed and disabled (ten Have et al., 2015). Extrapolating, a systematic review of the association between the latest economic crisis (i.e., low job mobility opportunity) and workplace stressors found that job insecurity was the strongest correlate with mental health impairments (Mucci et al., 2016).

Synthesizing conceptions across empirical studies, the impacts of: (1) work vs. non-work valuation (affect), and (2) short vs. long time horizons (cognitive), as two mechanisms linking work and retirement has not yet been evaluated in a single study. The goal of the current experiment, therefore, is to pit these competing mechanisms in an evaluative framework by manipulating SLE via attribute-framing conditions. The results are expected to clarify competing age-predictions for FTP across workplace and

retirement research domains. Next, we will introduce our SLE manipulation for subsequently deriving our research hypotheses.

## Hypotheses

The current study evaluates the competing predictions for age-FTP with an attribute-framing manipulation of SLE and simultaneous estimation of FTP and RetirIntent. Recent findings indicate that the framing of SLE questions, as either 'Live-to' or 'Die-by,' results in an SLE difference of approximately 7–10 years (Payne et al., 2013). Examples of the 'Live-to' and 'Die-by' framings are "What is the probability that you currently expect to 'live-to'/'die-by' 95-years of age? The 'Die-by' frame has been found to lower SLE compared to 'Live-to' framings.

Conceptually, we may re-interpret this SLE manipulation as a 'subjective age' manipulation. In this case, if the 'Die-by' frame is successfully replicated so that it lowers SLE, we may interpret this as inducing 'older subjective age.' Consequently, the randomization of participants and comparison on FTP enables us to infer how FTP covaries with different perceptions of one's remaining lifetime/SLE. Restated in the context of formal hypothesis-testing, we hypothesize that the 'Die-by' SLE frame will reduce FTP compared to the 'Live-to' frame.

**H1:** The 'Die-by' frame will decrease FTP compared to the 'Live-to' frame.

Additionally, we include the variable 'retirement intention' in order to assess the consistency of directional effects across 'work' and 'retirement' domains. Specifically, if we accept retirement to be subsumed by overall age, then it follows that older workers (lower SLE from 'die-by' frame) should report closer proximity to retirement (sooner retirement). Thus, we also hypothesize that the 'Die-by' SLE frame will reduce retirement intentions compared to the 'Live-to' frame.

**H2:** The 'Die-by' frame will decrease RetirIntent compared to 'Live-to' frame.

Finally, 'retirement planning' is purposefully assessed before randomized treatment assignment (live-to/die-by). Therefore, because 'retirement planning' is domain-specific to 'life after retirement,' we assume that greater planning for this post-work time will reduce the negative effect of lowered SLE on FTP as a 'global' construct. That is, we hypothesize that RetirPlan will operate by interacting with the 'Die-by' frame by buffering its negative effect on FTP.

**H3:** RetirPlan will interact with the 'Die-by' frame on FTP, such that high RetirPlan will reduce the negative effect.

In contrast, we expect that the domain-specificity of 'retirement planning' and 'retirement intention' to conjoin, so that the hypothesized main-effect of 'sooner retirement' will be strengthened by more retirement planning (assuming planning is proximal of this post-work life). That is, we hypothesize that RetirPlan will operate by interacting with the 'Die-by' frame by strengthening its negative effect on retirement intentions.

**H4:** RetirPlan will interact with the ‘Die-by’ frame on RetirIntent, such that high RetirPlan will strengthen the negative effect.

In addition to hypothesizing SLE-manipulation effects via response processes, that is, on mean-level changes of our focal outcomes, we further explore the nomological pattern of correlates with relevant external variables, in particular, the association between RetirPlan and RetirIntent.

## MATERIALS AND METHODS

A sample of  $N = 207$  participated in ‘ $2 \times 1$ ’ between-subjects experimental design. SLE served as between-subjects factor via the framing manipulation (‘Live-to’ vs. ‘Die-by’). Inclusion criteria required that participants be presently working full-time ( $> 30$ -h/week) for appropriate study of focal retirement variables. Amazon’s Mechanical Turks crowdsourcing labor market was used for participant recruitment. Participants received nominal compensation (\$1.50) for completion of the online experiment-questionnaire, with an additional incentive offered via a \$100 lottery drawing.

### Ethical Considerations

This study was carried out in accordance with the recommendations of ‘international-ethical human study guidelines’ in accordance with the Declaration of Helsinki. The protocol was approved by the authors’ academic institutional review board (Georgia Institute of Technology). All subjects were given written, informed consent prior to participating in the online questionnaire. Additional educational materials on retirement preparation was provided for interested participants on completion of the questionnaire. See, **Figure 2** below.

## Measures

### Subjective Life Expectancy

Subjective life expectancy was assessed on a slider-scale with probabilities ranging from 0 to 100. Participants were instructed to use the slider to indicate their probability of living to ages 65, 75, 85, and 95-years old. Instructions varied with experimental condition, so that participants assigned to the ‘live-to’/‘die-by’ condition read, “Using the slider scale below, please indicate the likelihood you currently believe you will ‘live-to’/‘die-by’ 65 / 75 / 85 / 95-years of age. Cronbach’s internal reliability was estimated at  $\alpha = 0.83$ .

### Future Time Perspective

Carstensen and Lang’s (1996, unpublished) original 10-item instrument was administered to assess FTP<sup>2</sup>. Participants indicated their agreement with how “true” each item described themselves using a 7-point Likert-type scale from 1 (Very untrue) to 7 (Very true). A sample item is, “(1) Many opportunities await me in the future.” Cronbach’s internal reliability was estimated at  $\alpha = 0.91$ .

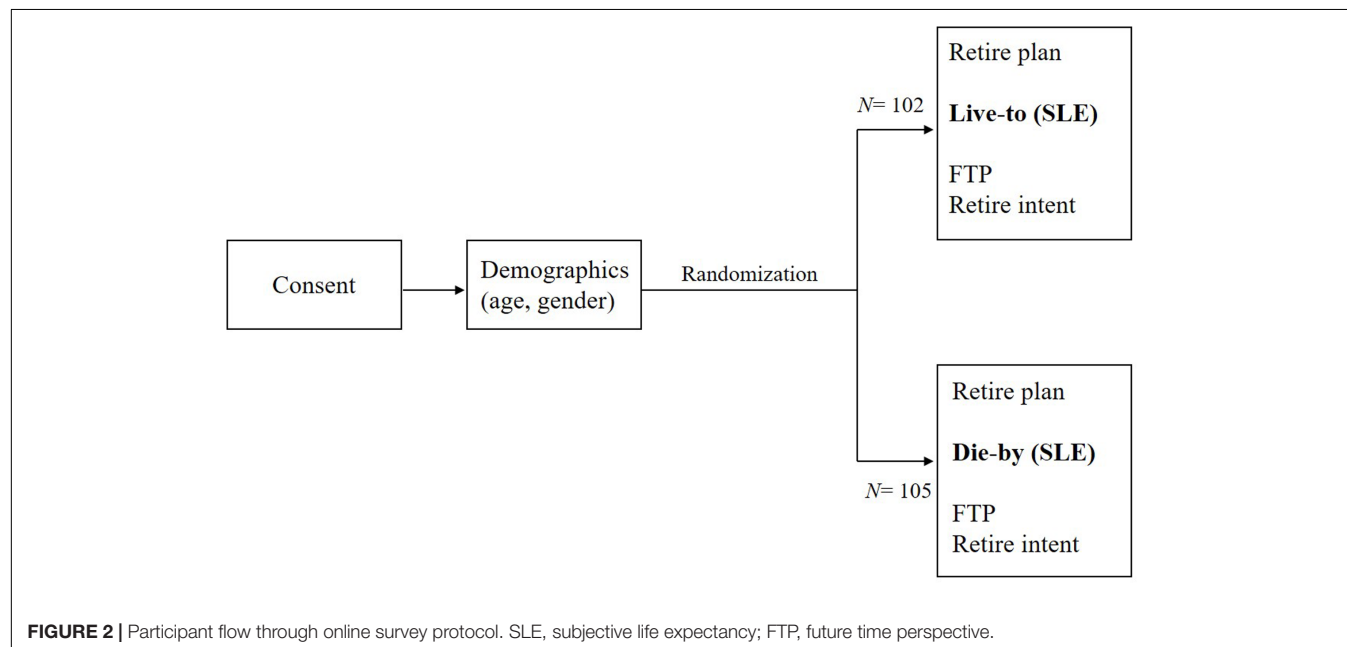
### Retirement Intentions

RetirIntent was assessed as a four-item composite of intended retirement age across four domains: ‘current employer,’ ‘career,’ ‘occupation,’ and ‘general workforce.’ Responses were recorded on a continuous scale. A sample item is, “I intend to retire at age 66–95.” Cronbach’s internal reliability was estimated at  $\alpha = 0.89$ .

### Retirement Planning

RetirPlan was assessed with Griffin and Hesketh’s (2008) 11-item global measure of planning activities. Participants indicated their

<sup>2</sup>See Supplementary Appendix Table S2 for all FTP items.





behavioral tendency to engage in preparatory activities on a 5-point Likert-type scale from 1 (Not at all) to 5 (A great deal). A sample item is, “Seeking retirement advice about retirement issues.” Cronbach’s internal reliability was estimated at  $\alpha = 0.90$ .

## Analyses

Preliminary response-quality screening, missing-data assessment, and hypotheses testing was conducted in SPSS v23. To test main-effects across our randomly allocated experimental groups, independent-sample *t*-tests were conducted to compare means on FTP and RetireIntent. High- and low-RetirPlan groups were generated with median-splits on the RetirPlan variable in order to test interaction-hypotheses in our experimental design. In order to test for interaction-effect hypotheses, SPSS’s univariate-general linear model procedures were implemented with SLE-experimental condition (Live-to vs. Die-by) and RetPlan groups (high vs. low) entered in a full-factorial model. Type III sums-of-squares were utilized in parameter estimate calculations. Significant-interactions were further inspected with simple pairwise-comparisons of experimental conditions within each level of the data-driven moderator (low/high RetirPlan). Bonferroni’s corrections were implemented for managing Type-I error rates from multiple-comparison tests. The observed-score general linear model was selected over latent-variable approaches<sup>3</sup> due to its parsimony, including lower sample size requirements and our focus on competing predictions between specific relations/localized pathways (compared to latent-variables’ usage for overall-model comparisons).

## RESULTS

Summary sample characteristics are reported in **Table 2** below. SLE-manipulation effects were successfully replicated, such that participants in the ‘Live-to’ condition reported a 10.02% greater chance of living to age 80 compared to the ‘Die-by’ condition [ $t_{(205)} = 3.75$ ,  $p < 0.01$ , Cohen’s  $d = 0.52$ ]. Notably, we observed a differential correlation between SLE-FTP that is consistent with theoretically competing age-predictions for FTP,  $r = 0.40_{(\text{Live})} / -0.30_{(\text{Die})}$ . That is, the directional discrepancy may be retraced to ‘younger’ and ‘older’ populations that were the foci for early-child development and gerontological theories predating the lifespan framework’s practical integration.

### Main Effects: Live-to vs. Die-by

Main effect hypotheses received mixed-support. Supporting H1, participants assigned to the ‘Die-by’ condition reported significantly lower FTP ( $M = 44.74$ ,  $SD = 11.15$ ) compared to the ‘Live-to’ condition ( $M = 47.92$ ,  $SD = 13.14$ );  $t_{(205)} = 3.44$ ,  $p = 0.03$ , Cohen’s  $d = 0.48$ .

For H2, participants assigned to the ‘Die-by’ condition also reported lower RetirIntent ( $M = 2.08$ ,  $SD = 1.06$ ) compared to

**TABLE 2 |** Summary sample characteristics by experimental conditions.

	Live-to	Die-by
Size (N)	102	105
Age M (SD)	57.1 (3.84)	57.0 (4.40)
Gender		
Male	50%	50%
Female	50%	50%
SLE	76.59 (1.75)	73.92 (1.67)

*Age is reported as sample mean (M) with standard deviations (SD) in parentheses. Gender is reported as proportions (%). SLE = subjective life expectancy. Independent-sample t-tests were not-significant ( $p > 0.05$ ) for demographics and moderator variable RetirPlan, which supported assumptions of equivalence between the two groups.*

the ‘Live-to’ condition ( $M = 2.04$ ,  $SD = 1.14$ ), but the effect was not significant;  $t_{(205)} = 0.52$ ,  $p = 0.31$ , Cohen’s  $d = 0.07$ . Main effect results are summarized in **Figure 3** below as standardized reductions of the ‘Die-by’ frame compared to the ‘Live-to’ frame.

## Interaction Effects

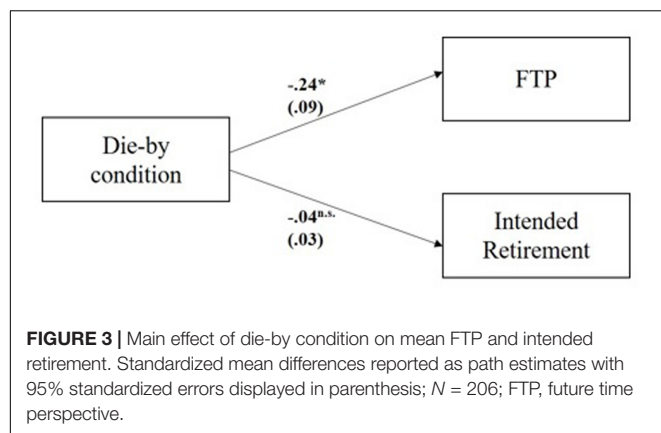
Interaction hypotheses for RetirPlan were generally supported. Specifically, regarding H3 for RetirPlan’s buffering effect of the ‘Die-by’ frame on FTP, results indicated a significant interaction,  $F(1,203) = 3.01$ ,  $p = 0.04^4$ . A simple-contrast estimate indicated significance in the hypothesized direction, such that the ‘Die-by’ frame’s negative effect on FTP was limited to low RetirPlan [ $F(1,203) = 4.27$ ,  $p = 0.02$ ]. In contrast, for high RetirPlan, the ‘Die-by’ frame had no effect on FTP [ $F(1,203) = 0.01$ ,  $p = 0.96$ ]. FTP’s marginal-means used for simple-contrasts are illustrated in the left-panel of **Figure 4**.

Regarding H4 for RetirPlan’s enhancing effect of the ‘Die-by’ frame on RetirIntent, results indicated a significant interaction,  $F(1,203) = 3.40$ ,  $p = 0.03$ . A simple-contrast estimate indicated significance in the hypothesized direction, such that the ‘Die-by’ frame’s negative effect on RetirIntent was significant for high RetirPlan [ $F(1,203) = 4.11$ ,  $p = 0.04$ ]. For low RetirPlan, an unexpected *increase* in RetirIntent was also observed, although it was only marginally significant [ $F(1,203) = 2.72$ ,  $p = 0.10$ ]. This unexpected cross-over interaction helps to explain the unobservable main-effect for RetirIntent, which would seem to-have been obscured. RetirIntent’s marginal means used for these calculations are illustrated in the right-panel of **Figure 4**.

Finally, **Table 3** below summarizes descriptive statistics for all simple-pairwise comparisons. Specifically, each row of **Table 3** lists the mean differences of all  $2 \times 2$  combinations of low/high RetirPlan for FTP and RetirIntent with Bonferroni-adjusted 95% confidence intervals [CIs] reported.

<sup>4</sup>Similar analyses were conducted in an ordinary-least squares regression framework by computing a ‘Live/Die  $\times$  RetirPlan’ multiplicative-interaction term. The equivalent results are reported here for complementary interpretation. Specifically, the ‘Live/Die  $\times$  RetPlan’ regression-interaction coefficient was estimated at,  $b = 0.24$ ,  $p = 0.04$ , supporting H3 and RetPlan’s buffering effect on FTP. Additionally, regarding H4 and RetirIntent, results indicated a significant interaction, such that the ‘Live/Die  $\times$  RetPlan’ regression-interaction coefficient was estimated at,  $b = 0.26$ ,  $p = 0.03$ .

<sup>3</sup>Model-comparisons were also conducted with structural equation modeling (SEM) without substantive change to parameter estimates and nominal significance levels.



## Exploratory Analyses

In addition to mean-level effects on focal outcomes, the patterning of external correlates was different across ‘Live-to’ and ‘Die-by’ conditions. Specifically, for the ‘Live-to’ condition, a significant positive correlation was observed between RetirPlan-RetirIntent,  $r = 0.19$ ,  $p = 0.04$ . In contrast, for the ‘Die-by’ condition, a significant negative correlation was observed,  $r = -0.22$ ,  $p = 0.03$ . The latter finding supports views of RetirPlan as a mechanism that accelerates workforce withdrawal (earlier retirement).

Given the patterning of external correlates, we considered additional explanatory causes for our experimental findings to support substantive interpretation of RetirPlan’s moderation effects. First, we considered if the FTP main effect may be attributable to its sensitivity to ‘careless responding’ based on mix-scored items (positive- / reverse-scored). An independent-samples  $t$ -test was re-conducted, excluding the  $j = 3$  reverse-scored FTP items. There remained a significant difference for the FTP subscore in the hypothesized direction across ‘Live-to’ ( $M = 33.11$ ,  $SD = 8.33$ ) and ‘Die-by’ ( $M = 30.69$ ,  $SD = 9.67$ )

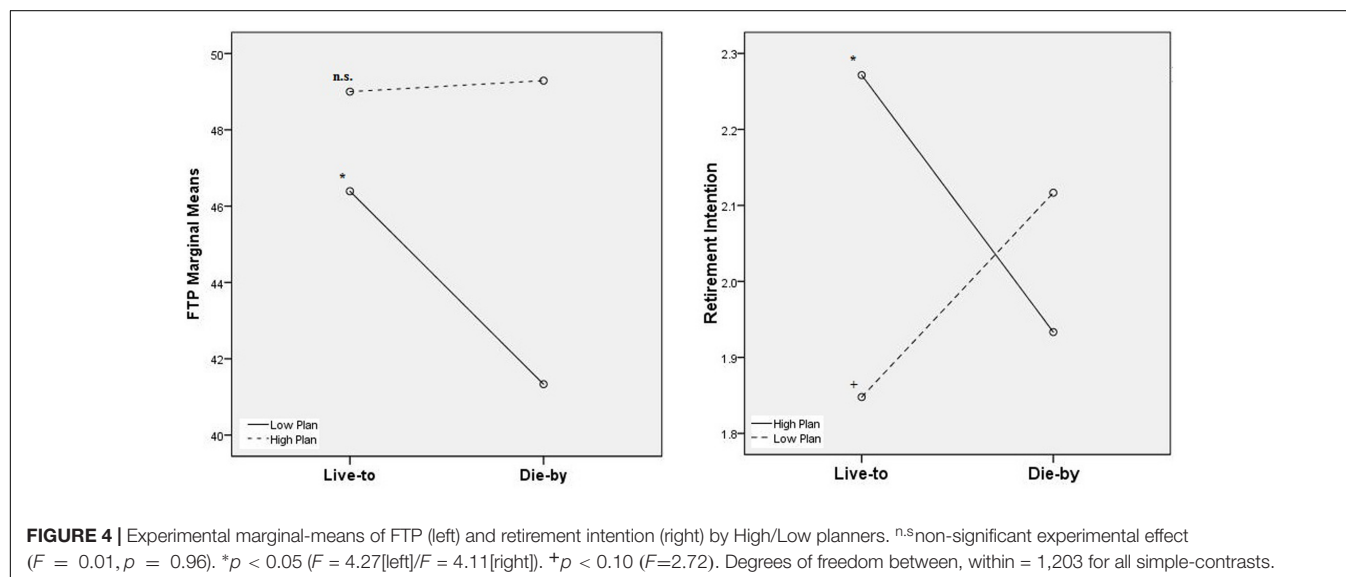
conditions;  $t(205) = 3.84$ ,  $p = 0.03$ , Cohen’s  $d = 0.54$ . The pattern of interactions also remained unchanged in terms of direction and statistical significance.

Because our RetirIntent outcome comprised no reverse-scored items, we examined if the non-significant main effect would hold across a median-split on survey duration (i.e., ‘time on test’). An independent-samples  $t$ -test was re-conducted separately for the low-Time and high-Time groups. The non-significant difference for RetirIntent remained for both the low-Time [ $t(101) = 0.46$ ,  $p = 0.65$ , Cohen’s  $d = 0.06$ ] and high-Time [ $t(103) = 0.85$ ,  $p = 0.40$ , Cohen’s  $d = 0.12$ ] groups. The pattern of interactions also remained unchanged in terms of direction and statistical significance. We summarize our findings and briefly elaborate their implications for future work-retirement integrative research in the section “Discussion” below.

## DISCUSSION

The current study identified a construct, FTP, with disproportionate external validity evidence in a shifting applied context, specifically, workers and retirees. The mono-operation bias inherent to two contrarian theoretical origins of FTP across functionally dissimilar populations (workers and retirees), thus, vesseled weak validity evidence and poor verisimilitude (Cronbach, 1988). We evaluated the rival age-related hypotheses with an experimental SLE-framing manipulation.

Summarizing our findings, first, we successfully replicated the SLE-framing manipulation and observed the opposing relations between SLE-FTP, which was positive in the ‘Live-to’ condition ( $r = 0.40$ ) and negative in the ‘Die-by’ condition ( $r = -0.30$ ). For hypotheses, H1 was supported with a significant negative effect of the ‘Die-by’ condition on FTP. The finding generally support inveterate lifespan theories that postulate age-related decline in FTP (Carstensen and Lang, 1996, Unpublished). Furthermore, we received support for FTP’s hypothesized interaction with



**TABLE 3 |** Pairwise-comparisons of experimental mean-differences for FTP and RetirIntent by Low/High plan groups.

Comparison by Low/High RetirPlan	Estimated mean difference	Standard error of difference	Bonferroni adjusted 95% CI
Low plan			
‘L-FTP’ – ‘D-FTP’	5.06*	2.44	0.231, 9.89
High plan			
‘L-FTP’ – ‘D-FTP’	–0.29	2.50	–5.22, 4.64
Low plan			
‘L-RetIntent’ – ‘D-RetIntent’	0.27 <sup>+</sup>	0.18	–0.13, 0.80
High plan			
‘L-RetIntent’ – ‘D-RetIntent’	–0.39*	0.16	–0.77, –0.01

\* $p < 0.05$ , <sup>+</sup> $p < 0.10$ , where  $p$ -values are adjusted using the Bonferroni method. Prefix ‘L’ denotes ‘Live-to’ experimental condition, prefix ‘D’ denotes ‘Die-by’ experimental condition.

RetirPlan, such that participants reporting more RetirPlan were unaffected by the ‘Die-by’ framing’s negative impact on FTP.

On the other hand, H2 pertaining to RetirIntent was unsupported by our findings. There was no significant difference between SLE-frames for RetirIntent. Further inspection of the interaction hypothesis (H4) revealed an unexpected cross-over effect, providing some indication for obscuring the hypothesized main effect. Contrast analyses supported our hypothesis for RetirPlan’s strengthening of the negative ‘Die-by’ effect. On the other hand, we also observed an unanticipated positive effect of the ‘Die-by’ condition on RetirIntent for low-RetirPlan. The cross-over effect could be interpreted as a delay of RetirIntent when shorter SLE is combined with inadequate preparation. This interpretation is consistent with recent empirical findings that indicate FTP’s dual-mechanism of prompting planning and inducing sunk-cost biases/escalations of commitment with current conditions. That is, in the same way that job characteristics may enhance occupational FTP, contracted lifespans may induce avoidance of retirement’s unknown, if ill-prepared, event space.

Taken together, we hope that the current findings hold practical import for bettering the practice of career counseling and job crafting amid longer working lives. For example, practical implications of this experimental study intersect the age-integration of social institutions and domain-integration of work-life balance. To this end, results should inform ongoing areas of research on related lifespan concepts – For example, ‘active aging’ (World Health Organization, 2002), ‘aging-in-place’ (Center for Disease Control and Prevention, 2011), and ‘successful aging in the workplace’ (Krause, 2001).

## Limitations

We aimed to evaluate contradictory predictions for age-related changes in FTP. Although, we found support for negative age-related predictions for FTP, we also observed a substantive content responsivity effect (Nichols et al., 1989). A tenable mechanism to explain such effects stem from empirical findings on mortality salience, specifically, its impact on identified determinants of motivated responding. For example, mortality

salience is positively associated with prosocial attitudes (Jonas et al., 2002) and trust beliefs (Paulhus, 1983). The cognitive context of our SLE elicitation systematically impacted response processes, in turn, un-differentiable main effects were observed on RetirIntent. On the other hand, we observed an unexpected crossover interaction, such that participants in the ‘Die-by’ reporting low RetPlan reported significantly *later* RetirIntent. Although exploratory analyses were conducted to increase substantive inference from our findings, important limitations are noteworthy for cautious interpretation. For example, from a response-modeling perspective, our focus on latent-structural relations limited our examination of potential response biases to classical approaches, such as conditioning on standard- and reverse-scored items (Colsher and Wallace, 1989). More advanced item response theory (IRT) models, however, have recently been published, enabling researchers to precisely account for wording effects and model directly, any number of suspected response styles (e.g., midpoint, extreme, acquiescence; Falk and Cai, 2016). Second, regarding RetIntent, we presumed that our sample of older employees anticipated a future withdrawal from the workforce toward retirement. It is tenable, however, that low-RetPlan participants did not represent inadequate- or ill-preparation but, rather, a deliberate intention to never retire.

## Future Directions

The continually aging workforce puts a premium on organizational and retirement scholars’ specification of lifespan motivation theories (Löckenhoff, 2012). The psychological construct of FTP figures prominently in both areas of research; for work scholars, the socio-emotional selectivity theory (SST) of lifespan motivation predicts that FTP decreases with age (Carstensen and Lang, 1996, Unpublished). In opposition, retirement scholars employ a psycho-motivational model, adapted from a theory of lifespan planning that predicts FTP increases with age (Hershey, 2004).

Sophisticated IRT models offer explanatory testing of suspected response biases for self-report measures. For example, Kam and Meyer (2015) recently examined the broad implications of item valence (i.e., standard- and reverse-scoring) for, both factor loading-patterns and bivariate external correlates. Future research should continue to integrate cognitive context of the assessment scenario (including response instructions/item framing) with IRT models sensitive to potential response styles or construct distortion.

Regarding workplace adaptations of FTP, redesigning work to motivate older employees’ may not function as increase of occupational-FTP, rather, as a decrease in waiting costs, as Paglieri observes, “Costs of delay should be taken into account, on par with delay, in determining intertemporal choices. From this viewpoint, refusing to sustain the costs of a delay is not the same thing as devaluing a reward because it is delayed” (Paglieri, 2013, p. 371). A future experimental study examines this possibility (alternative mechanism) with a battery of decisional delay-discounting, psychophysical patience tests, and the FTP questionnaire (see also, Scheibe and Zacher, 2013). Summarizing, the new context of aging workforces and retirees

presents an opportunity for theory elaboration in future research agendas (Fisher and Aguinis, 2017).

## CONCLUSION

The divide between work and retirement scholarship may be a reification of initial schisms between lifespan researches (early childhood vs. gerontological). The current authors concur with Shepard's (1993) articulation of consequential validity regarding unintended consequences of measures, specifically, that it is a "logical extension" (p. 426) of Campbell's (1960) advocacy for rival hypotheses in validity evaluations. Understanding of the aging labor force, by extension, requires a more comprehensive understanding of the motivations for retiring and for continuation. Should longer life expectancies abide the relative-cohort effect, then age-based predictions may depreciate in usefulness amid ever-longer and more complex employment

lives. The contribution of the current experiment's findings is that, not all work redesigns will encourage adequate planners to forego retirement, and not all who continue working past retirement are meaningfully present at work.

## AUTHOR CONTRIBUTIONS

MK designed the experiment, recruited and ran participants, and conducted primary analyses. SE provided advanced-methodological consultancy and conducted expository write-up.

## SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fpsyg.2017.02316/full#supplementary-material>

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# Neurophysiological Markers of Emotion Processing in Burnout Syndrome

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The substantial body of research employing subjective measures indicates that burnout syndrome is associated with cognitive and emotional dysfunctions. The growing amount of neurophysiological and neuroimaging research helps in broadening existing knowledge of the neural mechanisms underlying core burnout components (emotional exhaustion and depersonalization/cynicism) that are inextricably associated with emotional processing. In the presented EEG study, a group of 93 participants (55 women; mean age = 35.8) were selected for the burnout group or the demographically matched control group on the basis of the results of the Maslach Burnout Inventory – General Survey (MBI-GS) and the Areas of Worklife Survey (AWS). Subjects then participated in an EEG experiment using two experimental procedures: a facial recognition task and viewing of passive pictures. The study focuses on analyzing event-related potentials (ERPs): N170, VPP, EPN, and LPP, as indicators of emotional information processing. Our results show that burnout subjects, as compared to the control group, demonstrate significantly weaker response to affect-evoking stimuli, indexed by a decline in VPP amplitude to emotional faces and decreased EPN amplitude in processing emotional scenes. The analysis of N170 and LPP showed no significant between-group difference. The correlation analyses revealed that VPP and EPN, which are ERP components related to emotional processing, are associated with two core burnout symptoms: emotional exhaustion and cynicism. To our knowledge, we are one of the first research groups to use ERPs to demonstrate such a relationship between neurophysiological activity and burnout syndrome in the context of emotional processing. Thus, in conclusion we emphasized that the decreased amplitude of VPP and EPN components in the burnout group may be a neurophysiological manifestation of emotional blunting and may be considered as neurophysiological markers of emotional exhaustion and cynicism. Additionally, we did not observe a decrease in LPP, which may be considered as a marker that significantly differentiates burnout from depression.

**Keywords:** burnout, neurophysiological markers, emotion processing, ERPs, N170, VPP, EPN, LPP

## INTRODUCTION

Studies on burnout syndrome depict the typical characteristics and consequences of long-term work-related stress. Burnout has an impact on the mental and physical health of employees (for a review, see Schaufeli and Enzmann, 1998); as a consequence, it has the serious socio-economic impact of decreased productivity levels, increased rates of resignation and premature retirement (Schaufeli et al., 2009). Therefore, there is a need for empirical research that provides answers related to the neuronal mechanisms of burnout and further implication of this knowledge in interventive programs. Burnout has three main components: a state of emotional exhaustion, depersonalization or cynicism and lower personal accomplishment (Maslach and Leiter, 1997, 2008). The existing studies on burnout analyze the negative effects of long-term work-related stress on individuals' functioning in terms of the complex emotional and cognitive consequences (e.g., Maslach and Leiter, 1997, 2008; Schaufeli and Greenglass, 2001; Sandström et al., 2005; Van der Linden et al., 2005; Schmidt et al., 2007; Oosterholt et al., 2012, 2014; Deligkaris et al., 2014; Golkar et al., 2014). Together, the cognitive and emotional dysfunctions caused by long-term stress can lead to impaired ability to regulate emotional tension and cope with stressors. Studying the relationship between emotional exhaustion and emotional regulation in burnout subjects, Golkar et al. (2014) observed that burnout individuals have impaired ability to downregulate negative emotions, which can lead to an increased susceptibility to depression.

Besides the commonly used subjective measures, in burnout research there is a limited number of studies dedicated to behavioral (e.g., Sandström et al., 2005; Oosterholt et al., 2012; Bianchi and Laurent, 2015), neurophysiological (Luijcklaar et al., 2010; Golkar et al., 2014; Sokka et al., 2014, 2017; Golonka et al., 2017) and neuroimaging outcomes (Durning et al., 2013; Golkar et al., 2014; Tei et al., 2014).

Neurophysiological and neuroimaging studies provide evidence for impairments in cognitive and emotional processing in burnout that helps broaden our knowledge of the mechanisms underlying emotional exhaustion and depersonalization/cynicism, which are the core components of burnout. Studies that employ functional magnetic resonance imaging (fMRI) have indicated that burnout is associated with changes in functional brain anatomy. For example, Durning et al. (2013) observed that higher burnout scores are associated with reduced functional activation in the right dorsolateral prefrontal cortex (rDLPFC), the medial frontal gyrus (MFG) and increased activation of the right posterior cingulate cortex (rPCC) during performance of cognitive tasks. Tei et al. (2014) revealed that burnout severity is explained by decreased empathy-related brain activity, proving that emotional functioning is altered in burnout groups. Golkar et al. (2014) observed that functional connectivity between the amygdala and the anterior cingulate cortex (ACC) is weaker in burned-out subjects; this is in contrast to stronger connectivity from the amygdala to the cerebellum and the insular cortex, which may have further consequences for regulating mechanisms and

reactive and proactive control in burnout subjects (Golonka et al., 2017).

In addition to fMRI, other neuroimaging techniques, such as analyzing event-related potentials (ERPs) in EEG recordings, enable investigation of the time course of this information processing in the brain. Existing studies on ERP components in burnout are still very limited (i.e., Luijcklaar et al., 2010; Sokka et al., 2014, 2017; Golonka et al., 2017), but their findings are promising and contribute to the description of the neural mechanisms underlying burnout syndrome.

## Emotional Consequence of Burnout

Burnout is inextricably linked to significant emotional consequences. Core burnout components are *emotional exhaustion* and specific negative emotions and attitudes toward work (labeled as *cynicism*) and other people (labeled as *depersonalization*). These aspects are well recognized in research that employed subjective measures (i.e., Maslach et al., 1996; Maslach and Leiter, 1997, 2004, 2008; Mojsa-Kaja et al., 2015).

Burnout syndrome is associated with emotional exhaustion and the tendency to experience negative emotions. Additionally, emotional disengagement and distancing oneself from work and co-workers/clients/patients, etc. may be seen as an adaptive defense mechanism that helps in coping with difficult work-related circumstances. Hypothetically, this defense mechanism may reduce the anxiety associated with, for example, an overwhelming workload, a lack of control, insufficient reward, an unsupportive community, unfairness, conflicting values, etc.; however, it usually leads to further problems due to subsequent social and job consequences (e.g., deterioration in interpersonal relations and lower professional efficacy). Even if the attitude typical of depersonalization/cynicism brings temporal profits, it lacks long-lasting benefits.

Taking into account the state of emotional exhaustion, depletion and decline in individual functioning in burnout, we hypothesized that emotion processing in burnout subjects would differ, compared to a control group.

## Emotion Processing and Its Neurophysiological Indicators

Regarding the strong emotional component in burnout syndrome, the processing of emotion-related information remains particularly interesting. Due to the high adaptive importance of emotional stimuli, they seem to interfere with other kinds of stimuli (Ramos-Loyo et al., 2013). For the efficient functioning (defined as fast and competent reactions) which is crucial in a social and work environment, it is particularly important to direct attentional resources to the most important stimuli. A very complex and demanding work environment usually continuously exploits cognitive and emotional resources. Regarding long-term work-related stress, the effect of overstimulation and work overload may significantly impair the functioning of the individual.

In the presented study, we focus on analyzing the processing of affect-related information based on the well-documented ERP

indicators of emotional information processing (e.g., Eimer and Holmes, 2002; Batty and Taylor, 2003; Schupp et al., 2003; Moser et al., 2006; Olofsson et al., 2008), compared between two groups: burnout subjects and healthy controls.

Research on emotion processing typically implements two types of stimuli: images of emotional facial expressions and natural scenes (Wangelin et al., 2012). In our study, we implement both these types of stimuli to test whether burnout symptoms are related to altered or impaired response to affect-related events. We assumed that the state of emotional depletion might be related to blunted neurophysiological response to a specific type of information—stimuli that have emotional valence. Thus, our main hypothesis states:

*H: Burnout subjects demonstrate a weaker response to affect-evoking stimuli.*

## ERPs Related to a Facial Recognition Task: N170 and VPP

The mechanism of face perception has been broadly studied in brain research. Facial expression is a fundamental stimulus that conveys socially and emotionally relevant information that is critical for adaptive functioning in social environments. Given this crucial significance of faces, it is not surprising that the study of human face processing is one of the most intensively explored areas in visual cognition and emotion research.

The ERP components associated with face perception have been described in many experiments. A substantial body of research shows that pictures of faces evoke a larger ERP of negative polarity between 130 and 200 ms than other objects (Rossion and Jacques, 2008; Eimer, 2011). This ERP component peaks at occipitotemporal electrode sites about 170 ms after stimulus onset and has been called the N170 (Bentin et al., 1996). According to Schweinberger (1996), N170 is reduced if the face is perceptually degraded. N170 is temporally congruent with a positive-going ERP component and has maximum amplitude over central scalp electrodes; this is called vertex positive potential (VPP) (Bötzel and Grüsser, 1989). Joyce and Rossion (2005) stated that N170 and VPP have the same brain generators and observed that their amplitudes fluctuate conversely. These two ERP components show similar properties, namely greater sensitivity to faces than to other types of stimuli (Joyce and Rossion, 2005; Eimer, 2011).

Abnormalities in face processing measured by VPP and/or N170 have been studied in a wide range of psychiatric and neurological disorders, including bipolar disorder, depression, social phobia, schizophrenia, autism spectrum disorders and Parkinson's disease (for a review, see Feuerriegel et al., 2015). Despite some inconsistencies in findings, the growing body of research shows that these ERPs might play the role of neurophysiological markers that reflect social impairments in these disorders. For example, Foti et al. (2010) showed that in major depressive disorder, electrocortical response to emotional faces indexed by VPP was absent.

No studies have yet investigated VPP/N170 modulation by burnout. Therefore, our hypotheses are based on the close relation between burnout and depressive symptoms. As the study

sample is not clinical, we expect to observe a significant decline in VPP amplitude:

*H1: Burnout subjects present declined VPP amplitude to emotional faces.*

As it is assumed that N170 and VPP are not only evoked by the same brain source, but also have converse fluctuation and demonstrate identical functional properties (Joyce and Rossion, 2005), no additional hypotheses on N170 were formulated.

## ERPs Related to Passive Picture Viewing: EPN and LPP

Many studies have examined ERP responses to complex images from the International Affective Picture System (IAPS). IAPS consists of stimuli standardized for the basic dimensions of emotion (arousal and valence) which categorize stimuli as pleasant, neutral, or unpleasant; these are used to study both emotion and emotion regulation in adults (Lang et al., 1999; Olofsson et al., 2008).

When analyzing processing of affective pictures, there are two main ERP components which are sensitive to motivational salience of stimuli: early posterior negativity (EPN) and late positive potential (LPP). Moreover, their amplitude variance has been linked with the changes in allocating attentional resources (Schupp et al., 2000, 2006, 2012; Hajcak and Dennis, 2009). It has been consistently observed that EPN and LPP amplitudes increase when stimuli are perceived as more significant; this was observed in processing pleasant and unpleasant compared to neutral IAPS stimuli (Schupp et al., 2006; Hajcak and Dennis, 2009).

The EPN component is observed between 150 and 350 ms; the LPP component is observed between 300 and 700 ms over centroparietal regions (Schupp et al., 2000, 2006). Sabatinelli et al. (2013) analyzed the associations between early and late ERPs using functional MRI signals of cortical and subcortical brain areas. They found that emotional modulation of the LPP correlates with subcortical and visual cortical activation; emotional modulation of the EPN only (and modestly) correlates with subcortical and corticolimbic brain areas. These findings suggest that EPN may refer to motivational relevance, while LPP refers to emotional discrimination. Schupp et al. (2004) point out that, at the functional level, enhanced EPN reflects enhanced perceptual processing and may be mediated by the amygdala activity generated by emotional pictures. Regarding burnout subjects' disengagement, emotional blunting and being "uninvolved," it may be hypothesized that:

*H2: Burnout subjects reveal decreased EPN amplitude when processing emotional scenes.*

This hypothesis is derived from our general assumption about weaker emotional response in burnout subjects. However, when analyzing the relation between burnout and depression and anxiety (Schaufeli and Greenglass, 2001; Bianchi and Laurent, 2015; van Dam, 2016), a contradictory hypothesis could be formulated. In neuroimaging studies on depression, the decreased regulatory effect of the cortical areas over the



limbic regions is emphasized. Positron emission tomography (PET) and fMRI studies have shown decreased activation of cortical regions (Ketter et al., 1996; Drevets et al., 1997; Mayberg et al., 1999) and increased activation of limbic structures (Mayberg et al., 1999; Drevets, 2000; Sheline et al., 2001). Anand et al. (2005) found that depressed patients had greater activation of ACC and limbic regions (amygdala, paleostriatum, and medial thalamus). Additionally, they observed decreased cortico-limbic correlations in depressed subjects, compared to healthy individuals. This may lead to the conclusion that greater amygdala activity elicits greater neurophysiological response and greater EPN. Similarly, anxiety-prone subjects reveal increased activation in the amygdala and insula (Stein et al., 2007), which may also be reflected in higher EPN amplitude. On the other hand, depression may be also related to blunted amygdala response. Thomas et al. (2001) observed that anxiety disorder was associated with augmented amygdala response to fearful faces, compared to the blunted amygdala response in depression.

Moreover, clinical studies have revealed that highly anxious individuals demonstrate greater LPP amplitude during the presentation of negative pictures, while individuals with clinical depression showed a decrease of LPP amplitude (Hajcak, 2012). Regarding burnout's strong associations with depressive symptoms (emotional exhaustion and cynicism/depersonalization) and taking into account the characteristics of LPP (i.e., sensitivity to negative valence of pictures) we hypothesized that:

*H3: Burnout subjects reveal decreased LPP amplitude when processing emotionally negative scenes.*

## MATERIALS AND METHODS

### Participants

The study was conducted on an initial group of 100 participants aged 25–55 years. The inclusion criteria for the study were employee status (currently employed, active day-shift workers with higher education), right-handedness, correct or corrected-to-normal vision, not pregnant, addiction free and no history of neurological or psychiatric diseases. The initial group of 100 participants was selected based on the results of the Maslach Burnout Inventory – General Survey (MBI-GS; Maslach et al., 1996) and the Areas of Worklife Survey (AWS; Leiter and Maslach, 2004). The controls were matched with subjects with high scores on burnout, taking into account the latter's demographic characteristics.

The non-clinical burnout group had high scores in the exhaustion and cynicism subscales and low scores in the self-efficacy subscale (see **Table 1**) and in at least three of the six AWS subscales: workload, control, reward, community, fairness, and values. Low scores in AWS reflected a larger mismatch between individuals' values, needs and work environment. This scale was introduced as a controlling tool to ensure that deterioration in subjective well-being was linked to work-related stress. Inversely,

**TABLE 1 |** The means (M) and standard deviations (SD) for the burnout and control groups on burnout symptoms (exhaustion, cynicism, efficacy), work-life areas, age and independent-sample *t*-test between burnout and controls.

	Burnout (N = 47) M (SD)	Control (N = 46) M (SD)	t-value (df = 91)
<b>AGE</b>			
	37.28 (7.75)	34.78 (8.57)	1.47
<b>MBI-GS</b>			
Exhaustion	4.17 (0.97)	1.93 (0.72)	12.62 ***
Cynicism	4.04 (0.83)	1.47 (0.57)	17.49 ***
Efficacy	3.32 (1.08)	4.62 (0.62)	−7.11 ***
<b>AWS</b>			
Workload	2.28 (0.80)	3.21 (0.82)	−5.49 ***
Control	2.57 (0.98)	3.45 (0.67)	−5.00 ***
Rewards	2.48 (0.74)	3.43 (0.61)	−6.77 ***
Community	2.72 (0.95)	3.63 (0.66)	−5.40 ***
Fairness	2.00 (0.66)	3.09 (0.55)	−8.69 ***
Values	2.76 (0.66)	3.64 (0.55)	−6.99 ***

Asterisks denote significant difference (\*\*\*)  $p < 0.001$ .

the second group had lower scores in the exhaustion and cynicism subscales, higher scores in the self-efficacy subscale, and medium to high scores in AWS.

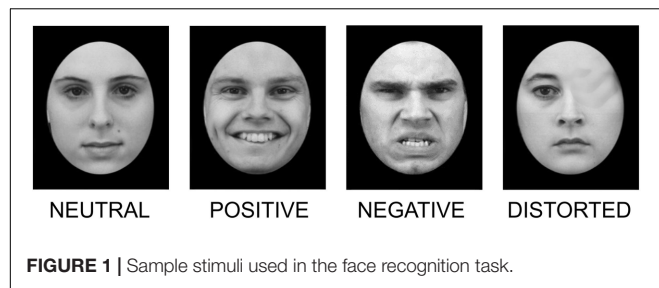
Eventually, due to the poor quality of the EEG data (i.e., extensive muscle and ocular artifacts), 93 subjects were included in the study sample. The results of the burnout group ( $N = 47$ ; 28 women) and the demographically matched control group ( $N = 46$ ; 27 women) were analyzed. The descriptive statistics of the burnout and control groups are presented in **Table 1**, including burnout symptoms, work-life areas and independent *t*-tests with *p*-values. The burnout group varied significantly from the control group, scoring higher on exhaustion and cynicism and significantly lower on efficacy and all AWS dimensions.

This study was carried out in accordance with the recommendations of the APA Ethics Code. All subjects gave written informed consent in accordance with the Declaration of Helsinki. The study protocol was approved by the Bioethics Commission at Jagiellonian University. The subjects were paid for participation in the study.

### Experimental Procedure

Participants were presented with two experimental tasks, prepared and generated using E-Prime 2.0 ©(Psychology Software Tools): a facial recognition task and viewing of passive pictures. Stimuli were presented on a 17" LCD monitor placed at a viewing distance of approximately 60 cm.

In the first task, based on the procedure by Schacht and Sommer (2009), each trial consisted of an oval-shaped black and white face presented on a black background. All the faces were balanced according to their color and tone properties. Stimuli were prepared based on faces from the NimStim dataset (Tottenham et al., 2009). The presented faces fall into one of four categories depending on their visual features: faces with either neutral, negative, or positive emotional expression and faces with a morphological distortion (e.g., a missing eye or nose)



(Figure 1). To ensure participants' engagement in the task, they were presented with a masking instruction to assess whether the face was morphologically correct ("press 1") or distorted ("press 2"). The task consisted of four blocks of 64 stimuli each. All stimuli were presented until the response was submitted; then, a blank screen with a fixation cross was displayed for 1,000–2,000 ms, mean 1,500 ms (Schacht and Sommer, 2009).

For the second task, 120 pictures were selected from the International Affective Picture System (IAPS; Lang et al., 1999): 40 depicted pleasant scenes (e.g., kittens and picturesque scenes), 40 depicted neutral scenes (e.g., cup and chair), and 40 depicted unpleasant scenes (e.g., mutilated bodies and dead animals)<sup>1</sup>. Prior to each picture, a white fixation cross was presented on a black screen for 1,000 ms. Each picture was then displayed in color for 2,000 ms.

After completion of experimental tasks, participants were asked to rate the pictures they had been presented with (both IAPS and faces) on a scale from 1 to 9, where 1 corresponded to very negative, 5 to neutral, and 9 to very positive.

## Data Recording and Acquisition

EEG data was recorded and processed in accordance with guidelines for EEG studies (Keil et al., 2014). Continuous dense-array EEG data (HydroCel Geodesic Sensor Net, EGI System 300; Electrical Geodesic Inc., Eugene, OR, United States) was collected from a 256 channel EEG at a sampling rate of 250 Hz (band-pass filtered at 0.01–100 Hz with a vertex electrode as a reference) and recorded with NetStation Software (Version 4.5.1, Electrical Geodesic Inc., Eugene, OR, United States). The impedance for all electrodes was kept below 50 k $\Omega$ . The offline data analysis was conducted with the open source EEGLAB toolbox<sup>2</sup> (Delorme and Makeig, 2004). Data was digitally filtered to remove frequencies below 0.5 Hz and above 35 Hz. Average reference was recomputed and bad channels were automatically removed by kurtosis measures with a threshold value of 5 standard deviations.

<sup>1</sup> The IAPS pictures used were **pleasant** (1050, 1200, 1300, 2730, 2800, 3010, 3160, 3170, 3230, 3261, 3300, 3350, 6200, 6210, 6230, 6244, 6250, 6312, 6313, 6370, 6550, 6560, 6571, 6821, 9040, 9042, 9050, 9253, 9300, 9400, 9405, 9410, 9433, 9520, 9600, 9611, 9810, 9910, 9920, 9921), **neutral** (2190, 2320, 2570, 2840, 2880, 5390, 5532, 5534, 5731, 5740, 5800, 5900, 7000, 7002, 7004, 7006, 7009, 7010, 7025, 7034, 7035, 7040, 7041, 7060, 7080, 7090, 7100, 7130, 7140, 7150, 7175, 7190, 7217, 7224, 7233, 7235, 7491, 7550, 7595, 7950), and **unpleasant** (1463, 1601, 1710, 1811, 2000, 2070, 2080, 2091, 2092, 2165, 2340, 2345, 4002, 4290, 4532, 4572, 4608, 4658, 4659, 4660, 4664, 4810, 5470, 5621, 5626, 5628, 7325, 8021, 8032, 8080, 8200, 8210, 8280, 8320, 8370, 8400, 8461, 8465, 8490, 8540) (Foti et al., 2009).

<sup>2</sup> <http://scn.ucsd.edu/eeGLab>

**TABLE 2** | The means (M) and standard deviations (SD) for the ratings of IAPS pictures and faces for the burnout and control group (ratings refer to a scale ranging from 1-very negative to 9-very positive).

	Burnout (N = 47) M (SD)	Control (N = 46) M (SD)
<b>IAPS</b>		
Neutral	5.19 (0.59)	5.23 (0.54)
Negative	2.21 (0.71)	2.05 (0.80)
Positive	7.29 (1.03)	7.54 (0.84)
<b>FACES</b>		
Neutral	4.94 (0.35)	6.75 (0.94)
Negative	3.74 (0.93)	3.67 (0.96)
Positive	6.29 (1.08)	5.01 (0.65)

Next, continuous data was visually inspected to remove remaining artifactual data manually, i.e., channels or time epochs containing high-amplitudes, high-frequency muscle noise, and other irregularities.

Independent component analysis was used to remove artifacts from data. Due to the large number of channels, decomposition of EEG data with the Infomax algorithm was preceded with Principle Component Analysis. Fifty independent components were extracted and visually inspected for each subject. Based on the spatiotemporal pattern (Bell and Sejnowski, 1995; Jung et al., 2000), components recognized as blinks, heart rate, saccades, muscle artifacts, or bad channels were removed. Missing channels were interpolated and ICA weights recomputed.

For both tasks, the EEG was segmented for each trial beginning 200 ms before each stimulus onset and continuing for 1,200 ms (i.e., for 1,000 ms following the response); a 200 ms window (from –200 to 0 ms prior to stimulus onset) served as the baseline.

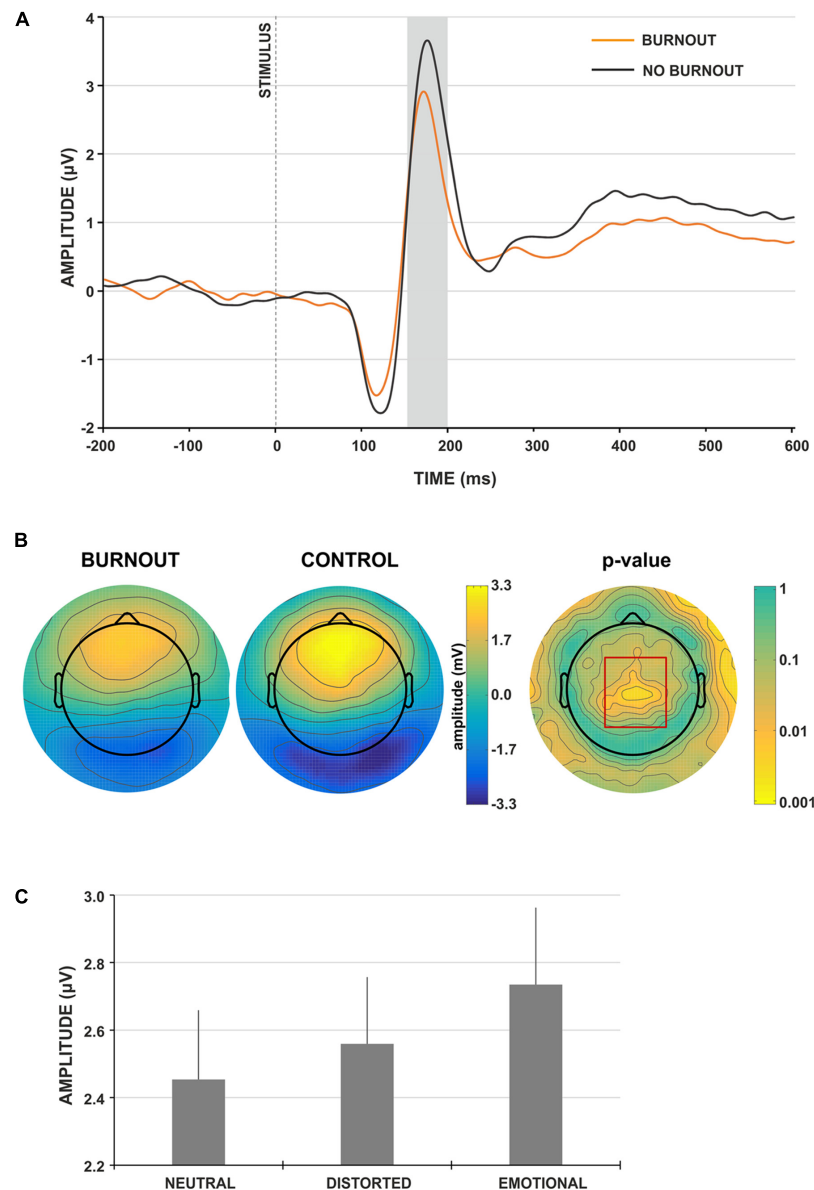
For the face recognition task, the VPP component was scored as the maximum amplitude in the 150–200 ms time-window over Cz electrodes site; N170 was scored as the minimum amplitude in the 150–200 ms time-window over O1, O2, P7, and P8 electrodes sites. For the passive picture viewing, EPN was scored as the minimum amplitude in the 200–300 ms time-window and LPP was scored as the mean amplitude in the 400–1,000 ms time-window (both were measured at CPz electrodes site).

## RESULTS

### Stimuli Ratings

The ratings of IAPS pictures and faces (Table 2) were submitted to independent repeated measures ANOVAs with group (two levels: burnout and control) and stimulus type (three levels: neutral, negative, positive) factors. There was no significant between-group difference for IAPS pictures [ $F_{(1,91)} = 0.266$ ,  $p = 0.607$ ] or faces [ $F_{(1,91)} = 2.406$ ,  $p = 0.124$ ]. No significant difference between the burnout group and the control group was observed.

There were significant differences in the ratings of the IAPS pictures [ $F_{(2,182)} = 957.97$ ,  $p < 0.0001$ ] and faces



**FIGURE 2 |** Face-locked ERP characteristics. **(A)** Grand-average face-locked VPP component at electrode site Cz for burnout (orange line) and control (gray line) group. The gray rectangle denotes the time-window selected for the ERP analyses. **(B)** Scalp topography for the time-window of the VPP component for burnout and control group. The red rectangle denotes the region showing significant between-group difference. **(C)** Grand-average amplitudes of the VPP component for neutral, distorted and emotional faces. Vertical bars denote standard errors.

$[F_{(2,182)} = 234.60, p = 0.0001]$  between all stimulus categories (neutral, negative, and positive). No interaction effects were found.

## Psychophysiological Results of Face Categorization Task

The values of N170 (separately extracted from O1, O2, P7, and P8 electrodes sites) and VPP (extracted from Cz electrodes site) were submitted to independent repeated measures ANOVAs with group (two levels: burnout and control) and stimulus type (three levels: neutral, distorted, and emotional faces) factors. In all

the performed analyses, faces with positive and negative facial expressions were placed in one category called “emotional faces”; thus, instead of four stimulus types, we operated on three separate categories: neutral, emotional, and distorted.

## N170 ERP Component

The analysis of N170 showed no between-group difference, [O1 electrodes site:  $F_{(1,91)} = 0.064, p = 0.801$ ; O2 electrodes site:  $F_{(1,91)} = 0.025, p = 0.875$ ; P7 electrodes site:  $F_{(1,91)} = 0.082, p = 0.776$ ; P8 electrodes site:  $F_{(1,91)} = 0.166, p = 0.685$ ], thus we did not explore the N170 component further.

**TABLE 3 |** Pearson correlation coefficients ( $r$ ) between subscales of MBI-GS and amplitude of VPP component in face categorization task in three categories of stimuli: neutral, distorted and emotional.

	Categories of stimuli		
	Neutral	Distorted	Emotional
<b>MBI-GS subscales</b>			
Exhaustion	-0.177	-0.222*	-0.156
Cynicism	-0.291*	-0.229*	-0.243*
Efficacy	0.174	0.109	0.168

Asterisks denote statistical significance (\* $p < 0.05$ ).

### VPP ERP Component

The analysis of the VPP component revealed the main effect of group type; the amplitude of the VPP component was significantly lower for participants presenting burnout syndrome [ $F_{(1,91)} = 7.546$ ,  $p = 0.007$ ,  $\eta_p^2 = 0.077$ ; **Figures 2A,B**]. **Figure 2A** presents the grand-average face-locked VPP component at electrode site Cz, where significantly lower VPP amplitude in burnout subjects is observed. The lower VPP activity in burnout is also illustrated on topographic activity maps (**Figure 2B**).

Moreover, the main effect of stimulus type was observed [ $F_{(2,182)} = 6.016$ ,  $p = 0.003$ ,  $\eta_p^2 = 0.062$ ]. The *post hoc* analysis showed that the amplitude of VPP for emotional faces was significantly higher (**Figure 2C**), compared to neutral and distorted faces ( $p < 0.001$  and  $p < 0.05$ , respectively). No interaction effect of group and stimulus type was observed.

To explore further the relationship between the amplitude of the VPP component for different stimuli types, correlation analysis with MBI subscales was performed; this showed a consistent, statistically significant relation between VPP amplitude for all stimuli types and MBI-cynicism scores (**Table 3**). Namely, the higher the MBI-cynicism score, the lower the VPP amplitude for neutral, distorted and emotional faces.

### Psychophysiological Results of the IAPS Task

The values of the EPN and LPP components extracted from CPz electrodes were submitted to independent repeated measures ANOVAs with group (two levels: burnout and control) and stimulus type (three levels: neutral, positive, and negative) factors.

The LPP component was not sensitive to the group factor [ $F_{(1,91)} = 0.381$ ,  $p = 0.538$ ,  $\eta_p^2 = 0.004$ ]; thus, it was not analyzed further. For the EPN component, we observed the main effect of group type (**Figure 3A**) and the amplitude of EPN was significantly more negative for participants not presenting burnout syndrome [ $F_{(1,91)} = 4.195$ ,  $p = 0.043$ ,  $\eta_p^2 = 0.044$ ]. Moreover, the main effect of stimulus type was observed [ $F_{(2,182)} = 8.892$ ,  $p < 0.001$ ,  $\eta_p^2 = 0.089$ ]. The *post hoc* analysis revealed that the amplitude of EPN for neutral IAPS pictures was significantly less negative, compared to EPN for negative ( $p < 0.001$ ) and positive ( $p < 0.05$ ) IAPS pictures (**Figure 3B**). No interaction effect of group and stimulus type was observed.

To explore further the relationship between the amplitude of the EPN component for different stimuli types and burnout syndrome, correlation analysis with MBI subscales was performed: it showed a consistent, statistically significant relation between the EPN amplitude for negative and positive IAPS pictures and MBI exhaustion and cynicism scores (**Table 4**). Namely, the higher the MBI exhaustion and cynicism scores, the less negative the EPN amplitude for negative and positive IAPS pictures.

## DISCUSSION

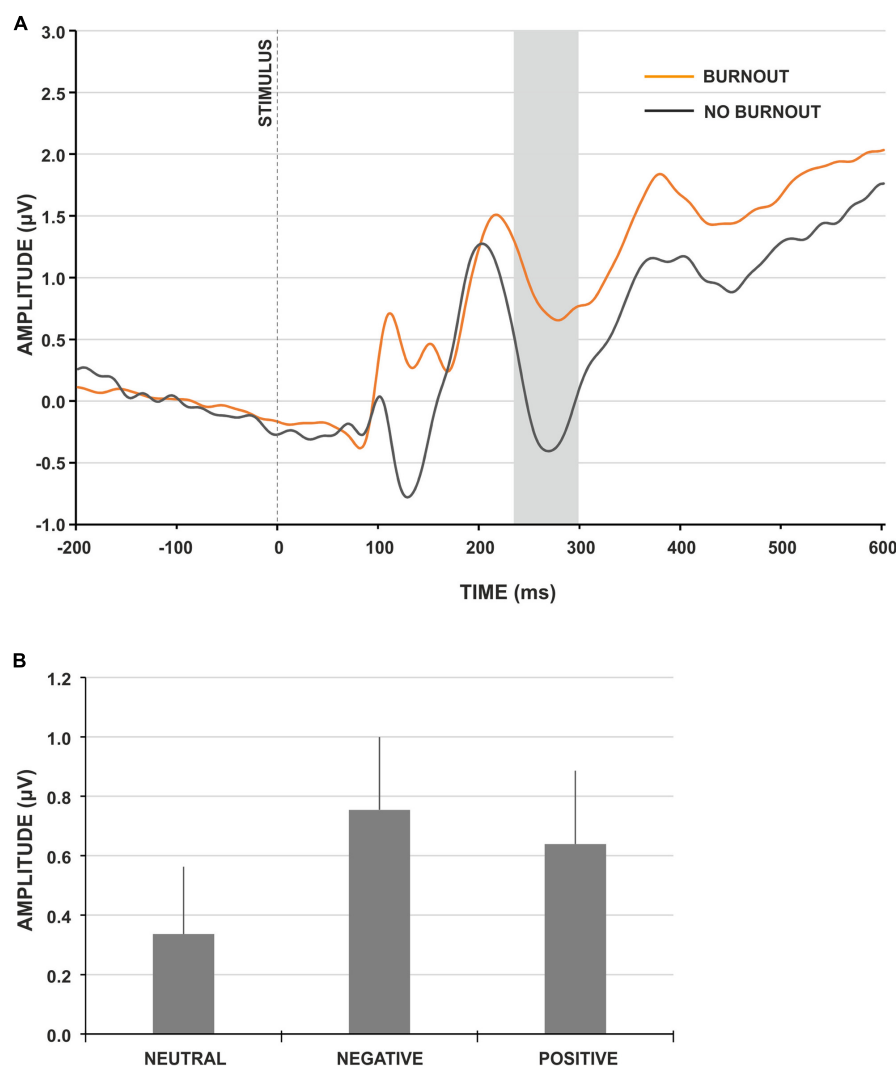
The study results partially confirm the presented hypotheses. Burnout subjects demonstrate a weaker response to affect-evoking stimuli (general hypothesis); this is indexed by a decline in VPP amplitude to emotional faces (hypothesis 1) and decreased EPN amplitude in processing emotional scenes (hypothesis 2). The assumption of a possible decrease in LPP amplitude in response to negative stimuli in burnout subjects (hypothesis 3) cannot be supported in the light of the presented results.

In face categorization tasks, the decrease of VPP amplitude indicated weaker neurophysiological response in burnout subjects, compared to healthy controls. A decreased response was observed in each face stimuli category (emotional, neutral, and distorted). This outcome is consistent with the study of Tei et al. (2014), in which they showed that burnout is associated with reduced activity in empathy-related brain areas, weakened emotional regulation and difficulty in recognizing emotional state. As VPP is related to the perceptual processing and structural encoding of facial stimuli, the decreased VPP may indicate a weaker response to face stimuli among burnout subjects. This might have further social consequences in work-related contexts and may be related to weaker responses to emotional contexts, which appear to be the core characteristic of cynicism and depersonalization. However, it is worth noting that when assessing pictures as negative, positive, or neutral, the rating scores of participants with burnout did not differ from those of the controls. Thus, careful and conscious perception of face expressions seems to be intact in burnout individuals.

This tendency is also observed in passive viewing of natural scenes in three stimuli categories: positive, negative, and neutral scenes. The response to natural scenes (indexed by EPN) was significantly weaker (less negative) in the burnout group. As EPN is related to automatic attentional allocation (Schupp et al., 2006), it may be hypothesized that in the studied tasks the costs of long-term work-related stress are observed in very early automatic and unconscious stages.

Thus, similar conclusions emerge for the two kinds of affect-related stimuli (faces and natural scenes) in the two types of affective information processing (active and passive): the initial, early phase of affective information processing is impaired and weakened. On the contrary, LPP (described as selective attention toward motivationally salient information, representation of stimuli in working memory (Donchin and Coles, 1988) and as a neural marker of emotion regulation (Qi et al., 2016) did not





**FIGURE 3 |** IAPS-locked ERP characteristics. **(A)** Grand-average IAPS-locked EPN component at electrode site CPz for burnout (orange line) and control (gray line) group. The gray rectangle denotes the time-window selected for the ERP analyses. **(B)** Grand-average amplitudes of the EPN component for neutral, negative and positive IAPS pictures. Vertical bars denote standard errors.

reveal any differences. Again, the electrophysiological results are in line with the data obtained from the rating of pictures. The similar rating results of IAPS pictures shows that there was no significant difference between the burnout group and the control group on the level of conscious perception. The obtained results lead to a similar observation as was found in error processing. The differences in the very early stages of information processing may not influence further processing, but may be related to the additional effort required to achieve the same results. This may suggest the compensatory effort that we described in our previous findings and may lead to similar conclusions about the possible “hidden costs” of burnout (Golonka et al., 2017).

Comparing the presented findings with our previous study on cognitive impairments in burnout (Golonka et al., 2017), an interesting aspect may be highlighted: in the case of external affect-related stimuli, the response in the early

**TABLE 4 |** Pearson correlation coefficients ( $r$ ) between subscales of MBI-GS and amplitude of EPN component for three categories of IAPS pictures: neutral, negative, and positive.

	Categories of IAPS pictures		
	Neutral	Negative	Positive
<b>MBI-GS subscales</b>			
Exhaustion	0.172	0.226*	0.229*
Cynicism	0.174	0.229*	0.206*
Efficacy	-0.092	-0.111	-0.125

Asterisks denote statistical significance (\* $p < 0.05$ ).

stage of information processing is weaker among burnout subjects, compared to healthy controls. This tendency changes if the subject refers to internal and individual contexts when committing an error: the early phase of information

processing is significantly enhanced (indexed by increased error related negativity amplitude—ERN). In this situation, the decrease in neurophysiological response is observed later (indexed by the lower amplitude of the late positivity ERP component—Pe); this could possibly lead to difficulties in proactive control and active goal maintenance.

The decrease in neurophysiological response observed among burnout subjects when processing emotional information may be particularly interesting in the context of correlation analyses (see **Tables 3, 4**). The correlations consistently show a significant association between analyzed ERP components and two core burnout symptoms (emotional exhaustion and cynicism), but not with efficiency. The amplitude of VPP is negatively related to cynicism in all stimuli categories (neutral, distorted and emotional) and with emotional exhaustion in distorted faces: the higher the burnout scores, the weaker the neurophysiological response. Similarly, EPN is associated with emotional exhaustion and cynicism: the correlation coefficients with negative and positive IAPS stimuli are positive, but—keeping in mind that we are analyzing negative depletion—it may be assumed that the higher the burnout scores on exhaustion and cynicism, the less negative the EPN component that is observed.

In the context of the important debate on the difficulties related to differentiating burnout from closely related states and disorders (mainly depression and anxiety, e.g., Korczak et al., 2010; Golonka et al., 2014; Bianchi and Laurent, 2015), it is particularly important to discuss discriminative points. Emotion processing in burnout and depression show some common features: in both cases, the response to affect-evoking stimuli is weaker. However, from a more detailed perspective, we can indicate some important differences: the deficits in emotion processing are noticed only in the early stage of this process (decreased VPP, EPN), but not in further processing (no changes in LPP), while in depression both components are amplified. Interestingly, in the case of the LPP component, burnout remains “in between” anxiety and depression: anxious individuals tend to demonstrate larger LPP amplitude, while individuals with clinical depression demonstrate the opposite (Hajcak, 2012).

Regarding the limitations of the study, the weaker neurophysiological response that is observed in the burnout group may be considered both as a burnout marker and as the result of changes observed on behavioral and subjective levels, i.e., specific attitudes and behaviors linked to emotional exhaustion, cynicism and depersonalization. This is still an essential issue in burnout research. An answer may emerge from longitudinal studies, but considering the complexity and fluctuating nature of burnout syndrome, it is highly problematic to design a longitudinal study on burnout.

## CONCLUSION

The obtained results are further evidence for impaired stimuli processing in individuals presenting burnout symptoms.

Burnout subjects reveal impairments in early stages of emotion information processing in two different categories of stimuli: faces and natural scenes.

The correlation analyses revealed that ERP components related to emotional processing (VPP and EPN) are associated with two core burnout symptoms: emotional exhaustion and cynicism.

Event-related potentials that differentiate processing of affect-related information between burnout and controls (VPP and EPN) may be potential indicators of burnout syndrome. We hypothesize that the decreased amplitude of VPP and EPN components in the burnout group may be the neurophysiological manifestation of emotional blunting and may be considered as neurophysiological markers of emotional exhaustion and cynicism. Additionally, LPP amplitude, which does not differ between burnout individuals and controls, may be a diagnostic criterion that differentiates burnout from depression and anxiety disorders.

The presented findings contribute to depicting neurophysiological outcomes as indicators of burnout syndrome. This might help to improve the diagnostic process of burnout and lead to a more precise description of the cognitive and emotional mechanisms underlying burnout syndrome.

## AUTHOR CONTRIBUTIONS

KG and MG: substantial contributions to the conception and design of the work; acquisition, analysis, interpretation of data, drafting the work and revising it critically; final approval of the version to be published; agrees to be accountable for all aspects of the work. JM-K: substantial contributions to the conception and design of the work; analysis, interpretation of data, drafting the work and revising it critically; final approval of the version to be published; agrees to be accountable for all aspects of the work. KP: substantial contributions to acquisition, analysis, drafting the work and revising it critically; final approval of the version to be published; agrees to be accountable for all aspects of the work. TM: substantial contributions to the conception and design of the work; drafting the work and revising it critically; final approval of the version to be published; agrees to be accountable for all aspects of the work.

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**Conflict of Interest Statement:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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# The Psychology of Sustainability and Sustainable Development for Well-Being in Organizations

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## INTRODUCTION

Just as the 21st century as a whole is characterized by complexity (Landy and Conte, 2016), acceleration (Rosa, 2013), change (Weiten et al., 2014), and globalization (Savickas, 2011; Blustein, 2013; Guichard, 2013), so the labor market is characterized by insecurity, economic instability, and ongoing turbulence (Blustein, 2011; Savickas, 2011). In this scenario, the well-being of individuals and organizations is particularly at risk (Van den Heuvel et al., 2010; Di Fabio, 2014b; Di Fabio and Kenny, 2016). Opportunities are accordingly arising for a new area of research and intervention, namely the psychology of sustainability (Di Fabio, 2016a, 2017) in terms of sustainable development for well-being in organizations (Tetrick and Peiró, 2012; Di Fabio, 2016a, 2017; Peiró, 2017).

The United Nations has proposed 17 sustainable development goals: no poverty; no hunger; good health and well-being; quality education; gender equality; clean water and sanitation; affordable and clean energy; decent work and economic growth; industry, innovation, and infrastructure growth; reduction in inequality; sustainable cities and communities; responsible consumption and production; climate action; life below water; life on land; peace, justice, and strong institutions; partnerships to achieve the goals (United Nations, 2015). These goals underline the importance of increasing opportunities for progress and promoting the development of individuals, families, and communities to ensure sustainable development and global growth. This is particularly true also for organizations (Di Fabio, 2017). Well-being is a key sustainable development goal and a fundamental requirement for good health, which is defined as “a state of complete physical, mental, spiritual, and social well-being and not merely the absence of disease or infirmity” (World Health Organization, 1998, 2007; Macik-Frey et al., 2007). Well-being is

therefore an essential part of organizational life and human resources management (De Smet et al., 2007; Di Fabio, 2017).

This extended definition of health sees healthy people as flourishing and resilient workers and emphasizes the importance of a positive work environment in promoting employee health, well-being, and performance, particularly from an organizational positive psychology perspective (Di Fabio, 2014b; Snyder et al., 2014; Di Fabio and Gori, 2016a,b; Di Fabio and Kenny, 2016).

## WELL-BEING AND THE CHALLENGE OF THE PRIMARY PREVENTION APPROACH IN ORGANIZATIONS

Tetrick and Peiró (2012) discuss the passage from ill health to positive health in organizations, as well as the promotion of health, well-being, and flourishing (Hofmann and Tetrick, 2003; Schaufeli, 2004; Macik-Frey et al., 2007). This involves focusing on people's talents and gifts to achieve high performance, satisfaction, and well-being (Quick, 1999). The 21st century has seen the introduction of a positive psychology approach to well-being based on the enhancement of individual and organizational resources (Di Fabio, 2014b, 2017; Di Fabio and Kenny, 2016) to help deal with the complexity of the post-modern era and to sustain the well-being of people, groups, and organizations. This positive psychology approach (Seligman and Csikszentmihalyi, 2000; Seligman, 2002) highlights study success and excellence – rather than anything negative – to promote well-being at the individual, group, organization, and inter-organization level (Henry, 2005). A call is made for cross-level interactions where individual approaches are complemented by collective approaches, combining short-term with long-term goals and outcomes (Hofmann and Tetrick, 2003), and for the introduction of a proactive and anticipatory approach to enhance particularly a primary prevention perspective (Peiró, 2008; Tetrick and Peiró, 2012; Di Fabio and Kenny, 2015, 2016). A shift has occurred from the traditional focus on the elimination of risks to employees' safety and health (Quick and Tetrick, 2003) to a more recent focus on the promotion of growth and positive experiences (Kelloway et al., 2008) with the emphasis on the development of a safe and healthy work environment (Tetrick and Peiró, 2012).

From a primary prevention perspective (Hage et al., 2007; Kenny and Hage, 2009; Di Fabio and Saklofske, 2014b; Di Fabio and Kenny, 2015), increasing the resources of individuals is crucial to building strength (Seligman, 2002; Di Fabio and Palazzeschi, 2012, 2015; Di Fabio et al., 2014, 2016a; Di Fabio, 2015). Primary prevention is aimed at preventing the development of a problem before it starts and, at the same time, promoting psychological well-being. This is achieved by building on the resources and strengths of workers in a positive prevention framework (Di Fabio, 2016a) and can be referred to as positive organizational health psychology (Di Fabio, 2017). Here the focus is on promoting – with interventions at different levels – individual, group,

organizational, and inter-organizational health (Henry, 2005; Di Fabio, 2017). The psychology of sustainability (Di Fabio, 2017) and sustainable development can be seen therefore as a new approach to promoting well-being in organizations (Di Fabio, 2017).

## PSYCHOLOGY OF SUSTAINABILITY AND SUSTAINABLE DEVELOPMENT

The psychology of sustainability and sustainable development (Di Fabio, 2016a, 2017) sees sustainability not only in terms of the ecological and socio-economic environment (Brundtland Report, 1987) but also in terms of improving the quality of life of every human being.

More specifically, the word “sustainable” refers etymologically to something that can be sustained for a period of time. It refers also to something that can be supported, tolerated, or confirmed over time, and that can be stated with certainty. It concerns building on the present in such a way as not to put the future at risk. In politics, technology, the economy, and the ecology, sustainability is about balancing current aims with future aims without jeopardizing the latter (Di Fabio, 2016a; Di Fabio and Maree, 2016).

Traditionally, sustainable development (Brundtland Report, 1987; Harris, 2003) was based on the three “Es” of economy, equity, ecology, and highlighting the right of present as well as future generations to enjoy the environment and natural resources. Psychologically, sustainability is viewed not only in terms of the ecological and social environment but also in terms of promoting the well-being of all people (Di Fabio, 2016a). While the traditional definition of sustainability focuses on avoiding (exploitation, depletion, and irreversible alteration), the new definition focuses on promoting (enrichment, growth, and flexible change) (Di Fabio, 2016a).

According to the traditional point of view, a product is sustainable if it uses increasingly smaller amounts of material; if it is based on renewable and non-polluting processes and materials; if it is not toxic; and if it is easy to maintain, process, dismantle, demolish, dispose of, and recycle (Di Fabio, 2016a). According to the new point of view, the construction and managing of a sustainable project is based not only on using increasingly smaller amounts of resources but also on regenerating resources (Di Fabio, 2016a). A sustainable project is thus accessible, de-constructible, and recoverable and comprises oxygenating processes aimed at promoting individual and organizational well-being (Di Fabio, 2016a; Di Fabio and Maree, 2016). A sustainable project proposes what does not yet exist; it changes what exists according to new goals to achieve new results; and it transfers knowledge and solutions to meet new challenges (Vygotskij, 1934; Di Fabio, 2002, 2014c, 2016a).

Reflexivity processes call for meaning (Guichard, 2004, 2010; Maree, 2013; Di Fabio, 2014c, 2016a) and are important to ensure sustainability in 21st century organizations (Di Fabio, 2014c, 2017). A meta-centric reflexivity perspective for sustainability (Di Fabio, 2016a) has been devised to help these processes.

In details, Di Fabio (2016a) argues that the sustainability of a project from a psychological point of view involves vertical and horizontal axes of reflexivity that can be articulated in terms of micro-dimensions and macro-dimensions. The vertical axis involves the idea of “where I come from,” establishes awareness of “where I am,” and proceeds to “where I will go.” The horizontal axis, conversely, concerns the transition from an egocentric, self-centered position to a new altruistic meta-centric position focused on the promotion of mutual gain, namely gain for others and gain for the self on the one hand, and connectedness focused on reflexivity (from the micro- to the macro-level) on the other hand. Here, the sustainability of a project is based on the identification of the zone of proximal sustainable development for the individual (Vygotskij, 1934; Di Fabio, 2002, 2014c, 2016a). Regarding the horizontal axis of the sustainability of a project, the transition takes place from a micro-level to a macro-level in the relationship between people and their world. The meta-centric reflexivity approach to sustainability (Di Fabio, 2016a) is a further innovation in the psychology of sustainability and sustainable development.

The sustainability of a project is key to well-being from a primary prevention point of view (Di Fabio, 2016a). Developing awareness of this fact is particularly useful not only in relation to the individual but also in relation to the group and the organization. Together with this new awareness is the need to find a balance between “me,” “we,” “organization,” “people,” and “the world.” A meta-centric reflexivity approach to sustainability is therefore essential for well-being in the highly fluid organizations of the 21st century (Guichard, 2013; Di Fabio, 2016a).

A reflective grid for the sustainability of personal projects (adapted by Blanché, 1957) has been developed (Di Fabio, 2016a), but this grid can also be used to improve the sustainability of group and organization projects. The grid permits reflection on the following points: sustainability, no sustainability; crisis of sustainability, no crisis of sustainability; some sustainability, some crisis of sustainability; neither sustainability, nor crisis of sustainability (Di Fabio, 2016a). The use of the grid in organizations at the various levels (individual, group, and organization) can also enhance awareness of the real areas of strength and sustainable development.

## PSYCHOLOGY OF SUSTAINABILITY AND SUSTAINABLE DEVELOPMENT FOR WELL-BEING IN ORGANIZATIONS

The psychology of sustainability and sustainable development (Di Fabio, 2016a, 2017) reinforces the primary prevention approach (Di Fabio and Kenny, 2015, 2016) and fosters well-being in organizations at all the various levels, starting from the worker and going on to the group, to the organization, and to organizational and inter-organizational processes.

In this approach, the meaningfulness of the project plays a new and vital role in its real sustainability (Di Fabio, 2016a), whether

it is a work-life project, a group project, an organizational project, or an inter-organizational project. Projects are more sustainable if they are characterized by coherence, direction, significance, and belonging (Schnell et al., 2013; Di Fabio, 2016a). Here, it is important to stress the passage from the motivational paradigm to the meaning paradigm (Di Fabio and Blustein, 2016). The motivational paradigm concerns intrinsic motivation (doing a job to gain satisfaction), extrinsic motivation (doing a job for reward or to avoid a punishment), and lack of motivation (lack of awareness of the link between behavior and consequences) (Tremblay et al., 2009; Deci and Ryan, 2010). The meaning paradigm concerns understanding how people can establish meaningful lives and meaningful work experiences in the midst of numerous challenges, transitions, and changes. The sustainability of a life-work project needs to be anchored to a meaningful life-work construction (Di Fabio and Blustein, 2016) so that the project can be truly viable thereby enhancing people's involvement and increasing the chances of success.

Regarding sustainable life-work projects, it is important to consider job satisfaction, job crafting, job design, and job redesign very carefully. Job satisfaction refers to the positive emotional state arising from the evaluation of employees' job experience (Locke, 1976) in terms of their relationships with colleagues and supervisors, job rewards in terms of monetary compensation and promotion, and quality of working conditions (Spector, 1997, 2008; Drydakis, 2012, 2015). Job crafting refers to how employees modify the form, scope, and extent of work activities according to their own skills, needs, and preferences (Wrzesniewski and Dutton, 2001) thereby enhancing their well-being in terms of, for example, job satisfaction (Hakanen et al., 2017) and work engagement (Demerouti, 2014). The above concepts of job satisfaction and job crafting are linked also to job design as a process that determines how jobs, tasks, and roles are structured, implemented, and changed, as well as their influence on individuals, groups, and organizational outcomes (Grant and Parker, 2009). Job redesign refers to the modification of the jobs, the tasks, and the conditions of work of employees (Tims and Bakker, 2010) with the aim of improving their work motivation and performance (Le Blanc et al., 2017).

A primary prevention approach aimed at ensuring well-being is the key for sustainability, growth, and success for workers, groups, and organizations (Di Fabio, 2016a, 2017).

Greater organizational awareness of psychologically sustainable development is needed to facilitate positive narratives at the personal, teamwork, and organizational level. Organizational narratives, which are often complicated and negative, can be transformed through processes of reflexivity that can generate meaning, hope, new possibilities, success, and sustainable development (Di Fabio, 2016a, 2017).

According to the psychology of working (Blustein, 2006), work can fulfill different needs such as power needs, relationship needs, and self-determination needs. Relationships can thus be considered a fundamental aspect of working. The relational theory of working (Blustein, 2011) holds that work is an inherently relational act as relationships influence and

shape every decision, experience, and the interaction of individuals in the world of work. Work meets not only the need for survival but also the need for social connection. This underlines the importance of relationships that are built in the reality of each single moment and each day of working life in organizations. Relationships consist also of the meanings constructed and shared in organizational contexts.

The psychology of sustainability and sustainable development thus calls for managerial styles and leadership that recognize and respect the importance of relationships in organizational contexts for the well-being of workers. Leadership includes directing the actions of an organizational group to reach a goal (House et al., 1999; Boyatzis, 2006), whereas management involves mainly organizing and coordinating projects and making projections (Michael et al., 2002; Renko et al., 2015). The literature covers different leadership styles (Eagly et al., 2003) including new leadership styles such as sustainable leadership (Hargreaves et al., 2003; Hargreaves and Fink, 2004), servant leadership (Ehrhart, 2004), authentic leadership (Avolio et al., 2009), ethical leadership (Gallagher and Tschudin, 2010), mindful leadership (George, 2012; Herold, 2013), benevolent leadership (Wang and Cheng, 2010), and decent leadership (Di Fabio, *in press*). Sustainable leadership refers to the shared responsibility to preserve human and economic resources as far as possible and to avoid social and environmental degradation (Hargreaves et al., 2003; Hargreaves and Fink, 2004). Servant leadership refers to putting followers' growth and interests above the aims of the organization or of the leaders (Ehrhart, 2004). Authentic leadership refers to focusing virtuously on followers' resources and strengths rather than their weaknesses (Avolio et al., 2009). Ethical leadership refers to striving after ethical goals and the empowerment of followers (Gallagher and Tschudin, 2010). Mindful leadership refers to concentrating on the present moment and recognizing and controlling feelings and emotions, particularly in stressful situations. Mindful leadership refers to being aware of the presence of followers and of leaders' influence on them (George, 2012; Herold, 2013). Benevolent leadership refers to focusing on followers' welfare at work as well as their personal lives, including their family members (Wang and Cheng, 2010). Finally, decent leadership involves the above concepts of leadership (sustainable, servant, authentic, ethical, mindful, and benevolent) as well as the management of diverse resources in an organization (Di Fabio, *in press*).

A new organizational sensibility is required to manage, promote, and ensure sustainable development in "liquid" organizations in uncertain and ever-changing environments. A managerial approach and new styles of leadership that show awareness of the importance of relationships and of constructing positive narratives in organizational contexts is the key to mobilizing energy, coping with challenges, and promoting sustainable development and the well-being of people in organizations.

## CONCLUSION

The psychology of sustainability and sustainable development calls for new awareness of the need to achieve sustainable well-being from a primary prevention point of view. This involves designing and constructing organizational development and well-being through the promotion of relationships and positive narratives (Di Fabio, 2017) in organizational contexts in everyday life.

A lot of research and interventions based on positive psychology are available to improve leadership skills and human resources management for managers in 21st century organizations. For example, from emotional intelligence (Petrides and Furnham, 2001; Di Fabio and Saklofske, 2014a,b; Di Fabio et al., 2016b) to empathy (Davis, 1980; Di Fabio, 2014b; Di Fabio and Bucci, 2016), compassion (Martins et al., 2013), and self-compassion (Neff, 2003); from positive capital (Luthans et al., 2007) to intrapreneurial self-capital (Di Fabio, 2014a) as a core of individual intrapreneurial resources to deal with frequent changes and transitions and to turn constraints into resources, to acceptance of change (Di Fabio and Gori, 2016b) as positive for a person's well-being from positive relational management (Di Fabio, 2016b) to workplace relational civility (Di Fabio and Gori, 2016a) as a relational style characterized by respect and concern for the self and others, and by interpersonal sensitivity (relational decency, relational culture, and relational readiness), to decent leadership (Di Fabio, *in press*); from reflexivity in its dimensions of clarity/projectuality, authenticity, and acquiescence (Di Fabio, 2015, 2016a) to the meaning of work and life (Bernaud, 2015; Di Fabio and Blustein, 2016). New research and intervention are needed to better explore and understand these issues. Furthermore future directions can also consider that healthy societies and healthy organizations can be enhanced by focusing on the well-being of individuals, groups, and organizations in a culturally diverse world. This can best be done from a cross-cultural point of view and on the basis of the psychology of sustainability and sustainable development (Di Fabio, 2017). Cross-level interactions are needed that combine individual approaches and collective approaches, and short-term and long-term objectives and results (Hofmann and Tetrack, 2003), thereby providing for timeous interventions from a primary prevention perspective (Peiró, 2008; Tetrack and Peiró, 2012), reducing personal and contextual threats, and increasing health and well-being (Di Fabio and Kenny, 2015, 2016).

Challenges are essentially opportunities. The psychology of sustainability and sustainable development can be seen as an adaptive response to the need to develop well-being in organizations that have to cope with the challenging and unpredictable environments of the 21<sup>st</sup> century.

## AUTHOR CONTRIBUTIONS

AD ideated the structure, analyzed the literature, and wrote the manuscript.



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# Occupations at Risk and Organizational Well-Being: An Empirical Test of a Job Insecurity Integrated Model

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One of the more visible effects of the societal changes is the increased feelings of uncertainty in the workforce. In fact, job insecurity represents a crucial occupational risk factor and a major job stressor that has negative consequences on both organizational well-being and individual health. Many studies have focused on the consequences about the fear and the perception of losing the job as a whole (called quantitative job insecurity), while more recently research has begun to examine more extensively the worries and the perceptions of losing valued job features (called qualitative job insecurity). The vast majority of the studies, however, have investigated the effects of quantitative and qualitative job insecurity separately. In this paper, we proposed the Job Insecurity Integrated Model aimed to examine the effects of quantitative job insecurity and qualitative job insecurity on their short-term and long-term outcomes. This model was empirically tested in two independent studies, hypothesizing that qualitative job insecurity mediated the effects of quantitative job insecurity on different outcomes, such as work engagement and organizational identification (Study 1), and job satisfaction, commitment, psychological stress and turnover intention (Study 2). Study 1 was conducted on 329 employees in private firms, while Study 2 on 278 employees in both public sector and private firms. Results robustly showed that qualitative job insecurity totally mediated the effects of quantitative on all the considered outcomes. By showing that the effects of quantitative job insecurity on its outcomes passed through qualitative job insecurity, the Job Insecurity Integrated Model contributes to clarifying previous findings in job insecurity research and puts forward a framework that could profitably produce new investigations with important theoretical and practical implications.

**Keywords:** occupational risk, organizational well-being, psychological stress, quantitative job insecurity, qualitative job insecurity



INTRODUCTION

We live in a society characterized by high levels of instability and uncertainty (Bauman, 2000). The world of labor is changing faster and more dramatically as perhaps in no other time in recent history. Developed countries, in particular, are facing a substantial technological updating to ensure organizational competitiveness, maximize profits and reduce costs. This greater intensification in the global economic competition, accentuated after 2008, has originated massive organizational changes as restructuring, reengineering, downsizing, merging, which has deeply affected considerable portions of the workforce worldwide (e.g., Giorgi et al., 2015; Mucci et al., 2016).

One of the most visible effects of this process is the growing rate of occupations at risk. A massive job loss, in fact, has increased feelings and perceptions of uncertainty and job insecurity within the workforce. Several recent European surveys have pointed out that feeling threatened by job loss has become a widespread and permanent phenomenon (e.g., Eurofound and Eu-Osha, 2014; Eurostat, 2015). The Eurobarometer survey, in particular, reported that about one fifth of the European workers experiences job insecurity, feeling not confident to hold the current job over the next 12 months (Eurobarometer, 2011). Moreover, nearly less than the half of respondents thinks that it would be unlikely to find another job quickly, i.e., within 6 months, in the event of being laid off (Eurobarometer, 2011). Although there are obvious country variations of these perceptions, on average the above mentioned percentages appear to remain a stable phenomenon in the EU over the last years.

Dimensions of Job Insecurity

Job insecurity has been defined as the subjective perception of being threatened by job loss (Mohr, 2000), and as concerns about the continued existence of the job in the future (Klandermans and van Vuuren, 1999). Because of its detrimental effects on employee well-being and organizational effectiveness, job insecurity has been labeled as one of the most urgent issues in contemporary working life (Society for Human Resource Management, 2011). Furthermore, a wealth of studies has clearly established that job insecurity represents one of the key psychosocial risk factor at the workplace leading to psychological and physical harm (see i.e., Sverke and Hellgren, 2002; De Witte et al., 2015, for a review), along with other classical stressors such as workload, lack of control, role-related stressors and poor interpersonal relationships at work.

More than 30 years ago, the Greenhalgh and Rosenblatt (1984) seminal paper approached job insecurity from a multidimensional point of view, identifying two important facets: the fear of total job loss and the fear of job features loss. Hellgren et al. (1999) later named the above mentioned aspects as *quantitative job insecurity*, i.e., the fear of losing the job as a whole, and *qualitative job insecurity*, i.e., worries about losing valued job features, such as career prospects and salary development. Importantly, both dimensions refer to a subjective experience of an anticipated future event and are powerful job stressors with negative outcomes for both the individual and the organization (Sverke and Hellgren, 2002; Sverke et al., 2002;

Cheng and Chan, 2008; De Witte et al., 2010; Greenhalgh and Rosenblatt, 2010). Research has shown that these two forms of job insecurity tend to be empirically correlated (e.g., Hellgren et al., 1999; Fischmann et al., 2015). However, quantitative and qualitative job insecurity appears clearly distinct conceptual constructs (Greenhalgh and Rosenblatt, 1984; Hellgren et al., 1999), and the explanations about their different effects on specific outcomes cannot be considered overlapping and deserve a deeper examination.

Quantitative Job Insecurity

Quantitative job insecurity refers to the continuity (or loss) of the job itself. It was described as the subjective anticipated experience of a fundamental and involuntary job loss (Sverke and Hellgren, 2002): Employees feel uncertain about whether they will be able to retain their actual job or become unemployed (De Witte, 2005). Consistent with general stress theories (Lazarus and Folkman, 1984; Lazarus, 1999), quantitative job insecurity is actually considered as a powerful stressor because it threatens well-being and health, affects attitudes and behaviors and it may lead to various types of strain (Sverke and Hellgren, 2002; Richter et al., 2014). In fact, the detrimental consequences of quantitative job insecurity have been widely showed by several empirical studies, both for the employee and the organization. Higher quantitative job insecurity was found to be correlated to a broad arrays of variables such as poorer mental and physical health, lower organizational commitment, job satisfaction, job performance and to higher intentions to leave the organization (for meta-analytic findings, see Sverke et al., 2002; Cheng and Chan, 2008; for a review see Sverke and Hellgren, 2002; De Witte, 2005; De Witte et al., 2015; Shoss, 2017).

As a source of stress experiences, one of the most useful theoretical distinctions about the potential outcomes of job insecurity has been proposed by Sverke et al. (2002). They distinguished between four different outcome categories based on two axes (see **Table 1**) that are: 1) *focus of reactions* (individual vs. organizational) and 2) *types of reactions* (immediate vs. long term). From this point of view, these two axes theoretically allow to distinguish between *when* a possible outcome occurs (as it can manifests on a short-term or a long-term period), *whom* it is affecting (as it can influence the individuals or the

TABLE 1 | Types and focus of job insecurity outcomes (adapted from Sverke et al., 2002).

	Individual reaction	Organizational reaction
Immediate reaction	Job attitudes Job satisfaction <sup>a,b</sup> Job involvement <sup>a</sup> Work engagement <sup>b</sup>	Organizational attitudes Organizational commitment <sup>a,b</sup> Trust <sup>a</sup> Organizational identification <sup>b</sup>
Long-term reaction	Health Physical health <sup>a</sup> Mental health <sup>a</sup> Psychological stress <sup>b</sup>	Work related behaviors Job performance <sup>a</sup> Turnover intention <sup>a,b</sup>

<sup>a</sup>Example variables indicated by Sverke et al. (2002); <sup>b</sup>Variables studied in the present investigations.

organizations), and which is the interplay among outcomes. Simply put, along a timeline certain type of strains can develop closer in time in respect to the stress experience than others that, instead, may be manifested longer in time. Likewise, the reactions to stress experience may be oriented at an individual or at an organizational level (see **Table 1** for example variables). To elaborate the rationale of our studies later on, we will solidly build on this theoretical distinction of job insecurity outcomes.

## Qualitative Job Insecurity

Qualitative job insecurity refers to the perceived threat of losing certain valued features of the job, such as one's salary, working hours or various social reward (Hellgren et al., 1999). In this case, rather than the job itself *quality* aspects of the job are being threatened instead. From a qualitative job insecurity perspective, the most important issue is how an employee perceives the potential loss of quality in the employment relationship, such as deterioration of working conditions, demotion, lack of career opportunities, decreasing salary development, and concerns about person-organization fit in the future. Qualitative job insecurity is related to the psychological contract perspective in the sense that the breach of the psychological contract is employed to explain theoretically the negative outcomes of job insecurity (De Cuyper and De Witte, 2006). However, they are conceived as two different constructs (De Cuyper and De Witte, 2006). The psychological contract refers to a set of mutual and dynamic individual beliefs or perceptions regarding reciprocal obligations between the employee and the organization (Morrison and Robinson, 1997) and is based on a reciprocal relationship. On the contrary, qualitative job insecurity concerns an unidirectional perception appraised by the worker which could feel a high qualitative job insecurity also for external reasons, not necessarily blaming the organization.

Qualitative job insecurity was similarly conceived as a work stressor with negative consequences for both the employee and the organization (Greenhalgh and Rosenblatt, 1984; De Witte et al., 2010). Practically speaking, it has a negative relevant impact on employees' strain and withdrawal attitudes and intentions (Hu and Zuo, 2007; De Witte et al., 2010). Although qualitative job insecurity has received less attention than quantitative job insecurity over the years, recent studies have nonetheless begun to underline the need to examine the effects of qualitative job insecurity on individual health and organizational well-being more in-depth (e.g., Richter et al., 2014; De Witte et al., 2015, 2016).

## Qualitative and Quantitative Job Insecurity: An Integrated View

Qualitative and quantitative job insecurity are empirically related (Hellgren et al., 1999). Still, the most part of literature has investigated these two facets separately and not many studies have yet addressed their reciprocal role. Moreover, previous investigations failed to establish which job insecurity dimension have stronger effects on health and well-being at work (e.g., De Witte et al., 2010). For example, some studies found that quantitative job insecurity have stronger negative effects on

well-being than qualitative job insecurity (Reisel and Banai, 2002). Other studies showed that the strength of the relationship between these two dimensions of job insecurity and well-being was similar (Boeths and De Witte, 2006; De Witte et al., 2010). Still, other scholars found that quantitative job insecurity was more strongly related to health outcomes whereas qualitative job insecurity was more strongly related to job attitudes, often outperforming quantitative job insecurity (Hellgren et al., 1999). Likewise, longitudinal studies showed different effects for quantitative and qualitative job insecurity on work related well-being over time (for a review see De Witte et al., 2016).

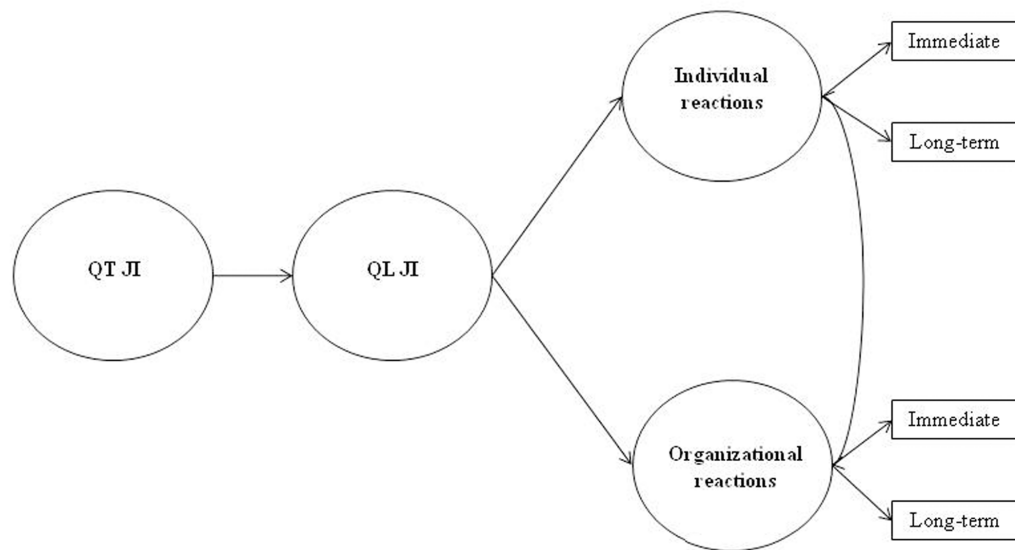
In this regards, Sverke and Hellgren (2002) argued that quantitative job insecurity might cognitively precede qualitative job insecurity because of its higher potential threat, suggesting that the aspect reflecting concerns about continued employment might be the most prominent. Therefore, it is possible to argue that the fear of losing one's own job may logically imply, as a consequence, the fear of losing specific job features as well. That is to say, from a cognitive point of view, that the fear of losing such specific valued job features can become salient to the individual daily experience later in time and after having considered also the possibility of losing the whole job. However, to our knowledge, such a hypothesis was never empirically tested before.

## Aim of the Present Paper

In the present paper, we aimed to present and empirically test an integrated model for the study of quantitative and qualitative job insecurity. Building on previous stress models (Sverke and Hellgren, 2002) and theoretical distinction (Sverke et al., 2002; see **Table 1**), it was argued that qualitative job insecurity would mediate the effects of quantitative job insecurity on both individual (immediate and long-term) and organizational (immediate and long-term) outcomes (the Job Insecurity Integrated Model, JIIM, see **Figure 1**).

The Conservation Of Resources (COR) theory (Hobfoll, 1989, 2001), as a stress theory, provides a framework for understanding the proposed Job Insecurity Integrated Model (JIIM). COR theory belongs to resources-based theories of stress according to which the fit of personal, social, economic and environmental resources determines strain reactions and resultant outcomes. The basic assumption of COR theory is that all individuals have the tendency to strive to obtain, retain, protect, and foster valuable resources, that may delineated into objects, personal characteristics and conditions. Strain reactions can occur in different occasions, including when individual resources are threatened with loss (Hobfoll, 2001). Within a working context, the resources may include time for work, status/seniority at work, consideration from employer, support from co-workers, adequate income, job training and personal energy (Hobfoll, 1998).

According to COR theory, stable employment, its material and social benefits, represent resources that are highly valued by the majority of people. COR theory suggests that, if employment is considered as a valuable resource, the threat of losing it would cause high strain for workers. Job insecurity implies high unpredictability and uncontrollability (De Witte, 1999): The consequent response would be a lack of energy leading employees to strain and withdrawal reactions such as lower levels of



**FIGURE 1 |** The proposed Job Insecurity Integrated Model (JIIM). QT JI is quantitative job insecurity; QL JI is qualitative job insecurity.

work engagement, job satisfaction, organizational identification, commitment and higher intention to leave the organization. However, the threat to job as a whole also logically include, as a consequence, the threat and the fear of losing important related job characteristics, whereas the reverse path may not always necessarily occur. More specifically, if an employee perceives, for examples, a high likelihood to lose the job and being fired, he/she might also think that, after this loss, he/she would also lose salary, career development, job role and the like. On the contrary, if an employee perceives, for examples, the concrete possibility to lose salary developments, to lack of career opportunities, to have his/her job role centrality being reduced, he/she has high qualitative job insecurity. However, the fact that he/she is perceiving the likelihood of losing value job features would not necessarily imply that he/she is going to perceive also to lose the job itself.

Following this line of reasoning, in the present paper we argued that a threat of job loss (i.e., quantitative job insecurity) could lead in turn to the perception of losing important features related to the job (i.e., qualitative job insecurity), that in turn origins strain and withdrawal reactions. Therefore, more explicitly, the proposed JIIM would predict that the effects of quantitative job insecurity on both individual and organizational outcomes would pass through qualitative job insecurity (Quantitative JI → Qualitative JI → Outcomes; see **Figure 1**).

## OVERVIEW OF THE STUDIES

Two studies were conducted in order to empirically test the proposed model (**Figure 1**). The studies were carried out in accordance with the recommendations of “Sapienza Research Committee” with written informed consent from all subjects. All

subjects gave written informed consent in accordance with the Declaration of Helsinki. For the outcomes of job insecurity, we referred to the theoretical distinction elaborated by Sverke and Hellgren (2002) and outlined in the introduction (see **Table 1**). In particular, Study 1 aimed to investigate the mediating role of qualitative job insecurity on the relationship between quantitative job insecurity and its *immediate* individual (i.e., work engagement) and organizational (organizational identification) outcomes. Study 2 aimed to extend these results to an integrated model, which considered both *immediate* and *long-term* individual and organizational outcomes. Regarding immediate outcomes, job satisfaction (individual) and organizational commitment (organizational) were investigated. Likewise, for long-term outcomes psychological stress (individual) and turnover intention (organizational) were considered.

## STUDY 1

This study was designed to test the JIIM focusing two different outcomes. As individual outcome, work engagement was considered. Work engagement concerns a positive, fulfilling, work related state of mind characterized by vigor (e.g., level of energy while working), dedication (e.g., enthusiasm related to work) and absorption (e.g., being concentrated on one’s work) (Schaufeli and Bakker, 2004). Several research found that job insecurity was associated with lower work engagement (e.g., Bosman et al., 2005; Mauno et al., 2007; Stander and Rothmann, 2010).

As organizational outcome, we focused on identification with the organization, which refers to the extent to which an employee includes the organization in her or his own self-concept, producing a psychological linkage between the individual and the organization (i.e., Ashforth et al., 2008). Relatively few recent



studies were conducted linking job insecurity and organizational identification, showing consistently that both quantitative (Ngo et al., 2013) and qualitative job insecurity (Callea et al., 2016; Chirumbolo et al., 2017) were negatively associated to organizational identification. However, to our knowledge, no published study has yet investigated the effect of quantitative and qualitative job insecurity to organizational identification at the same time.

In line with previous findings, in the present study it was expected that both quantitative and qualitative job insecurity were negatively associated with work engagement and organizational identification. However, we aimed to an integrated framework to clarify the role of both job insecurity facets, hypothesizing that qualitative job insecurity would mediate the effect of quantitative job insecurity on both work engagement and organizational identification (proposed JIIM: Quantitative JI → Qualitative JI → Outcomes; see **Figures 1, 2**).

However, we were well aware that, employing cross sectional data, no causal conclusions could be drawn. In fact, a plausible alternative model could also be conceived expecting a different path, namely that quantitative job insecurity would mediate between qualitative job insecurity and its outcomes (alternative model: Qualitative JI → Quantitative JI → Outcomes). Therefore, this alternative path was also modeled and formally compared to the proposed one.

In addition, in order to rule out a further alternative model in which Quantitative and Qualitative JI had an interaction effect on the outcomes, a moderation model was also tested.

## Method

### Participants and Procedure

The survey was designed to respect the privacy and anonymity, ensuring information confidentiality and that the data will be analyzed in aggregated manner. A written informed consent, with the description of the research' purpose, has been requested to participants. Participants were selected via a snowball procedure, beginning with workers known to the researchers. After completion of the paper-and-pencil questionnaire, each participant was asked to recommend other workers.

Participants were 329 employees in private firms (94 men and 234 women, one missed to report her/his gender), living mostly in the center and south of Italy. The response rate was of about 70%. The average age of the employees was 32 years old ( $SD = 8.36$ ), ranging from 19 to 65 years old. In regards to education, 53.4% had a university degree, 43.1% had a high school degree and the remaining completed only the compulsory school. About 66.7% of the participants were single, 29.4% were married (or lived with a partner) and the remaining were divorced (3.4%) or widowed (0.6%). Regarding occupational status, 27.8% had a permanent contract whereas 72.2% had a temporary job. The majority (about 68%) were white-collars and the remaining were blue-collars.

### Measures

Quantitative job insecurity was measured by five item from Sverke et al. (2004) on a five-point Likert scale from 1 (*Strongly disagree*) to 5 (*Strongly agree*). The scale assessed the employees' perceptions and worries about whether they would be able to keep

their current job (e.g., "I fear I will lose my job"). High scores indicated higher levels of quantitative job insecurity. The Italian validation (Chirumbolo et al., 2015) showed good psychometric properties. In the present paper the Cronbach's alpha was 0.80.

Qualitative job insecurity was assessed by five item taken from Hellgren et al. (1999). The scale measured the fear of losing important job characteristics, as career and wage development, future prospects and task stimulation (e.g., "I worry that my salary will not adequately increase in the future"). The items were scaled on a five-point Likert scale from 1 (*Strongly disagree*) to 5 (*Strongly agree*). High scores indicated higher levels of qualitative job insecurity. The Italian validation (Chirumbolo and Areni, 2010) showed good psychometric properties. In the present paper the Cronbach's alpha was 0.78.

Work engagement was measured by the short Utrecht Work Engagement Scale (UWES-9; Schaufeli et al., 2006), composed of nine item on a seven-point Likert scale from 0 (*never*) to 6 (*always*). This scale investigated the positive aspects of vigor, dedication and absorption at work (e.g., "At my work, I feel bursting with energy"). High scores indicated higher levels of work engagement. The Italian validation (Balducci et al., 2010) showed good psychometric properties. In the present paper the Cronbach's alpha was 0.92.

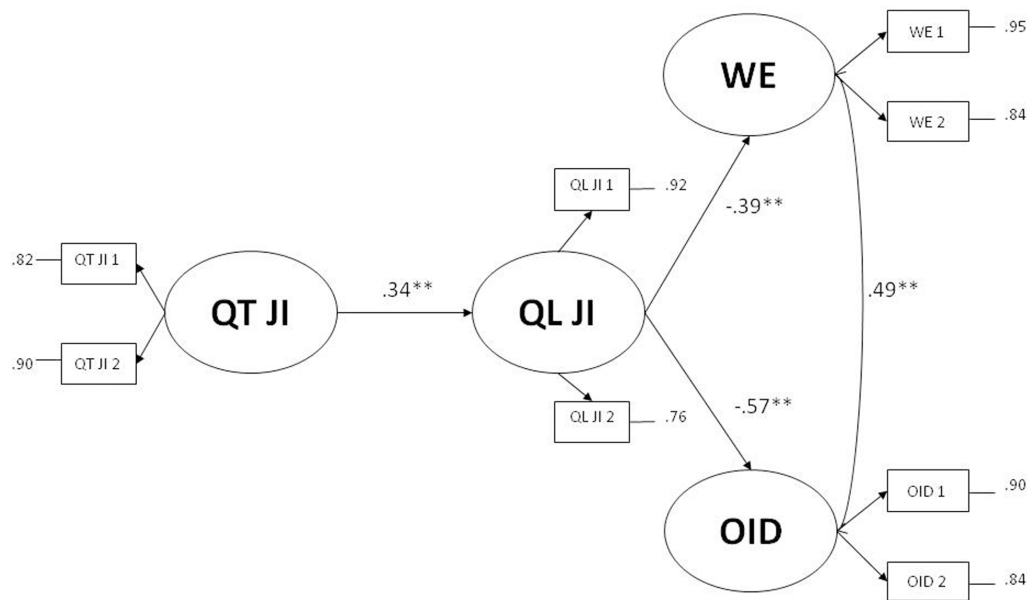
Organizational identification was assessed with Doosje et al. (1995) four item scale (seven points from 1 = *not agree at all*; to 7 = *Agree completely*). The scale was adapted for organizational setting and measured the degree to which an employee sees himself/herself as a member of organization (sample item: "I feel strong ties with organization"). This scale has been successfully applied in Italian previous research with good reliability (e.g., Callea et al., 2016). High scores indicated higher levels of organizational identification (alpha = 0.87).

### Data Analyses

Preliminary analyses, as mean, standard deviation and Pearson correlations were performed in order to explore the relationships between quantitative and qualitative job insecurity, work engagement and organizational identification.

Before testing the hypothesized mediational model, a Confirmative Factor Analysis (CFA) was conducted in order to test whether the measures used in the present study were sufficiently distinct, showing satisfactory discriminant validity. Two alternative nested models were contrasted and compared. In the first model (M1), the fit of a one-factor solution was tested. In case our measures were not distinct to each other, model M1 would show satisfactory fit. In the second model (M2), the fit of a four-factor solution (i.e., quantitative job insecurity, qualitative job insecurity, work engagement and organizational identification) was tested. The two models were formally compared (M1 vs. M2). Model fit was evaluated along with the following indices: the Comparative Fit Index (CFI); the Tucker-Lewis index (TLI); the root mean squared error of approximation (RMSEA); and the standardized root mean square residual (SRMR). In particular, for TLI and CFI values between 0.90 and 0.95 are considered acceptable. RMSEA and SRMR values indicate a good fit when they are smaller than or equal to 0.08. Specifically, in case our measures exhibited





**FIGURE 2 |** Full mediation model of qualitative job insecurity on the effects of quantitative job insecurity on work engagement and organizational identification.

\* $p < 0.05$ ; \*\* $p < 0.01$ . QT JI is the latent variable of quantitative job insecurity; QL JI is the latent variable of qualitative job insecurity; WE is the latent variable of work engagement; ODD is the latent variable of organizational identification.

discriminant validity, it was expected that M2 would show a better fit than M1. Moreover, a formal chi-square difference test ( $\Delta\chi^2$ ) between these two nested models was performed (Satorra and Bentler, 2001). If our measures were sufficiently distinct, a significant decrease in chi-square from M1 to M2 was to be expected. In addition to this, the Akaike Information Criterion (AIC) was also used to further compare the two models (Akaike, 1987): The model with lower AIC is the one to be preferred.

Mediation analysis with latent variables were performed via structural equation modelling (SEM) as well, using two random composites of items (parcels) as indicators of each latent variable with more of three items (e.g., Bagozzi and Heatherton, 1994). Item parcels were randomly selected, but contained a balanced number of items and had comparable reliabilities. Therefore, our model showed eight parcels as observed variables and 4 latent variables. The mediation analysis strategy recommended by James et al. (2006) was followed. In the first step the full mediation model (i.e., without the direct effects) was tested; in the second step the partial mediation model, including the direct effects from job insecurity to work engagement and organizational identification, was tested. The two nested models were compared via the chi-squared difference test ( $\Delta\chi^2$ ). When the  $\Delta\chi^2$  is not significant, it means that the partial mediation model does not increase the fit significantly; therefore, the mediation model is to be preferred since it is more parsimonious.

Finally, in order to evaluate the statistical significance of direct and indirect effects, bootstrapping procedure was used, employing 5000 samples with replacement from the full sample to construct bias-corrected 95 percent Confidence Intervals (CI)

(Preacher and Hayes, 2008; Hayes, 2009). The indirect effect is significant when zero is not included in the CI. If the indirect effect is not significant, there is not mediation; if both indirect and direct effects are significant then there is a partial mediation; finally, if the indirect effect is significant but direct effect is not significant a total mediation occurs (Preacher and Hayes, 2008; Hayes, 2009).

The fit indices of the alternative model, as previously outlined, were also computed. The proposed JIIM and the alternative model were formally compared via the Akaike Information Criterion (AIC) (Akaike, 1987). The chi-squared difference test cannot be computed in this case since the two models are not nested and have the same degrees of freedom.

Furthermore, in order to exclude the assumption that qualitative job insecurity was instead a moderator, moderated hierarchical regression analyses were performed (Aiken and West, 1991). Qualitative job insecurity may be considered a moderator in the relationship between quantitative job insecurity and its outcomes if interaction term would be significant (Aiken and West, 1991).

Data were analyzed using SPSS (23th version) and M-PLUS (version 8.53).

## Results and Discussion

Means, standard deviations and correlations between quantitative and qualitative job insecurity, work engagement and organizational identification were reported in Table 2. As expected, both aspects of job insecurity were negatively related to work engagement and organizational identification and quantitative job insecurity was positively related to qualitative job insecurity. This means that high scores of quantitative and

qualitative job insecurity correspond to low scores of work engagement and organizational identification.

### Confirmative Factor Analysis of the Measurement Model

Results of CFA indicated that the one-factor model (M1) did not show a satisfactory fit,  $CFI = 0.56$ ,  $TLI = 0.52$ ,  $RMSEA = 0.16$ ,  $SRMR = 0.13$ ,  $\chi^2(230) = 2047.91$ ,  $p < 0.001$ . Conversely, the four-factor solution model (M2) showed a better fit, although the fit indices were not completely satisfying,  $CFI = 0.83$ ,  $TLI = 0.81$ ,  $RMSEA = 0.09$ ,  $SRMR = 0.08$ ,  $\chi^2(224) = 937.07$ ,  $p < 0.001$ . The chi square difference between M1 and M2 showed that there was indeed a significantly increase of fit in M2,  $\Delta\chi^2_{M1-M2}(6) = 1110.84$ ,  $p < 0.001$ . Moreover, the AIC of M1 was 25430.08 while the AIC of M2 was 24434.81, further suggesting that the four-factor solution model (M2) had to be preferred to the one-factor model (M1).

### Mediational Model

As outlined in the previous section, we compared the fit of the full mediation model with the fit of a competitive partial mediation model (James et al., 2006). The full mediation model showed a satisfactory fit,  $\chi^2(16) = 47.03$ ,  $p < 0.01$ ;  $CFI = 0.97$ ;  $TLI = 0.96$ ;  $RMSEA = 0.07$ ;  $SRMR = 0.05$  (Figure 2). The partial mediation model, including direct effects from quantitative job insecurity on work engagement and organizational identification, did not significantly improve the model fit, as the chi-squared difference test was not significant,  $\Delta\chi^2(2) = 3.01$ ,  $p = 0.22$ . Therefore, the full mediation model has to be preferred because more parsimonious (Figure 2).

The total effect of quantitative job insecurity on work engagement was significant,  $B = -0.22$  ( $p < 0.01$ ), bootstrap CI between  $-0.33$  and  $-0.11$ . Furthermore, also its indirect effect was significant,  $B = -0.14$  ( $p < 0.05$ ), bootstrap CI between  $-0.24$  and  $-0.04$ . The total effect of quantitative job insecurity on organizational identification was significant,  $B = -0.17$  ( $p < 0.01$ ), bootstrap CI between  $-0.28$  and  $-0.06$ . Furthermore, also its indirect effect was significant,  $B = -0.20$  ( $p < 0.05$ ), bootstrap CI between  $-0.34$  and  $-0.05$ . Therefore, the effect of quantitative job insecurity completely passes through qualitative job insecurity. In other term, qualitative job insecurity totally mediated the relationship between quantitative job insecurity, work engagement and organizational identification.

### Test of the Alternative Model

Finally, because our data were cross-sectional, in order to rule out competing hypotheses we also considered an alternative model with an inverse path, in which quantitative job insecurity mediates the effect between qualitative job insecurity and both outcomes (alternative model: Qualitative JI  $\rightarrow$  Quantitative JI  $\rightarrow$  Outcomes). The two models were compared and it was expected that the proposed JIIM would show better fit and a lower AIC index than the alternative model.

The alternative model showed worse and unsatisfactory fit indices,  $\chi^2(16) = 105.40$ ,  $p < 0.01$ ;  $CFI = 0.93$ ;  $TLI = 0.87$ ;  $RMSEA = 0.13$ ;  $SRMR = 0.11$ , than the proposed JIIM (see previous section for fit indices). Moreover, the AIC of the alternative model was 7562.35 while the AIC of the proposed JIIM was 7503.96, suggesting that the proposed JIIM has to be empirically preferred to its alternative model.

Finally, two moderated hierarchical regression analyses were performed, considering organizational identification and work engagement as outcomes respectively. In both analyses, the interaction terms between quantitative and qualitative job insecurity were not significant,  $B = -0.01$ ,  $p = 0.90$  for organizational identification,  $B = -0.05$ ,  $p = 0.53$  for work engagement. Therefore the results showed that the moderation hypothesis of qualitative job insecurity in the relationship between quantitative and outcomes was not supported.

## STUDY 2

The second study was designed to replicate the patterns of the first study and extend the model to other outcomes, testing in this way the full JIIM presented in Figure 1. Replication represents an important issue in psychological science (see for example the special issue on “Replicability in Psychological Science” appeared in *Perspective on Psychological Science* in 2012; Pashler and Wagenmakers, 2012). In particular, by replicating patterns and findings across different constructs, measures and samples, scientific investigation aims to support the consistency and robustness of empirical results that otherwise might have been obtained by chance (Cook and Campbell, 1979).

In line with Sverke et al. (2002) distinction (Table1), we focused our investigation on the following four outcomes: (1) job satisfaction as immediate individual reaction; (2) organizational commitment as organizational immediate reaction; (3) psychological stress as individual long-term reaction; and (4) turnover intentions as organizational long-term reaction. In literature, a wealth of studies have since corroborated the negative link between job insecurity, job satisfaction and organizational commitment, as well as the positive association between job insecurity, psychological stress and intention to leave the organization (for extensive reviews see i.e., Sverke and Hellgren, 2002; Sverke et al., 2002; De Witte, 2005; Cheng and Chan, 2008; De Witte et al., 2016). Accordingly, our predictions were theoretically and empirically in line with previous investigations. However, as in Study 1, we aimed to propose and test the JIIM expecting that qualitative job insecurity

**TABLE 2 |** Correlations among variables of Study 1.

	<i>M</i>	<i>SD</i>	<i>2</i>	<i>3</i>	<i>4</i>
(1) QT JI	2.48	0.87	0.37**	-0.17**	-0.14**
(2) QL JI	3.39	0.76		-0.30**	-0.40**
(3) WE	3.72	0.54			0.54**
(4) OID	3.93	0.46			

QT JI is quantitative job insecurity; QL JI is qualitative job insecurity; WE is work engagement; OID is organizational identification. \*\* $p < 0.01$ .

would mediate the effects of quantitative job insecurity on all four outcomes considered (Figure 1).

Likewise in Study 1, in order to rule out competing hypotheses, an alternative model predicting that quantitative job insecurity mediates the relationships between qualitative job insecurity and all outcomes (alternative model: Qualitative JI → Quantitative JI → Outcomes) was also tested and compared to the proposed JIIM. Similarly, the moderation model was tested to rule out the possible interaction effect of Qualitative and Quantitative JI on the different Outcomes.

## Method

### Participants and Procedure

The procedure was the same than the Study 1, including the requested of a written informed consent and the sampling via snowball procedure.

Participants were 278 employees working in public sector (44.6%) or private firms (55.4%) (130 men and 147 women, one missed to report her/his gender), living mostly in the center and south of Italy (response rate of about 65%). The average age of the employees was 39 years old ( $SD = 12.15$ ), ranging from 20 to 65 years old. In regards to education, 24.5% had a university degree, 57.6% had a high school degree and the remaining completed only the compulsory school. About 41.5% of the participants were single, 53.6% were married (or lived with a partner) and the remaining were divorced (2.6%) or widowed (2.2%). Regarding occupational status, 69.5% had a permanent contract whereas 30.5% had a temporary job. The majority (67.3%) were white-collars and the remaining were blue-collars. With respect to Study 1, the present sample was composed of older workers,  $t(605) = 7.17$ ,  $p < 0.01$ , and more male participants, chi-square (1) = 21.50,  $p < 0.01$ .

### Measures

Quantitative and qualitative job insecurity were measured as in Study 1. The quantitative job insecurity scale had a Cronbach's alpha of 0.77, while the qualitative had an alpha of 0.67.

Job satisfaction was assessed with three items on a five-point Likert-scale from 1 (*Strongly disagree*) to 5 (*Strongly agree*). This scale measured the general satisfaction with the present job (sample item: "I am satisfied with my job"). The Italian validation (Sverke et al., 2004) showed good psychometric properties. Higher scores indicated higher job satisfaction (alpha = 0.82).

Organizational commitment was measured with four item scaled on a five-point Likert-scale from 1 (*Strongly disagree*) to 5 (*Strongly agree*), taken from Allen and Meyer (1996). The scale tapped affective attachment toward the organization (sample item: "I feel emotionally attached to my organization"). The Italian validation (Sverke et al., 2004) showed good psychometric properties. Higher scores meant higher affective commitment (alpha of 0.84).

Psychological stress was assessed through ten items of the Perceived Stress Scale (Cohen et al., 1983), scaled on a five-point scale from 1 (*Never*) to 5 (*Very often*). Participants were asked about their feelings and thoughts during the last month, indicating how often they felt or thought a certain way. The scale measured the perception of stress and the

degree to which situations in one's life are appraised as stressful. Items were intended to assess how unpredictable, uncontrollable, helplessness and overloaded respondents find their lives (sample item: "How often have you found that you could not cope with all the things that you had to do?"). High scores on this scale indicated high psychological stress. The Italian validation (Sverke et al., 2004) showed good psychometric properties. In the present study, the Cronbach's alpha was 0.82.

Turnover intentions were measured with Sjöberg and Sverke (2000) three item scale on a five-point Likert-scale from 1 (*Strongly disagree*) to 5 (*Strongly agree*). The scale measures the propensity to leave the actual job (sample item: "I feel that I could leave this job"). The Italian validation (Sverke et al., 2004) showed good psychometric properties. High scores on this scale indicated prominent intention to leave the organization (alpha of 0.75).

### Data Analyses

The same general data analytic strategy as in Study 1 was employed.

## Results and Discussion

Means, standard deviations and correlations between quantitative and qualitative job insecurity, job satisfaction, organizational commitment, psychological stress and turnover intention were reported in Table 3. As expected, both job insecurity scales were negatively related to job satisfaction and organizational commitment and positively related to psychological stress and turnover intention. This means that high scores of quantitative and qualitative job insecurity correspond to low scores of job satisfaction and organizational commitment and high scores of psychological stress and turnover intention.

### Confirmative Factor Analysis of the Measurement Model

Results of CFA indicated that the one-factor model (M1) did not show a satisfactory fit,  $CFI = 0.49$ ,  $TLI = 0.45$ ,  $RMSEA = 0.12$ ,  $SRMR = 0.13$ ,  $\chi^2(405) = 2055.46$ ,  $p < 0.001$ . Conversely, the six-factor solution model (M2) showed a better fit, although the indices were not completely satisfying,  $CFI = 0.81$ ,  $TLI = 0.79$ ,  $RMSEA = 0.08$ ,  $SRMR = 0.08$ ,  $\chi^2(390) = 991.83$ ,  $p < 0.001$ . The chi square difference

**TABLE 3 |** Correlations among variables of Study 2.

	<i>M</i>	<i>SD</i>	2	3	4	5	6
(1) QT JI	2.50	0.93	0.44**	−0.30**	−0.16**	0.26**	0.39**
(2) QL JI	2.70	0.72		−0.52**	−0.39**	0.28**	0.56**
(3) JS	3.81	0.92			0.68**	−0.21**	−0.60**
(4) AC	3.36	0.96				−0.08	−0.50**
(5) PS	2.85	0.64					0.21**
(6) TI	2.49	1.12					

QT JI is quantitative job insecurity; QL JI is qualitative job insecurity; JS is job satisfaction; AC is affective commitment; PS is psychological stress; TI is turnover intention. \*\* $p < 0.01$ .

between M1 and M2 showed that there was a significantly increase of fit in M2,  $\Delta\chi^2_{M1-M2}(15) = 1063.63$ ,  $p < 0.001$ . Moreover, the AIC of M1 was 24563.03 while the AIC of M2 was 24434.81, further suggesting that the six-factor solution model (M2) had to be preferred to one-factor model (M1).

Also for Study 2, we followed the procedure suggested by James et al. (2006) and compared the fit of full mediation model with the fit of an alternative partial mediation model. The full mediation model (no direct effects) showed a satisfactory fit,  $\chi^2(66) = 247.57$ ,  $p < 0.01$ ;  $CFI = 0.90$ ;  $TLI = 0.86$ ;  $RMSEA = 0.09$ ;  $SRMR = 0.07$  (Figure 3). The partial mediation model (including direct effects from quantitative job insecurity to the four outcomes) did not significantly improve the model fit as the chi-squared difference test was not significant,  $\Delta\chi^2(4) = 8.12$ ,  $p = 0.09$ . Therefore, the full mediation model had to be preferred because it was more parsimonious (Figure 3).

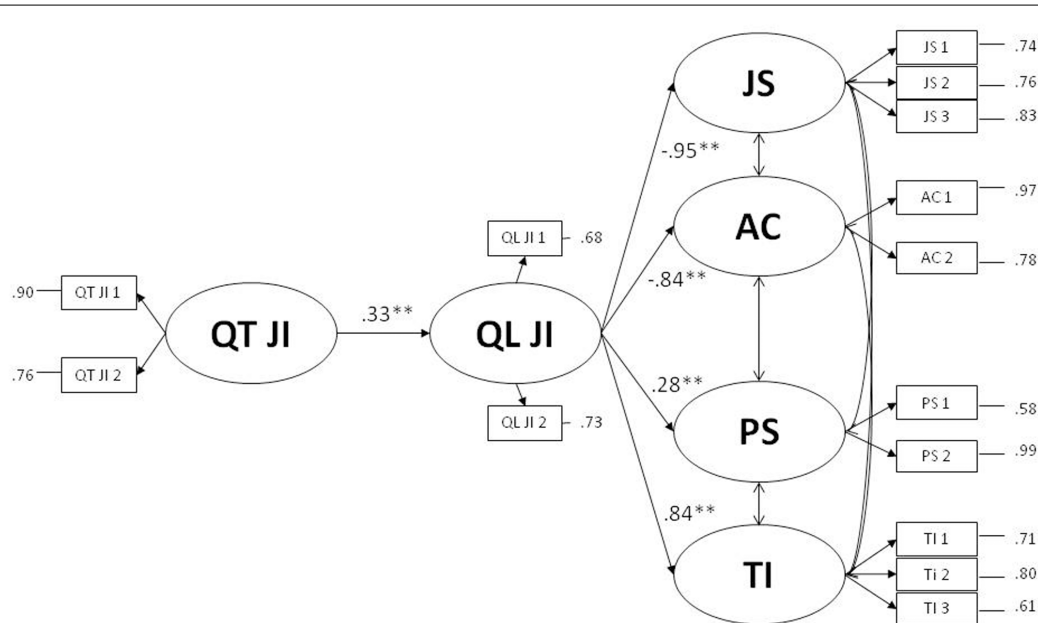
The total effect of quantitative job insecurity on job satisfaction was significant,  $B = -0.33$  ( $p < 0.01$ ), bootstrap CI between  $-0.47$  and  $-0.19$ , and its indirect effect was also significant,  $B = -0.53$  ( $p < 0.01$ ), bootstrap CI between  $-0.78$  and  $-0.28$ . The total effect of quantitative job insecurity on organizational commitment was significant,  $B = -0.24$  ( $p < 0.01$ ), bootstrap CI between  $-0.37$  and  $-0.11$ , and its indirect effect was significant,  $B = -0.47$  ( $p < 0.01$ ), bootstrap CI between  $-0.69$  and  $-0.24$ . Therefore, it appears that the effect of quantitative job insecurity on both individual and organizational immediate reactions was totally mediated through qualitative job insecurity.

The total effect of quantitative job insecurity on psychological stress was significant,  $B = 0.31$  ( $p < 0.01$ ), bootstrap CI between  $0.19$  and  $0.42$ , and its indirect effect was significant,  $B = 0.15$  ( $p < 0.05$ ), bootstrap CI between  $0.02$  and  $0.29$ . Finally, the total effect of quantitative job insecurity on turnover intention,  $B = 0.50$  ( $p < 0.01$ ), with bootstrap CI between  $0.37$  and  $0.63$ , was significant as well as its indirect effect,  $B = 0.46$  ( $p < 0.01$ ), bootstrap CI between  $0.23$  and  $0.70$ . Therefore, the effect of quantitative job insecurity on individual and organizational long-term reactions was totally carried on through qualitative job insecurity. As hypothesized, qualitative job insecurity totally mediated the effects of quantitative job insecurity on job satisfaction, affective commitment, psychological stress and turnover intention.

### Test of the Alternative Model

As in study one, we also tested the alternative model in which quantitative job insecurity mediates between qualitative job insecurity and the four studied outcomes (Qualitative JI  $\rightarrow$  Quantitative JI  $\rightarrow$  Outcomes). The alternative model showed general unsatisfactory fit indices [ $\chi^2(66) = 323$ ,  $p < 0.01$ ;  $CFI = 0.85$ ;  $TLI = 0.80$ ;  $RMSEA = 0.12$ ;  $SRMR = 0.10$ ]. Moreover, the AIC of the alternative model was 9875.37 while the AIC of the proposed model was 9799.73, providing additional empirical support to our hypothesized mediating role of qualitative job insecurity.

Again, since data are cross sectional, causal conclusions should be avoided. Nevertheless, when two alternative and competing models were compared, one with quantitative job insecurity as



**FIGURE 3 |** Full mediation model of qualitative job insecurity on the effects of quantitative job insecurity on job satisfaction, affective commitment, psychological stress and turnover intention. \* $p < 0.05$ ; \*\* $p < 0.01$ . QT JI is the latent variable of quantitative job insecurity; QL JI is the latent variable of qualitative job insecurity; JS is the latent variable of job satisfaction; AC is the latent variable of affective commitment; PS is the latent variable of psychological stress; TI is the latent variable of turnover intention. Correlations between outcomes:  $r_{JS-AC} = 0.64^{**}$ ;  $r_{JS-PS} = -0.26^{**}$ ;  $r_{JS-TI} = -0.29^{**}$ ;  $r_{AC-PS} = -0.30^{**}$ ;  $r_{AC-TI} = -0.32^{**}$ ;  $r_{PS-TI} = 0.27^{**}$ .



mediator (Qualitative JI → Quantitative JI → Outcomes), and one with qualitative job insecurity as mediator (Quantitative JI → Qualitative JI → Outcomes), empirical results robustly showed that the latter had to be preferred.

Finally, four moderated hierarchical regression analyses were performed, considering job satisfaction, affective commitment, psychological stress and turnover intention as outcomes. In all analyses, the interaction terms between quantitative and qualitative job insecurity was not significant (for job satisfaction:  $B = -0.05$ ,  $p = 0.47$ ; for affective commitment:  $B = -0.09$ ,  $p = 0.24$ ; for psychological stress:  $B = -0.10$ ,  $p = 0.62$ ; for turnover intention:  $B = -0.07$ ,  $p = 0.35$ ). Therefore the results pointed out that the moderation role of qualitative job insecurity was not supported.

## GENERAL DISCUSSION

Job insecurity is widely recognized as one of the most important psychosocial risk at the workplace (De Witte et al., 2015), with negative consequences on employee and organizational well-being. Although the interest on the detrimental effects of job insecurity is increasing (e.g., Shoss, 2017), existing theoretical models have not yet fully integrated the study of quantitative and qualitative job insecurity facets. In the present paper, two independent studies were designed to address this gap, developing and testing an integrated framework in which qualitative job insecurity mediated the effects of quantitative job insecurity on a wide range of individual and organizational outcomes. Study 1 examined the associations of quantitative and qualitative job insecurity with two immediate types of reaction outcomes: work engagement as an individual focus, and organizational identification as an organizational focus of reaction, respectively. Study 2 featured a more comprehensive array of outcome variables of quantitative and qualitative job insecurity: job satisfaction (immediate and individual reaction), organizational commitment (immediate and organizational reaction), psychological stress (long-term and individual reaction), and turnover intention (long-term and organizational reaction), respectively.

In terms of contributions, our framework provided a valuable starting point to overcome the research gap on the relationship between quantitative and qualitative job insecurity and their simultaneous effects on specific outcomes. In fact, several research considered both dimensions of job insecurity separately or from the same point of view: Findings on their reciprocal role and their effects were not definitively established yet. In this perspective, we conceived a role for qualitative job insecurity as a mediator in the relationship between quantitative job insecurity and outcomes. Building on previous speculations (Sverke and Hellgren, 2002), our model contended that quantitative job insecurity may precede, based on its higher potential threat, qualitative job insecurity. From the point of view of the real working life, when employees perceive the subjectively perceived likelihood of future job loss, they will in turn develop a perception of potential loss of valuable aspects of their job, resulting then in

both individual and organizational negative outcomes. Therefore, the JIIM aimed to shed light on the different role of job insecurity features. As such, the results of this two-study investigation make important contributions to both theory and practice.

## Theoretical Implications

From a theoretical point of view, the present investigations aimed to develop and extend the multidimensional model of job insecurity proposed more than 30 years ago by Greenhalgh and Rosenblatt (1984), and renewed more recently by Hellgren et al. (1999). Some scholars have showed that quantitative and qualitative job insecurity tend to be empirically correlated (Hellgren et al., 1999; Fischmann et al., 2015) even though they appear as clearly distinct conceptual constructs (e.g., Greenhalgh and Rosenblatt, 1984). Despite these evidences, few studies have examined their joint associations with outcome variables and their interplay effects. The hypothesized relationship between such two dimensions of job insecurity and their outcomes were built on the theoretical model by Sverke and Hellgren (2002). Taking this feature of work experience as a point of departure, the JIIM may add insight to stress models on job insecurity regarding how effects of quantitative job insecurity on short-term and long-term outcomes pass through qualitative job insecurity.

To the best of our knowledge, no studies have examined the role of these two forms of job insecurity hypothesizing that one (i.e., quantitative job insecurity) could precede the other (i.e., qualitative job insecurity) in predicting outcomes based on focus and types reactions (i.e., individual and organizational; immediate and long-term). In order to fill this gap in the empirical evidence concerning job insecurity, we suggested, and then empirically examined through two different studies, our integrated model of job insecurity hypothesizing that quantitative job insecurity may predict qualitative job insecurity, being the former a more prominent job stressor. Our hypothesis is based on Sverke and Hellgren (2002) who argued that quantitative job insecurity may cognitively precede qualitative job insecurity because of its higher potential threat to job continuity. Following a logical line of reasoning, we argued that in employees' daily experience the fear of losing specific job features could become salient later in time and after having considered the possibility of losing the whole job.

The evidences of both studies were fully in line with our integrated model. In Study 1, consistently with previous studies that examined direct associations between either qualitative or quantitative job insecurity and outcomes, we found that quantitative job insecurity was negatively associated with work engagement (Lo Presti and Nonnis, 2012) and organizational identification (Ngo et al., 2013) through the full mediation of qualitative job insecurity. Similarly, in Study 2, quantitative job insecurity was negatively associated with job satisfaction (Reisel et al., 2010) and organizational commitment (Chirumbolo and Areni, 2005), while it showed a positive association with psychological stress (Kalil et al., 2010) and turnover intentions (Emberland and Rundmo, 2010). Moreover, the effects of quantitative job insecurity were fully mediated by qualitative job insecurity. It derives that, as we posited before, the perceived threat of losing own job implies losing specific

job features while, this latter variable (i.e., qualitative job insecurity), mediates the effects of the overall fear of losing own job. The mediating role of qualitative job insecurity is at the core of our contribution and is a novel hypothesis that has not been tested previously and that can contribute to better understanding the intermediary process that leads from the quantitative job insecurity to different outcomes. Considering qualitative job insecurity as mediator open an interesting research field, helping to describe better how this process unfold.

## Practical Implications

There are also some practical implications of the present study. Our findings have confirmed on the one hand, that qualitative and quantitative job insecurity have several negative effects on individual and organizational variables, both of immediate and long-term development and on the other hand, has underlined the mediator role of qualitative job insecurity. Therefore, the results may help managers and employers to distinguish between the negative consequences of each dimension of job insecurity, and try to cope them accordingly.

It derives that, when organizational circumstances lead to the widespread of rumors and other internal communication flows fostering employees' fear of losing their jobs, preventive interventions should be designed in order to cope with different levels of reaction (i.e., individual *vs.* organizational) as well as with phenomena that can develop in different times (i.e., long-term *vs.* immediate). For instance, interventions addressing psychological stress could regard mindfulness or other stress management programs, while interventions aimed at addressing work engagement or organizational commitment would be more effective when indirectly targeting the individual wider organizational experience through, for example, organizational programs about appraisal and evaluation systems, teamwork, internal communication, etc. Furthermore, disentangling the relationship between quantitative and qualitative job insecurity, we can argue that when perceptions of job insecurity rise in the organization, managers can counteract these feelings intervening on more specific job facets that could lead to negative consequences. For instance, in case of organizational restructurings that appear to threaten employees' job continuity, managers could implement interventions aimed at fostering positive employees' expectations toward specific job facets as, for example, training opportunities and work-life balance programs.

Since it is impossible to prevent entirely the uncertain and involuntary nature of job insecurity, secondary prevention should practically also be in place. Generally speaking, organizations should become more sensitive to promote stress management programs to their employees. Managers could involve employees in mindfulness-based stress reduction programs to enhance the capacity to manage distressing emotions. Research on mindfulness-based program has been found to increase positive organizational behavior, enhancing overall employee well-being (e.g., Aikens et al., 2014; Ugwu and Asogwa, 2015). Considering that, human resource practices

could train employees to become more able to manage stress at work, as quantitative and qualitative job insecurity, constructively and effectively, especially in the current working scenario.

## Limitations and Future Research

Our study is subject to some limitations, which at the same time constitute opportunities for future research. The design of the present study poses some limitations on the generalizability of its findings that need to be addressed and that can suggest potential research avenues. Snowball sampling limited the generalizability of our results. Future research should focus on samples that are more representative. However, the consistency of our results with previous evidence could be an indicator than minor, if any, sampling bias has possibly occurred. Moreover, given that our data were cross-sectional, causal inferences among variables could not be drawn. Nevertheless, we adopted a formal model comparison approach and the proposed JIIM appeared to empirically outperform an alternative model, in which the mediator was quantitative job insecurity. Although longitudinal studies will be necessary to adequately test the JIIM, in terms of modeling approach, at present time the JIIM fitted significantly better than its possible alternative one. In this perspective, however, future research should particularly focus on assessing quantitative and qualitative job insecurity in different times, in order to fully disentangle their reciprocal casual relation.

All variables were measured through the same questionnaire; it derives that common method variance could have altered the magnitude of the effects found. However, we found theoretically meaningful relationships among variables, which were comparable in directions and effect sizes to those, found in the existing literature (see for instances meta-analyses of Sverke et al., 2002; Cheng and Chan, 2008). Therefore, we believe that the present findings could hardly been impaired from common method variance bias. Notwithstanding, future research should also include objective indicators as, for example, real turnover, absences from work and performance indicators derived from management or from organizational data.

In the present paper, we focused on the consequences of both job insecurity types. However, in a different perspective one can also consider that qualitative and quantitative job insecurity might have different individual antecedents. The literature in this regards is very limited, thought, if not absent. As a matter of fact, few studies were conducted on the predictors of quantitative job insecurity only (e.g., Näswall and De Witte, 2003; Keim et al., 2014), suggesting that variables such as role ambiguity, role conflict, locus of control, age and contract type can affect perceptions of quantitative job insecurity (Keim et al., 2014). On the contrary, no study was yet published regarding individual predictors of qualitative job insecurity. Although these two facets of job insecurity generally have their main root in environmental threats, from a "differential exposure model" (see Bolger and Zuckerman, 1995) also individual dispositions, other than socio-demographical variables, may account for differential levels of job insecurity which in turn can predict negative outcomes. In this perspective,

more research is needed in this field to fulfill this lack in our knowledge.

## CONCLUSION

The present investigation attempted to advance the study of the role of job insecurity dimensions on both individual and organizational outcomes, proposing a new theoretical framework. Pursuing the line of research of JIIM, future research will develop the model by considering different kind of antecedents of job insecurity (both contextual and individual) and additional outcomes, for instances task and contextual measures of job performance. Furthermore, different possible moderators will be investigated not only between qualitative job insecurity and its

outcomes but also between quantitative and qualitative job insecurity.

## ETHICS STATEMENT

The present paper belong to the research project “Individual and organizational consequences of job insecurity.” This project was approved and founded by the “Sapienza Research Committee” in December 2013.

## AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication.

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# A Temporal Map of Coaching

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Economic pressures on companies, technological developments, and less stable career paths pose potential threats to the well-being of employees (e.g., stress, burn-out) and require constant adaptation. In the light of these challenges, it is not surprising that employees often seek the support of a coach. The role of a coach is to foster change by facilitating a coachees' movement through a self-regulatory cycle with the ultimate aim of stimulating sustained well-being and functioning. While meta-analytic research indicates that coaching interventions can be effectively applied to assist employees in dealing with change, the current literature on coaching lacks solid theoretical frameworks that are needed to build a cumulative knowledge-base and to inspire evidence-based practice. In this conceptual analysis, we examine the coaching process through a temporal lens. By doing so, we provide an integrated theoretical framework: a temporal map of coaching. In this framework, we link seminal concepts in psychology to the coaching process, and describe which competencies of coachees are crucial in the different stages of change that coaching aims to bring about. During the preparatory contemplation stage, targeting coachees' awareness by enhancing their mindfulness and environmental receptiveness is important. During the contemplation stage, coachees' willingness and perceived ability to change are central competencies. We propose that coaches should therefore foster intrinsic goal orientation and self-efficacy during this stage. During the planning stage, coaches should focus on goal-setting and implementation intentions. Finally, during the maintenance/termination stage, stimulating coachees' reflection is especially important in order to help them to integrate their learning experiences. The framework delineated in this paper contributes to the understanding of coaching as a tool to assist employees in dealing with the challenges of an increasingly dynamic work-environment and yields concrete suggestions for future theory development and research on coaching.

**Keywords:** coaching, Trans Theoretical Model of Change, awareness, willingness to change, ability to change, planning, integration of learnings

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## INTRODUCTION

The current work environment is characterized by rapid technological developments, a shift toward knowledge-based work and less stable career paths (Savickas et al., 2009). Simultaneously, individuals in western societies attach more value to self-actualization and optimal well-being and functioning in both their work and personal lives (Joshua, 2013). Taken together, changes in work and self-actualization needs require constant adaptation and professional development on

the part of employees, which poses multiple challenges to them. First, people in general tend to favor the status-quo and familiarity over change and uncertainty (Boswell et al., 2014) which means that they tend to avoid rather than anticipate change. Second, people often lack the self-regulatory knowledge, skills and attitudes needed for effective change (Baumeister and Heatherton, 1996). Third, personal and professional goals (e.g., spending more time with family versus getting a promotion) may cause complex dilemmas and work-family conflicts (Frone et al., 1992). In the light of these challenges and the associated health risks, it is not surprising that employees often seek the support of a coach.

Coaching has been defined as a ‘result-oriented, systematic process in which the coach facilitates the enhancement of life experience and goal-attainment in the personal and/or professional life of normal, non-clinical clients’ (Grant, 2003, p. 254). The role of a coach is to foster change by ‘facilitating a coachees’ movement through a self-regulatory cycle’ (Grant, 2003, p. 255) with the ultimate aim of stimulating sustained well-being and functioning (Grant, 2003, 2013). In other words, coaching is basically about fostering self-directed changes in coachees in order to make them feel and function better.

While meta-analytic research (Theeboom et al., 2014; Jones et al., 2016) indicates that coaching interventions can be effectively applied as a change methodology, current studies on coaching (e.g., Evers et al., 2002) do not reveal the processes through which these outcomes are attained. This is unfortunate, because knowledge of these processes is crucial for the evidence driven development of coaching interventions (Theeboom et al., 2014).

Of course, research in clinical, social, and organizational psychology offers many insights into competencies that are related to change. Currently however, insights into how exactly coaches can strengthen these competencies are fragmented, because no clear theoretical framework exists that links this rich knowledge base to the coaching process. Therefore, when and why coaches should use which strategies is largely a black box. Interestingly, in their Theory of Team coaching, Hackman and Wageman (2005) proposed that it could be useful to view coaching through a temporal lens because different coaching interventions may be relevant and effective during different stages of the change process. Specifically, they stated that ‘coaching interventions are more effective when they address issues a team is ready for at the time they are made’ and that ‘ill-timed interventions may actually do more harm than good’ (p. 275). Likewise, the idea that viewing the coaching process through a temporal lens could provide useful insights into coaching of individuals is reflected in the work of both Passmore (2011) and Grant (2012), who suggested that the Trans Theoretical Model of Change (TTM, Prochaska and Velicer, 1997) could be a useful framework for coaching.

Originally developed to conceptualize and study behavior change (see Prochaska, 2013; for a comprehensive review of the model) and to assess individuals’ readiness to change across multiple health behaviors such as smoking, physical exercise, and stress reduction (Hall and Rossi, 2008), the TTM posits

that behavior change occurs in five distinct stages of change (see below). As such, the temporal lens offered by the TTM enables building a clear framework related to which types of coaching strategies are helpful at which stages of the coaching process, and why this is the case. This is the goal of the current paper. In our conceptual analysis, we offer research evidence where available and address possible avenues for future research where necessary. By integrating the “stages of change” perspective as outlined in the TTM with important concepts in different disciplines of psychology, the current paper can facilitate theory development, research on coaching, and coaching practices.

## THE TRANS THEORETICAL MODEL OF CHANGE AND ITS VALUE FOR UNDERSTANDING COACHING

The TTM posits that behavior change occurs in five distinct stages of change: precontemplation, contemplation, preparation, action, and maintenance. Furthermore, this model is built on the notion that behavior changes as individuals contemplate on and weigh the gains and losses of their behaviors. The precontemplation stage is aimed at becoming aware of a need for change and increasing the pros of behavior change (e.g., stop smoking). The contemplation stage is meant to further explore one’s motivation and to decrease the cons of behavior change (e.g., giving up favorite habits associated with smoking). The preparation stage involves setting specific goals and making plans for action, which may involve concerns about possible failure. The action stage is about setting the first small steps toward the attainment of goals and to start exercising and practicing desired behaviors. In this stage individuals have to work hard to keep from returning to earlier stages. The maintenance stage concerns preventing relapse and consolidating progress (Prochaska and Velicer, 1997; Grant, 2012).

Although the TTM was created in the context of the cessation of unhealthy behaviors and is focused on individuals’ readiness for behavioral change, we argue that the basic change principles underlying this model clearly suit the reality of coaching, which is also aimed at changing behaviors (Grant, 2003, 2012). That is, individuals who come to coaching may be in varying stages of change and change involves a gradual movement through specific changes (Prochaska and DiClemente, 2005). Some coaching authors have done some groundwork in linking the TTM to coaching. For example, Passmore (2011) has offered some specific guidelines for interventions in the different stages. According to Passmore, coaches could help coachees to explore their wider values, beliefs, and the impact of the behavior of others in the first stage, while coaches could help coachees to plan for coping if falling back in the maintenance stage. Likewise, Grant (2012) argued that – in a work context – coachees can become aware of their own needs and those of the organization through a 360° feedback intervention in the first stage, which will help them to select their goals. Furthermore, he posited that the stages outlined by the TTM are particularly useful to assess a coachees’ change readiness.

Although we view these preliminary suggestions as important steps toward developing a temporal map of coaching, we believe that a solid integration of the stages as outlined in the TTM and important concepts in clinical, social, and organizational psychology could enhance theory development and research on coaching, and facilitate coaching practices. The definitions of coaching presented above refer to concepts such as goals and self-regulation, which are central for coach-supported change to occur. These concepts are also at the heart of seminal theories in psychology. For example, a general and influential theory on explaining human behavior, and thus relevant for behavior change, is the Theory of Planned Behavior (Ajzen, 1991). This theory argues that individuals' behavior is goal-directed and guided by behavioral intentions (the effort individuals are planning to exert in order to perform the behavior) if this behavior is under volitional control (individuals' beliefs in their self-efficacy to execute a certain behavior). Other important theories, such as Self-Determination Theory (SDT) (Deci and Ryan, 2000), Goal-setting Theory (Locke and Latham, 2002), and Self-efficacy Theory (Bandura, 1977), all underline the importance of goals, behavioral intentions, and self-efficacy for individual behavior (change) as delineated in the Theory of Planned Behavior. In what follows, we address these theories and their main concepts when discussing the successive stages of the coaching process.

In this paper, we build on the TTM by developing a temporal map of the coaching process. In addition, based on seminal theories in clinical, social, and organizational psychology we identify essential competencies that coachees should develop or strengthen in each stage of the coaching process in order to move from one stage to another. We particularly argue that attainment of core competencies in one stage is a prerequisite for competency development and change progress in the next stages. By identifying relevant focal competencies for each stage, specific interventions can be developed or refined and research could test their effectiveness and underlying assumptions. This can ultimately contribute to the development of evidence-based practices in coaching that foster employee welfare and strength, and decrease occupational risk factors.

In the next section, we discuss the stages of the temporal map of coaching<sup>1</sup> in more detail. For each stage of the coaching process we suggest two focal competencies that are evidently relevant in that stage. However, note that the competencies that we propose are by no means intended to be exhaustive, but rather emerge from current theories and research in psychology. Furthermore, we address previous research (in the broader psychological literature and/or in the specific coaching literature) that relates these competencies to the proximal (individual self-regulated change) and distal goals of coaching (individual well-being and functioning). Finally, we provide suggestions for future research on coaching and coaching practice.

<sup>1</sup> We excluded the action stage from our framework because this is the stage in which the coachee acts without the coach being present.

## PREPARATORY CONTEMPLATION: DEVELOPING AWARENESS

**Table 1** presents an overview of the main goals in each stage of the coaching process and the proposed focal competencies that should be addressed in these stages. We label the first stage of the coaching process as preparatory contemplation rather than precontemplation. The TTM describes the first (precontemplation) stage as a stage in which no intention to change ("why would I stop smoking?") develops into an intention to change (Prochaska and Velicer, 1997). However, when – in the context of work and careers – individuals are contacting a coach they are to a certain extent (being) motivated to start the coaching process, whether this is due to experienced difficulties, an executive coaching program offered by the organization, or questions regarding their career.

The main goals of the preparatory contemplation stage in coaching is to identify individual and context factors that are the impetus for the coaching and to come to the realization that there is a need to change. The primary task of a coach during this stage is to raise coachees' awareness of the individual and organizational drivers for change. This awareness is important as it is a prerequisite for successful follow-up steps: the further exploration of drives, the setting of goals, and developing action plans in line with these drives. Moreover, we believe that this awareness will smoothen the change process (see also Boyatzis, 2006). Note that this stage would be especially (but not exclusively) important for so-called 'unvoluntary' coachees (e.g., who are sent by their organization), because raising awareness of the factors that led to coaching could enhance a coachee's intrinsic motivation to change (see below) and his or her engagement in the coaching process. Hence, the interventions of the coach are aimed at developing or strengthening coachees' awareness competencies. Two competencies in particular could enhance awareness of individual- and organizational drivers of change, respectively: mindfulness and environmental receptiveness.

## MINDFULNESS

The construct of mindfulness has been adopted from the Buddhist tradition (Hayes and Feldman, 2004) and was

**TABLE 1 |** The main goals and focal competencies during each stage of the TTM.

Stage	Main goal	Focal competencies
Preparatory contemplation	Development of awareness	<ul style="list-style-type: none"> <li>• Mindfulness</li> <li>• Environmental receptiveness</li> </ul>
Contemplation	Exploring the willingness and perceived ability to change	<ul style="list-style-type: none"> <li>• Intrinsic goal orientation</li> <li>• Self-efficacy</li> </ul>
Planning	Planning for change	<ul style="list-style-type: none"> <li>• Goal-setting</li> <li>• Implementation intentions</li> </ul>
Maintenance/ termination	Integration of learnings	<ul style="list-style-type: none"> <li>• Reflection</li> </ul>

originally introduced in the psychological literature by Kabat-Zinn (1990). Mindfulness consists of two basic components (Bishop et al., 2004, p. 1) the self-regulation of attention that allows for increased recognition of present mental experiences, and an open, curious, and accepting orientation toward those experiences.

Developing coachees' mindfulness could help coachees to become aware of their needs and desires in three ways. First, mindfulness enables individuals to openly observe and reflect on their own thoughts, emotions, and behaviors. Second, the inward focus enhanced by mindfulness may help coachees to explore their own values and motivations (Hayes et al., 2006) which increases the chance that they set self-concordant goals (i.e., goals that are consistent with individuals' interests and core values; Sheldon and Elliot, 1999) in the subsequent stages. Third, mindfulness could enable coachees to make a distinction between issues that they can potentially solve and issues that they can't influence, and to stay focused on the solvable issues (Hayes et al., 1999).

Although a lot has been written about mindfulness and coaching (e.g., Passmore and Marianetti, 2007), we know of only two independent pilot studies that directly investigated the potential synergy of mindfulness meditation and coaching interventions. Both studies found that mindfulness can be successfully combined with coaching interventions and has the potential to amplify the effectiveness of those interventions (Collard and Walsh, 2008; Spence et al., 2008). Additionally, previous research on mindfulness outside the coaching literature has shown that mindfulness is positively related to several aspects of change (the proximal goal of coaching) and to functioning and well-being (the ultimate goals of coaching). For example, mindfulness meditations decrease anxiety and negative affect by reducing cognitive distortions (thinking errors), self-set demands, and anticipated consequences of negative events (Sears and Kraus, 2009). Likewise, mindfulness fosters benign stress attributions (Weinstein et al., 2009), such as when the stress arises from being in a power position (Boyatzis et al., 2006), and it advances attentional control (Jha et al., 2007), mental and physical health (Chiesa and Serretti, 2009; Hofmann et al., 2010), and academic and workplace performance (Beauchemin et al., 2008). In addition, mindfulness may not only be helpful by fostering self-awareness in the preparatory contemplation stage, but may have several additional benefits in the following stages of the coaching process. For example, mindfulness will also be beneficial during the maintenance stage, because the attentional control associated with mindfulness is an important precondition for reflection (Cox et al., 2010), which in turn is an important antecedent of learning (Dewey, 1933). Hence, mindfulness may not only help the coachee to recognize what he/she truly needs and desires, and to set goals accordingly, but may also help to sustain learning from previous experiences.

## ENVIRONMENTAL RECEPTIVENESS

Drawing on literature on epistemic motivation (an individual's desire to develop a thorough understanding of a situation)

in social and organizational psychology (e.g., Van Kleef et al., 2009) and on receptiveness in cross-cultural and communication research (e.g., Chen et al., 2010; Leung and Chiu, 2010), we conceptualize environmental receptiveness as the ability and willingness to receive environmental information, such as information about the thoughts and behaviors of significant others, what is needed and expected to function on a job (referent information), the extent to which role requirements are met (appraisal information), and information about the quality of the relationships with others (relational information: Miller and Jablin, 1991; Bauer et al., 2007).

A lack of environmental receptiveness often lies at the heart of a need for coaching. Generally, phenomena such as selective attention and change blindness make people less able to detect significant changes timely (Simons and Rensink, 2005). Moreover, much of the organizational information about what the organization expects or desires from its employees is hidden or ambiguous rather than open or clear. To give an example, misinformation about the ("soft" or informal) requirements for getting a promotion in an organization (e.g., getting along with other managers) often leads to frustration for both employees ("but I did tick all the boxes for a promotion") and their direct supervisors who have a hard time maintaining a perception of procedural justice. This lack of awareness of organizational (and social) needs, opportunities and constraints can leave coachees in the blind. Hence, interventions aimed at enhancing a coachees' environmental receptiveness could help coachees to deal with, and maybe even prevent problems associated with the highly dynamic and complex nature of current organizational environments.

There is currently no research investigating the role of environmental receptiveness in coaching. However, research outside the field of coaching has shown that two elements underlying environmental receptiveness are positively related to self-regulated change, well-being and functioning, namely openness to experience ("an interest in varied experience for its own sake" McCrae, 1987, p. 1259) and epistemic motivation, the willingness to actively seek information in order to develop a rich and accurate understanding of the world (Amit and Sagiv, 2013).

Specifically, LePine et al. (2000) found that openness to experience predicted decision quality during a problem solving task in which the rules for correct decisions changed frequently. In addition, research on epistemic motivation evidenced that individuals who are motivated to seek alternative coping strategies for dealing with stressful situations feel more in control of these situations, apply a wider variety of strategies, and adapt more successfully (Cheng, 2003).

Research has also shown that information-seeking is one of the main tactics through which organizational newcomers can proactively deal with the uncertainty they experience during organizational entry (Ashford and Black, 1996; Kim et al., 2005; Ren et al., 2014). Newcomers who seek more information about what is required to function on the job and on how they are functioning adapt more easily due to more role clarity and social acceptance (Bauer et al., 2007).

All in all, we propose that in the preparatory contemplation stage, coaching interventions should be focused on raising



coachees' awareness of individual and organizational drivers of change by enhancing coachees' competencies of mindfulness and environmental receptiveness. Furthermore, we propose that these coaching interventions in the preparatory contemplation stage will increase the effectiveness of coaching interventions in subsequent stages of the coaching process.

## CONTEMPLATION: EXPLORING THE WILLINGNESS AND PERCEIVED ABILITY TO CHANGE

The contemplation stage revolves around reevaluating the self and the environment and the pro's and cons of change (decisional balancing) in order to be able to make a firm commitment to action before taking the first steps toward change (Prochaska, 2013). During this stage, a coach helps coachees to clarify their own needs and values such that they can develop goals (Burke and Linley, 2007) and action plans (in the following stage) that are self-concordant, that is, congruent with their inner values and needs. In other words, coaches could use the contemplation stage to help coachees to develop an intrinsic (rather than extrinsic) goal orientation. Furthermore, in this stage it is important that coachees perceive themselves as able to change. As such, a coach could also use this stage to help coachees to explore and develop their self-efficacy (the belief in one's ability to succeed in specific situations; Bandura, 1977).

## INTRINSIC GOAL ORIENTATION

Self-Determination Theory (Deci and Ryan, 1985) states that all humans strive for the fulfillment of three basic needs: autonomy, competence, and relatedness. Autonomy refers to a sense of volition and self-endorsement of behavior, competence refers to support for the efficacy of autonomously selected goals, and relatedness concerns the sense of being cared for and connected to others. These needs play a crucial role for the types and strength of people's motivation (Ryan et al., 2011).

According to SDT, intrinsic goals are aligned with the satisfaction of basic needs, whereas extrinsic goals are driven by external sociocultural norms associated with coercion, fear, or shame. People who are oriented toward intrinsic goals focus more on the content of an activity itself (e.g., an exercise) than on the contingencies following it (e.g., a reward), which foster their commitment and persistence, and ultimately their performance and well-being (Vansteenkiste et al., 2007).

According to Deci and Ryan (2008), "SDT provides empirically informed guidelines and principles for motivating people to explore experiences and events, and from that reflective basis, to make adaptive changes in goals, behaviors, and relationships. Because the issues of intrinsic motivation and of creating a climate conducive to volitional and lasting change are central to all psychotherapies, the principles of SDT are not only useful in informing therapeutic content but also have relevance across varied interventions and techniques" (p. 186). Although coaching differs from therapy in several ways (e.g., Hart et al.,

2001; Grant, 2014), goal orientations can be expected to be equally important to coaching because all coaching engagements involve volitional and lasting adaptation and are essentially goal driven (Spence and Oades, 2011; Grant, 2012).

Only one study on coaching addressed coachees' orientation toward intrinsic goals and found that the coaching intervention GROW (Goals, Reality, Options, Way forward; Whitmore, 2010) increased the development of self-concordant goals. However, an abundance of research outside of the context of coaching has shown that an intrinsic (rather than extrinsic) goal orientation is positively related to change, well-being, and functioning. For example, research in educational and sports settings indicates that an intrinsic goal-orientation fosters effective self-regulation. Students who are intrinsically motivated show lower drop out of high school (Vallerand et al., 1997), are more deeply engaged in learning activities, show more persistence, and perform better than students who are less intrinsically motivated (Vansteenkiste et al., 2006). Also, athletes who have an intrinsic goal-orientation are more likely to engage in task-oriented coping (dealing with the problem at hand) whereas athletes with an extrinsic goal-orientation tend to disengage from their stressors (Smith et al., 2010). Furthermore, striving for self-concordant goals positively affects adjustment, identity development, and academic performance (Sheldon and Houser-Marko, 2001). Finally, setting self-concordant goals was found to promote (subjective) well-being irrespective of cultural context (Sheldon et al., 2004).

## SELF-EFFICACY

Self-efficacy has been defined as the belief in one's ability to succeed in specific situations (Bandura, 1977). Although Bandura originally described self-efficacy as a domain-specific construct (e.g., self-efficacy for athletic performance), others introduced the concept of generalized self-efficacy that refers to an overall estimate of a person's ability to mobilize the cognitive and motivational resources needed to deal with challenges in life (Judge et al., 1998).

Self-efficacy is a key component in the coaching process because it is a necessary basis for approaching problems from a new perspective, developing creative solutions, and experimenting with new skills and behaviors (Popper and Lipshitz, 1992). Hence, in order for coaching to be effective, it should be aimed at stimulating self-enhancing causal attributions (i.e., ascribing success to one's own effort or skills rather than external circumstances) and building feelings of competence (Moen and Skaalvik, 2009; Moen and Federici, 2012). Self-efficacy will support coachees' ownership of and responsibility for the adaptation process.

Several studies have investigated how coaching can influence self-efficacy. For example, a study by Evers et al. (2002) found that managers who received coaching scored higher on generalized self-efficacy than a control group. Likewise, Moen and Skaalvik (2009) found that a coaching intervention increased generalized self-efficacy for both a group of CEOs and middle managers as compared to their respective control

groups. As one of the most frequently studied variables in the fields of social and organizational psychology, self-efficacy by itself has been extensively linked to coping behaviors (e.g., Devonport and Lane, 2006) and academic (Multon et al., 1991) and work-related performance (Stajkovic and Luthans, 1998). Furthermore, meta-analyses that studied self-efficacy as a component of higher order constructs such as Core Self-Evaluations (CSEs, consisting of self-efficacy, self-esteem, locus of control, and emotional stability; Judge and Bono, 2001) and Psychological Capital or PsyCap (consisting of self-efficacy, optimism, hope and resilience; Luthans and Youssef, 2004) have also found positive relationships with adaptation, well-being, and performance (e.g., Kammeyer-Mueller et al., 2009). Therefore, we propose that coaching interventions aimed at enhancing coachees' intrinsic goal-orientation and self-efficacy are essential in the contemplation stage as they will increase the effectiveness of coaching interventions in subsequent stages of the coaching process.

## PLANNING FOR CHANGE

In the planning stage (Passmore, 2011), commitments are made and there is an intention to quickly move into action. This stage is similar to what the TTM labels as the preparation stage, which refers to a readiness to change, the setting of goals, and the making of commitments with regard to new (health) behaviors (Prochaska, 2013). In the context of coaching, coaches can help coachees to review and select chosen options, and to clarify and refine goals. A first task for coaches during this stage is to facilitate coachees to further specify their intrinsic goals. However, 'good intentions have a bad reputation' (Gollwitzer, 1999, p. 439), meaning that goal intentions alone do not necessarily lead to effective actions. Instead, in addition to goals, people need to formulate implementation intentions that specify how they will deal with potential obstacles in order to ensure that goals can be attained. We discuss two focal competencies that could be addressed during the planning stage: setting goals and forming implementation intentions.

## GOAL-SETTING

According to Goal-setting Theory (Locke and Latham, 2002), goal-setting refers to the conscious guidance of moment to moment behavior toward a (consciously or unconsciously) desired end-state (Gollwitzer, 1999). Whereas SDT (Deci and Ryan, 1985) specifically focuses on the content of goals and the degree to which this content aligns with basic human needs and an individual's interests and values, Goal-setting Theory mostly focuses on how goals are set and framed after goal-content has been determined.

Goal-setting Theory (Locke and Latham, 2002) and the relevance of helping coachees to set workable and effective goals in particular have been widely recognized in the coaching literature. Most definitions of coaching include the word 'goal-focused' (e.g., Grant, 2003) emphasizing that coaching is in

essence a goal-focused activity (Gregory et al., 2011; Grant, 2012). Setting goals has proven to be essential in making the changes needed to narrow the gap between a current situation and a desired end-state (Heckhausen et al., 2010).

Goal-setting Theory has undoubtedly been one of the most influential theories in coaching research and practice. Most of the empirical work on coaching has been conducted in the context of coaching methodologies that are heavily goal-driven such as the GROW model (see above) of coaching (Whitmore, 2010) and solution-focused coaching interventions that direct a coachee's attention to a desired future situation (Berg and Szabo, 2005; Theeboom et al., 2016). To give an example, Moen and Skaalvik (2009) showed that executives who underwent coaching achieved an increase in goal specificity, elicited more feedback regarding their progress, and had clearer strategies for achieving their goals than executives in a control group. Moreover, meta-analytic research shows that goal-driven approaches to coaching can be effective for improving self-regulation, coping, well-being, and performance (Theeboom et al., 2014).

Outside of the specific coaching research, the literature on goal-setting is arguably one of the richest literatures in the field of organizational psychology and studies have demonstrated that goal-setting is strongly related to change, well-being, and performance (e.g., LePine, 2005). Further, the general literature on goal-setting provides specific guidelines for practitioners as research has shown that goal-setting is most effective when goals are SMART (specific, measurable, achievable, realistic, time-targeted; Rubin, 2002) and when goals are challenging, proximal in time, focused on mastery ('I want to become better than before') rather than performance ("I want to outperform others"; Pintrich, 2000), and when goal-setting is accompanied with seeking feedback about the progress that is made in realizing the goals (Locke and Latham, 2002; LePine, 2005). For example, participants in health programs who set specific goals and self-monitored their progress were found to show better attendance and less dropout (Annesi, 2002), to eat healthier, and to lose more weight (Shilts et al., 2004) than participants who did not set specific goals.

## IMPLEMENTATION INTENTIONS

The preparation stage revolves around planning, which can be described as "a prospective self-regulatory strategy, a mental simulation of linking concrete responses to future situations that can be used to replace spontaneous *in situ* reactions by pre-planned details of action implementation and detailed strategies for coping with anticipated obstacles" (Sniehotta et al., 2005, p. 566). Effective planners should not stop once a goal is set (Gollwitzer, 1999) but they should also proactively think about how their goal-intentions can be translated into behavior and how they can deal with the potential obstacles that could hinder goal-striving (Sniehotta et al., 2005). In other words, planning is about forming implementation intentions which have the form of 'if situation X is encountered, then I will perform the goal-directed response Y' (Gollwitzer and Sheeran, 2006). Coaching seems to be especially suited to forming

implementation intentions: the client-centered dyadic nature of coaching allows for in-depth conversations about (how to deal with) the unique social and practical obstacles that coachees can encounter while translating their intentions into actual behavior.

As coaching is about fostering actual changes rather than merely strengthening intentions to change, especially in organizational contexts where individuals and organizational stakeholders expect some sort of return on their investments (i.e., a positive balance between gains and costs), it is surprising that there is a lack of research on the role that coaching can play in forming implementation intentions. However, several meta-analytic investigations and experimental studies outside the domain of coaching have shown that adding implementation intentions to goal intentions considerably contributes to goal-achievement (Koestner et al., 2002; Gollwitzer and Sheeran, 2006; Bayer et al., 2010). Individuals who combine strong goal intentions with implementation intentions show better progress toward short-term and long-term personal goals than individuals who merely have strong goal intentions (Koestner et al., 2002). In addition, forming implementation intentions benefits well-being because it increases people's self-efficacy in dealing with setbacks and shields them from feelings of anxiety and ego-depletion (i.e., the loss of mental resources necessary for self-control and willpower) during goal-striving (Bayer et al., 2010).

Altogether, setting goals and forming implementation intentions are central in the planning stage of the coaching process and these competencies are necessary for the making and maintenance of actual changes. Hence, we propose that coaching interventions aimed at enhancing coachees' competencies to set goals and to form implementation intentions in the planning stage will increase the effectiveness of coaching interventions in the next stage of the coaching process.

## MAINTENANCE AND TERMINATION: INTEGRATION OF LEARNINGS

Individuals in the maintenance stage have already made important changes but still require to invest some effort in preventing relapse (Prochaska, 2013). This need for relapse prevention becomes less salient (although not obsolete) during the termination stage in which new behaviors have become automatic and have replaced the old patterns of behavior. In the termination stage, individuals disengage from effortful change. In the context of coaching, the most important role of a coach during this stage is to help the coachee to solidify their learnings and to integrate new behaviors into their day-to-day lives in order to ensure the 'transfer of coaching.' A competency that has been inseparably linked to this kind of integrative ("transformative"; Mezirow, 1997) learning is reflection.

## REFLECTION

Reflection concerns 'the pondering, reviewing, and questioning of experiences' (Gallimore et al., 2014, p. 269). Several influential theories, such as Kolb's (1984) Experiential Learning theory and

Mezirow's (1997), Transformational Learning view reflection as a mediator between an experience and learning. Hence, all genuine and profound learning is the result of reflecting on experiences (Dewey, 1933). Schön (1983) distinguishes two main forms of reflection: reflection-in-action (the immediate "thinking on one's feet" in uncertain situations; Cox, 2013) and reflection-on-action which happens after the event. The latter seems most relevant to coaching since coaches are expected to be seldomly present when coachees are actually 'in action.'

Theories on learning and reflection are highly important for coaching (Gray, 2006). First, learning is crucial for the long-term effectiveness of coaching. The return on investment of coaching is much higher when coachees have learned from the coaching experience that their self-regulatory capacities are enhanced and they are able to solve similar problems in the future. In terms of a Chinese proverb: 'Give a man a fish and he will eat for a day, teach him how to fish and he will eat for a lifetime.' Actually, several roles that coaches typically play substantially overlap with teaching roles (Gray, 2006), namely providing information, serving as a resource, assessing learners' needs and competencies, locating resources or securing new information, setting up learning experiences, working with learners as a sounding board for ideas, and helping learners to develop a positive attitude toward learning and self-directed inquiry (Jarvis, 1995).

While the importance of reflection (on action) has been addressed in the coaching literature (e.g., Burke and Linley, 2007; Cox, 2013), we are not aware of any studies that directly investigated the impact of reflection on (long-term) coaching effectiveness. There is only one study that showed that enhancing the antecedents of reflection, such as mindfulness, in combination with coaching is more effective for goal-attainment than coaching alone (Spence et al., 2008). Moreover, there is some empirical research on reflection in the domain of health education (see Mann et al., 2009). This research indicates that reflection, and collaborative reflection (such as reflection that occurs in the dialog between a coach and a coachee) in particular, is key to deep-level learning. Furthermore, it is argued that reflective practice can be facilitated through creating a "safe atmosphere, mentorship and supervision, peer-support, and time to reflect" (p. 614). Hence, we propose that coaching interventions aimed at enhancing coachees' competencies to reflect on their experiences in the maintenance and termination stages will increase the transfer of coaching.

## DISCUSSION

The main aim of this conceptual analysis was to outline a theoretically rich and empirically driven temporal map for coaching interventions. Such a map is useful for both coaching practitioners and scholars alike. For coaching practitioners, a temporal map can help to determine focal points that could facilitate the change process and subsequently, to decide which interventions will be most fruitful to help the coachee to move through the different stages. For scholars, considering the coaching literature through the lens of a temporal map helps to

develop theory on the coaching process and to identify directions for future research.

Based on the TTM we delineated a temporal map of coaching and based on seminal theories and research in clinical, social, and organizational psychology we identified crucial competencies that coachees should develop or strengthen throughout the different stages of the coaching process. We posited that in the preparatory contemplation stage, the main task of a coach is to foster the coachees' awareness of both his/her own needs and drives for change by enhancing mindfulness and those of the environment by enhancing environmental receptiveness. In the contemplation stage, the main task of the coach is to help the coachee to explore both his/her willingness to adapt by enhancing the focus on intrinsic (self-concordant) goals and his/her perceived ability to adapt by enhancing self-efficacy. In the planning stage, the main task of the coach is to facilitate the coachee to prepare for action by assisting them to set goals according to the principles of Goal-setting Theory and to develop implementation intentions that can help coachees to foresee and proactively cope with potential obstacles. Finally, we posited that in the maintenance and termination stages, the main task of coaches is to help coachees to reflect on their experiences and learning in order to increase the chance that coaching has a lasting impact.

We emphasize that the suggested focal competencies are not intended to be exhaustive and that future theoretical and empirical work is needed to reveal other important competencies that should be addressed in the different stages and to further refine the temporal map we outlined in this paper. As our review of the relevant literature for each stage points out, this might be especially relevant for the preparatory contemplation and maintenance/termination stages, which, up to now, have largely been ignored in the coaching literature.

In addition to proposing focal competencies per stage, we emphasize that the development or strengthening of these competencies in one stage are a prerequisite for coaching effectiveness in follow-up stages. Specifically, we propose that exploring one's willingness and ability to change and developing an intrinsic goal orientation and self-efficacy in the contemplation stage will be doomed to fail if coachees lack mindfulness and environmental receptiveness. Likewise, the setting of goals and implementation intentions in the planning stage will be hard to realize when coachees lack an intrinsic goal orientation and self-efficacy. Finally, reflection in the maintenance stage will be superficial and insufficient for transfer of change when coachees are unable to set clear goals and implementation intentions. Altogether, we propose that the competencies together are the foundation of an individual's sustained self-regulatory capacity, which is the ultimate goal of coaching.

Our temporal perspective on the coaching process requests the further development of a temporal theory of coaching that may be rooted in, and extend, existing theories such as the Conservation of Resource Theory (COR; Hobfoll, 2002) and the Broaden-and-Build Theory of Positive Emotions (B&B; Fredrickson, 2001). COR theory states that individuals are motivated to protect and strengthen themselves through the acquisition, maintenance,

and replenishment of internal resources (e.g., self-efficacy) and external resources (e.g., organizational support) needed to cope with and adapt to environmental conditions (Hobfoll, 2002). COR theory articulates several assumptions that are highly important in the context of coaching. First, COR theory argues that resources are malleable and can be increased or decreased by individuals themselves, and thus, are accessible to interventions. Second, COR theory proposes that resources do not exist in a vacuum, but rather develop and co-exist in an ecological system with strong interrelationships called resource caravans (Hobfoll, 2011). Identifying resource caravans is highly relevant for the development of series of coaching interventions. Finally, COR theory suggests the existence of 'gain spirals,' which occur when an individual is able to cope successfully with environmental conditions and strengthens his or her resources in turn. The reciprocity of resources and outcomes into gain spirals is particularly important for the timing and phasing of coaching interventions. A coach may create a gain spiral by using an intervention that promotes competencies of an intrinsic goal orientation and self-efficacy in the contemplation stage which leads to immediate success and then applying follow-up interventions that build on this success.

Broaden-and-Build Theory of Positive Emotions postulates that positive emotions broaden peoples' scope of thoughts and actions or thought-action repertoires. Further, it proposes that these broadened thought-action repertoires stimulate experimentation, risk taking and innovative behaviors, which result in the discovery of novel strategies that can be used to adapt effectively to the environment and to build the resources needed to deal with challenges in the future (Fredrickson and Joiner, 2002). This "build"-component of B&B theory also includes a reciprocal mechanism similar to the gain spirals described in COR theory. Successful competency development in one stage of the coaching process induces positive emotions that will lead to broadened thought-action repertoires in a next stage.

Besides a need for more theory development along the lines suggested here, we envision several specific issues that could be addressed in future research on coaching. Below, we shortly discuss three of those issues: (1) the assessment of where a coachee is in the change process (2) a coachee's movement through the different stages of change and (3) the coaching approaches and interventions that are particularly suitable in the different stages.

## RESEARCH AGENDA

Coaching does not necessarily starts when a coachee is in the preparatory contemplation stage. It is possible that a coachee has already gone through the preparatory contemplation and contemplation stages by him or herself (or with the help of another coach, mentor or manager) and seeks help for translating earlier discoveries about (individual and environmental) drives for change into action (by developing suitable goals and forming implementation intentions in the planning stage). Likewise, it is also possible that a coachee seeks the help of a coach in the maintenance stage, in order to allow him- or herself to reflect



on previous experiences. These examples show that in order for a coach to be effective, he or she needs to be aware of where the coachee is in the process of change (Grant, 2012). Therefore, a potentially interesting avenue for future research would be to develop and investigate diagnostic tools that can help to assess where the coachee stands in the process. A promising starting point may be to adapt existing questionnaires, such as for example the Readiness To Change Questionnaire (Rollnick et al., 1992), for use in a coaching context.

Another (and related) question that remains open for future research is when and to what degree coaches should be targeted at ‘taking a step-back’ rather than moving forward through the stages. To give an example, consider a coachee who has been unsuccessful in attaining a goal (finishing a project) and fails to fix this problem by vigorously setting goals and forming implementation intentions. In this case, a potentially fruitful direction for a coach could be to assist the coachee in stepping back into the preparatory contemplation and/or contemplation stages in order to find out to whether the coachee is aware of all relevant environmental factors, whether his or her goals are self-concordant, and whether he or she is self-efficacious in undertaking effective action (before setting goals and forming implementation intentions). After all, other theories related to individual-level change such as the Intentional Change Theory (ICT) postulate that change is often a non-linear and discontinuous process (Boyatzis, 2006). We hope that future studies will explore a possible integration of the temporal map of coaching developed in this paper and ICT, as they could mutually strengthen each other. Specifically, the ‘discoveries’ that are, according to ICT, central to sustainable individual-level change can be linked to the coaching stages we discussed here. As an example, the ‘ideal self and personal vision’ discovery (see Boyatzis and Akrivou, 2006) fits well with the contemplation stage, as both entail a motivational component. As another example, the ‘learning agenda and plan’ discovery fits well with the planning stage. Integrating specific suggestions for interventions as provided by ICT with our temporal map of coaching could help coaches to develop these interventions. The ‘personal balance sheets’ (Boyatzis, 2006) are a good example of how ICT-based interventions can be incorporated in coaching practice.

This brings us to our final recommendation for future research. Future studies could investigate which specific coaching interventions are best suited to target the focal competencies outlined for each stage of the coaching process. Currently, most approaches to coaching described in contemporary textbooks (Cox et al., 2010; Palmer and Whybrow, 2014) originate in therapeutic interventions (e.g., cognitive-behavioral coaching, motivational interviewing, narrative coaching). However, coaching differs from therapy on many levels (e.g., the scope of the problems discussed, the target population, the duration and the degree of goal-orientedness of the process) and coaching interventions should differ accordingly (Grant, 2014). The focal competencies we have outlined may help to identify, develop, and investigate tailored coaching interventions.

To give an example, we discussed how enhancing a coachees’ self-efficacy could be important during the contemplation

stage. According to Social Cognitive Theory (Bandura, 1977) self-efficacy beliefs are acquired via four informational sources: personal performance accomplishments, vicarious learning, social persuasion, and physiological and affective states. Future research could investigate how coaches can address these informational sources in order to enhance a coachees’ self-efficacy. For instance, a coach could emphasize personal performance accomplishments by asking a coachee to tell about previous success experiences related to the problem and/or to assist a coachee in seeking opportunities for successful accomplishments. Or, a coach with expertise in leadership can provide examples of successful leadership behaviors to inspire vicarious learning. Finally, a coach could engage in social persuasion by giving compliments and encouragements (e.g., ‘you have been a key employee in this team for years, I am sure you’ll do great as a manager’). Similarly, future research could investigate which interventions are useful to enhance mindfulness (e.g., mindfulness meditation; see Spence et al., 2008 for an example) and environmental receptiveness (e.g., perspective taking exercises) in the preparatory contemplation stage, setting SMART goals and forming implementation intentions in the preparation stage, and reflecting on experience (e.g., using diaries and written reflections) in the maintenance/termination stage.

In order to address these issues (the stage of change assessment, the movement between stages, and the utility of specific interventions for each stage), we encourage a combination of quantitative and qualitative research methodologies. Coaching often is a highly individualized and complex process (Passmore and Theeboom, 2015) and coachees often work in complex organizational settings that may influence their change process. Therefore, quantitative research alone is unlikely to capture the complexity and the richness of experiences and working environments of coachees (Grant, 2013). It is only by combining different methodologies that we can attain a comprehensive understanding of coaching as a change methodology.

## CONCLUSION

We are the first to acknowledge that the temporal map outlined in this paper is truly a starting point and could benefit from input from scholars in different fields of psychology, coaching, and practitioners alike. We have argued that a temporal map of the coaching process is needed because it will promote theory and research on coaching which, in turn, will result in the development of timely and tailored coaching interventions. In this paper, we have outlined various focal competencies that coaches could address in the different stages of the coaching process. Moreover, we have proposed that the timely targeting of competencies will enhance the effectiveness of coaching interventions in subsequent stages. While the competencies are based on previous coaching literature and seminal theories and research in clinical, social, and organizational psychology, our propositions require empirical tests to extend and refine our temporal map. We hope that the temporal map of the coaching

process delineated in this paper may be a starting point for scholars and practitioners who are dedicated to understanding and developing coaching as a change-methodology.

## AUTHOR CONTRIBUTIONS

The three authors discussed the main purpose and design of this conceptual analysis together. TT wrote a first draft of the

main part of this paper. AV added text to the first draft and BB also added text in a first round. The authors discussed the text together and each of the authors critically revised the first text in a second round in a similar order as in the first round. The paper went through several subsequent rounds (and discussions) in the same order as in the first and second round. Finally, all authors approved the current version and agreed that all authors are accountable for all aspects of the work, including issues of accuracy and integrity of the writing process and written text.

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# Investigation of Psychophysiological and Subjective Effects of Long Working Hours – Do Age and Hearing Impairment Matter?

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Following current prognosis, demographic development raises expectations of an aging of the working population. Therefore, keeping employees healthy and strengthening their ability to work, becomes more and more important. When employees become older, dealing with age-related impairments of sensory functions, such as hearing impairment, is a central issue. Recent evidence suggests that negative effects that are associated with reduced hearing can have a strong impact at work. Especially under exhausting working situations such as working overtime hours, age and hearing impairment might influence employees' well-being. Until now, neither the problem of aged workers and long working hours, nor the problem of hearing impairment and prolonged working time has been addressed explicitly. Therefore, a laboratory study was examined to answer the research question: Do age and hearing impairment have an impact on psychophysiological and subjective effects of long working hours. In total, 51 white-collar workers, aged between 24 and 63 years, participated in the laboratory study. The results show no significant effects for age and hearing impairment on the intensity of subjective consequences (perceived recovery and fatigue, subjective emotional well-being and physical symptoms) of long working hours. However, the psychophysiological response (the saliva cortisol level) to long working hours differs significantly between hearing impaired and normal hearing employees. Interestingly, the results suggest that from a psychophysiological point of view long working hours were more demanding for normal hearing employees.

**Keywords:** long working hours, age, hearing impairment, cortisol, psychophysiology

## INTRODUCTION

Until now, neither the problem of aged workers and long working hours, nor the problem of employees suffering from hearing impairment and prolonged working time has been addressed explicitly in a psychophysiological approach. Moreover, hearing impairment is one of the prominent symptoms of increasing age. The current paper addresses this interplay in a laboratory study.

## Age and Age-Related Impairments

Demographic development raises expectations of an aging of the working population in the next years (e.g., World Health Organization [WHO], 1993; Statistik Austria, 2014), making it more

and more important to keep employees healthy and strengthen their ability to work until they reach retirement-age. Demographic changes also require the working world to adapt to fewer available younger professionals; therefore elderly skilled employees have to be involved more in the working process (Müller, 2011). When employees get older, dealing with age-related impairments of sensory functions such as hearing impairment or vision-related impairments, is a central issue. While vision-related impairments are often corrected and the wearing of glasses is not a problem in society, unfortunately the same is not true for hearing impairment. People with hearing impairments often do not own a hearing aid. Reasons for this are for example that they feel that they hear well enough in most situations, hearing aids are uncomfortable or won't help them and that they would be embarrassed to wear hearing aids or they have not yet tested their hearing (Hougaard and Ruf, 2011). In addition, it also appears that, even if a hearing impaired person owns a hearing aid, hearing aids are sometimes not used regularly by their owners. So far, however, there has been little discussion about dealing with hearing impairment in the working world.

World Health Organization [WHO] (1993) defines aging workers as employees who are 45 years and older. According to World Health Organization [WHO] (2015a) data, over 5% of the world's population (360 million people) has disabling hearing loss, which has been supported by a recent German study (Gablenz et al., 2017). In addition, the World Health Organization [WHO] (2015b) estimates that due to unsafe listening practices or rather unsafe or damaging levels of sounds (e.g., while listening to their audio devices, visiting clubs, bars or discotheques), 1.1 billion young people could be at risk of hearing loss. Considering this, research regarding reduced hearing capacity while people are employed or capable of employment becomes increasingly important. Hearing impairment has a significant impact on the quality of life of the person and was also found to be associated with reduced subjective emotional well-being and increased symptoms of depression (Scherer and Frisina, 1998; National Academy on an Aging Society, 1999; Mathers et al., 2000; Arlinger, 2003; Dalton et al., 2003; Monzani et al., 2008; Hawkins et al., 2012; Heffernan et al., 2016). Following Hawkins et al. (2012), self-reported hearing impairment influences not only the quality of life negatively, furthermore, the negative influence of hearing impairment seems to be stronger than other chronic medical problems like heart problems, diabetes, hypertension, or arthritis, which may also have an influence on early retirement. This view is supported by the National Academy on an Aging Society (1999) that reported a retirement rate of 18% for hearing-impaired, and a retirement rate of 12% for normal hearing American employees aged between 51 and 61 years. Analyses of data of the whole United States-working population have shown that 75% of the normal hearing compared to 67% of the hearing impaired working-age population was employed. However, a simple causal interpretation of these data is not possible.

Apart from the previously discussed impact on the quality of life of the concerned person itself, uncorrected reduced hearing also influences all persons that want to communicate with persons with hearing impairment (Jennings and Shaw, 2008;

Scarincia et al., 2009; Lemke and Scherpiet, 2015). One can easily imagine that this can have a strong impact at work. In addition, previous studies reported negative effects of hearing impairment on (job) performance caused by an impairment of speech comprehension, memory performance and selective attention (Bostel et al., 2000; Pearman et al., 2000; Neijenhuis et al., 2004; Baskent et al., 2010; Lin et al., 2011; Rönnerberg et al., 2011; Rudner et al., 2011; Nachtegaal et al., 2012; Lemke and Scherpiet, 2015; Wingfield et al., 2015; Frtusova and Phillips, 2016; Mudar and Husain, 2016). Furthermore, the information processing of hearing impaired is associated with significantly increased effort (Rabbitt, 1968; Kahneman, 1973; McCoy et al., 2005). To explain these findings, the so-called effortfulness hypothesis is used: Hence, to achieve the same perceptual performance as a normal hearing person, a person with hearing impairment must expend a higher performance effort (or more cognitive resources). This is followed by lower available process resources to decode the content and transfer it to short- and long-term memory. The question arises whether this supposed increase in performance effort of hearing impaired has an influence on their well-being or perceived exhaustion during working hours, especially under exhausting working situations such as working overtime hours.

## Long Working Hours

According to article 2 of the Directive 2003/88/EC of the European Parliament and of the Council of 4 November 2003 concerning certain aspects of the organization of working time (European Parliament and Council of the European Union, 2003; p. L299/10), "working time" is defined as "any period during which the worker is working, at the employer's disposal and carrying out his activity or duties, in accordance with national laws and/or practice." "Rest period" is defined as "any period which is not working time." Generally, occupational scientists define "long working hours" as working hours that are beyond normal weekly hours of work. However, no consistent number of a defined limit of weekly hours can be found in literature beyond which additional hours are considered as long working hours. For example, Caruso et al. (2004) define long working hours as more than 40 working hours a week, whereas Dex et al. (1995) define them as more than 60 h of working. According to article 6 "Maximum weekly working time" of the Directive 2003/88/EC" (European Parliament and Council of the European Union, 2003; p. L299/11), "the average working time for each seven-day period, including overtime, does not exceed 48-hours" [article 6 (b)]. Therefore, this measure is also often used (e.g., Beswick and White, 2003; Kodz et al., 2003). An exact limit for working hours of a working day is not defined in the European Directive, however, a recovery time of 11 h a day is prescribed. Following the European Foundation for the Improvement of Living and Working Conditions (Eurofound, 2016) "overtime" is defined as "time worked in addition to hours worked during normal periods of work, and generally paid at higher rates than normal rates" (p. 5). Following this definition the normal weekly working hours have to be taken into account which can vary in different countries, sectors, and/or organizations (Eurofound, 2016). Also, overtime is not always paid or compensated by compensatory time off. In the United States, a differentiation between "exempt

employees” and “non-exempt employees” do exist (Doyle, 2017). Following Doyle (2017) “the term ‘exempt’ means exempt from being paid overtime.” Following the Overtime Pay Requirements of the Fair Labor Standards Act (FLSA; U.S. Department of Labor: Wage and Hour Division, 2012), “FLSA requires employers to pay covered non-exempt employees at least the federal minimum wage and overtime pay for all hours worked over 40 in a work week.” An employee’s workweek is defined as “a fixed and regularly recurring period of 168-hours – seven consecutive 24-hour periods” (U.S. Department of Labor: Wage and Hour Division, 2008; p. 1). Following Dahlgren et al. (2006), long working hours are prevalent within today’s working world, which has been supported by the results of the Foundation’s Third European Survey on Working Conditions (15 EU Member States; Boisard et al., 2003) which showed that at least 17% of the full-time employees are affected by long working hours, i.e., worked more than 45 h a week.

Previous research has shown that the organization of working time has not only an effect on health and social contacts/the social environment, but is also important from an economic point of view. For example, Nachreiner (2002) concludes that the risk of accidents increases exponentially after the seventh and eighth hour of overtime. This in turn results in increased subsequent costs such as remuneration in the event of sickness or increased insurance premiums. Furthermore, overtime increases the error rate, which from a long-term perspective, leads to an increase in economic costs. Other research groups also reported a negative impact on work performance and safety at work (e.g., Dembe et al., 2005; Folkard and Lombardi, 2006; Knauth, 2007). However, there are also studies that could not demonstrate a correlation between longer working hours and an increased risk of accidents (e.g., Trimpop et al., 2000; Akerstedt et al., 2002). Following Caruso’s (2006) summary long working hours have direct impact on health and safety of employees. For example, long working hours are associated with insufficient sleep, as well as general fatigue. Furthermore, employees with long working hours show poorer performance in cognitive tasks, concentration and attention, and additionally, long working hours lead to unhealthy eating habits and a higher risk of long-term illnesses and injuries. On the other hand, not only the employees themselves are affected by long working hours, but also their family environment (Krenn and Hermann, 2004; Geurts et al., 2009). In addition to a subjectively perceived poorer well-being (Caruso et al., 2004), long working hours can have an impact on an increased risk of cardiovascular symptoms (Buell and Breslow, 1960; Uehata, 1991; Liu and Tanaka, 2002) and influence blood pressure negatively (elevated blood pressure through to hypertension; Iwasaki et al., 1998; Park et al., 2001; Rau and Triemer, 2004; Su et al., 2008). In addition, Park et al. (2001) showed an association with lowered heart rate variability. Also, diseases of the musculoskeletal system increase with longer working hours (Raediker et al., 2006; Trinkoff et al., 2006). Furthermore, a relationship between metabolic disorders such as diabetes mellitus or the metabolic syndrome and long working hours was shown (Sparks et al., 1997; Spurgeon et al., 1997; Violanti et al., 2009). The question arises whether a critical interplay between age and age-related impairments like hearing

impairment and effects of long working hours do exist. Therefore, age differences regarding long working hours are of importance. Here, a trend reversal seems to take place. Whereas in 1979, in the United States the group of employees with the longest working hours were between 25 and 34 years old and employees aged between 55 and 64 years worked far less, this trend had been reversed in 2006 (Kuhn and Lozano, 2006). Very similar conclusions were shown by Beswick and White (2003) for working hours in the United Kingdom, and the results of the Foundation’s Third European Survey on Working Conditions (15 EU Member States; Boisard et al., 2003) additionally indicate that older employees do not work shorter hours than younger employees. Considering all of this evidence, it seems that studies with an age-specific point of view on the effect of long working hours, becomes more and more important. Especially, due to the expectation that the occurrence of aftereffects of long working hours will manifest themselves as problems with advanced age. For this reason, our study focuses not only on the impact of reduced hearing capacity but also on age.

## Recovery

In addition to previously described general effects of age, age related impairments and long working hours, also the interplay with employees’ recovery, is of interest. Following Sonnentag et al. (2008, p. 675) “recovery is an important concept in the context of job stress and strain.” Recovery is required in order to compensate negative consequences of strain, such as mental fatigue, and to restore conditions to achieve optimum performance (Allmer, 1996). Kallus and Erdmann (1994) define recovery as dynamic psychophysical process. This includes basic biological regulation processes at different physiological levels as well as mental regulation and control processes, up to complex emotions, cognitions, actions, and social interactions. Following Kellmann and Kallus (2000, p. 210) recovery is characterized as follows: “recovery is a process in time, is related to the type of and duration of stress, depends on a reduction of, a change of, or a break from stress, is individually specific and depends on individual appraisal, ends when the psychophysical state of restored efficiency and homeostatic balance is reached, includes purposeful action (active recovery), as well as automated psychological and biological processes restoring the initial state (passive recovery) and can be described on various levels (e.g., physiological level, psychological level, social level, socio-cultural level, environmental level). Furthermore, recovery processes can be displayed in various organismic subsystems, various sub-processes of recovery can be dissociated and recovery is closely tied to boundary conditions (e.g., sleep, social contact, etc.).” Kallus (2016, p. 42) suggests that these characteristics show “that recovery is much more than eliminating fatigue or restarting the system.”

According to Nachtegaal et al. (2009) there is a significant correlation between hearing status and need for recovery after work in a way that a higher need of recovery after work is reported by people with poorer than by people with better hearing status. Furthermore, older employees seem to have a stronger need of recovery than younger employees (e.g., Jansen et al., 2002; Kiss et al., 2008). In addition, Sonnentag and Zijlstra (2006) reported

a positive relationship between the amount of overtime work and the need for recovery. From our point of view, there is a gap in literature regarding the combination of these variables and their influence on employees' recovery and well-being. Our study addresses this gap in literature and therefore focusses on hearing capacity and age under exhausting working situations such as working overtime hours, respectively, long working hours.

## Endocrine Stress Parameters

As mentioned before, long working hours can provoke stress. On the one hand, stress can be assessed subjectively (e.g., questionnaires). On the other hand, psychophysiological parameters, such as cardiovascular activity and responses of the endocrine system are able to show stress or rather arousal of an individual from an objective point of view. Regarding the endocrine system, mental, emotional, and physical stress can lead to an increase in cortisol levels within minutes. This is one of the reasons why the psychophysiological parameter cortisol is applied as one of the most important stress hormones besides the catecholamines noradrenaline and adrenaline (Kirschbaum, 1991). Cortisol is controlled by the hypothalamic-pituitary-adrenal axis (HPA axis). If the HPA axis is dysregulated, a hyper- or hyposecretion of cortisol is possible (Pruessner et al., 1997). Cortisol is a steroid hormone produced by the adrenal cortex and affects many physiological systems. It increases the carbohydrate-, fat-, and protein-metabolism and enables a rapid physical performance enhancement and, in addition, affects immune functions. Thus, the organism is able to adequately respond to stress (Selye, 1936). Cortisol is measured at different measurement times in the presented study (see Materials and Methods section). Following a circadian rhythm, the cortisol level is typically high in the morning after waking up, showing an increase by approximately 50–60% in the first 30–45 min after awakening, and decreases rapidly in the first hours thereafter. During the day the cortisol level decreases slowly until it reaches its lowest level around midnight (Pruessner et al., 1997; Wust et al., 2000). The circadian rhythm is very stable over age (healthy persons). Adam et al. (2006) reported no significant effects of age on the wakeup cortisol level.

Jahncke and Halin (2012) used salivary cortisol to investigate differences between hearing impaired and normal hearing participants during a simulated open-plan office working situation. The results show a tendency toward higher stress levels during noise exposure of 60 L<sub>Aeq</sub>, for hearing impaired compared to normal hearing participants. The authors assume that this effect is possibly caused by the fact that hearing impaired are being more noise sensitive and distracted by noise than normal hearing individuals. Controversial results for the relationship between (long) working hours and cortisol levels are shown in literature. Dahlgren et al. (2006) compared a normal working week (8 h/day / 40-h workweek) to a week with long working hours (12 h/day / 60 h/week). No significant main effect of overtime was shown for the salivary cortisol data of the participants but a trend toward an interaction effect for the morning values: An increase at the end of the working week with long working hours compared to the normal working week was reported. Due to the relatively small sample size (18

office workers) the authors suggest to interpret these data with caution. On the other hand, Persson et al. (2003) were not able to show a significant association between working hours and salivary cortisol (two working-hour groups: 8 h/5 days, i.e., 40 h a week; 12 h/7 days, i.e., 84 h a week), which was confirmed in a longitudinal study by Steptoe et al. (1998). Further, Marchand et al. (2012) suggest that the effect of working hours on the cortisol level is non-linear and therefore only becomes visible after a time period of more than two working days. Besides this, a negative correlation between job strain and cortisol occurred in the study of Steptoe et al. (1998). However, Steptoe et al. (2000) showed a higher cortisol level of people that experienced a high-level of job strain compared to people that experienced low job strain. This is in line with other research groups that showed a correlation between workload and cortisol awakening response (CAR) and between workload and a stronger increase of the cortisol level after awakening (e.g., Kunz-Ebrecht et al., 2004; Eller et al., 2006). To sum it up, controversial results for the relationship between working hours and cortisol level are shown in literature, while there is more consensus on the relationship between job strain, workload, and cortisol level.

Whereas effects of gender, smoking status, alcohol consumption or job support were often investigated in the different studies, the combined effects of long working hours, age and hearing impairment were not investigated as important variables – at least not in a psychophysiological approach. If age was mentioned in the studies, the authors report that age was controlled within their samples. Our study extends past research on long working hours by including age as variable of interest. Therefore, the aim of the study presented in this paper was to examine if age and hearing impairment, do have an impact on psychophysiological and subjective effects of long working hours. Accordingly, the following research question should be answered: Do age and hearing impairment have an impact on psychophysiological and subjective effects of long working hours?

## MATERIALS AND METHODS

A laboratory study with repeated measurement design was chosen. The study was conducted in an experimental laboratory of the department of psychology at the University of Graz, Austria.

### Participants

In total 61 employees (white-collar workers) participated in the laboratory study. Salivary cortisol measurements of 51 of them were available. Loss of salivary cortisol data of 10 participants was due to not analyzable samples or the non-willingness to participate in this psychophysiological measurement. Therefore, for analyses presented within this paper, the final sample consists of 51 white-collar workers, aged between 24 and 63 years ( $M = 39.69$ ,  $SD = 11.62$ ). Following the definition of World Health Organization [WHO] (1993) whereas aging workers are defined as workers who are aged 45 years and older, 22 participants (43.14%) belong to the group of aging workers or



older workers. 50.98% of the participants were female and 49.02% were male. All of them performed their work primarily in office workplaces. 7.84% of the participants were self-employed, 21.57% have a leadership position. 54.90% of the participants reported an average overtime of 1–5 h/week in the last 3 months before they participated in the study, 25.50% of 6–10 h/week, 9.80% of 11 and more hours per week and 9.80% did not work overtime hours in the last 3 months. None of the participants owns a hearing aid. Participants' hearing abilities were screened by audiometry. Their hearing loss measured by audiometry ranged for the worse hearing ear from 2.50 to 46.25 pure tone average (PTA) dB HL ( $M = 11.47$ ,  $SD = 7.06$ ). The criterion to be included in the hearing impaired group was a worse ear hearing loss of 15 dB or more on a minimum of two out of the four (speech relevant) frequencies 0.5, 1, 2, and 4 kHz. Following the criterion, 21 participants (female: 12, male: 9; age:  $M = 45.67$ ,  $SD = 12.12$ ) were included in the hearing impaired group, 30 participants (female: 14, male: 16; age:  $M = 35.50$ ,  $SD = 9.34$ ) were included in the normal hearing group. The unequal distribution regarding age of the two groups,  $t(49) = -3.38$ ,  $p = 0.001$ , can be explained by the natural aging process of auditory functions. To control possible effects of the commute of the participants from their workplace to the experimental laboratory, a baseline measurement of all study variables was performed at the beginning of the experimental session. Regarding the study variables, no significant differences at the baseline measurement were found for the two different hearing groups. Therefore, the effects can be attributed to the study manipulation. In addition the hearing groups do not differ significantly regarding average overtime per week in the last 3 months nor regarding the number of overtime hours in the current working week in which they participated in the study.

The participants were recruited via the homepage of the University of Graz, short communications in regional newspapers and notices that were posted at notice boards in different companies, supermarkets, universities, medical practices of otolaryngologist and hearing aid acousticians. All participants received 65 Euro to refund their transportation costs and as incentive for their participation. Informed written consent was obtained from all participants.

## Study Design, Materials, and Procedure

To answer the research question if age and hearing impairment do have an impact on psychophysiological and subjective effects of long working hours, a repeated measurement design was chosen for the laboratory study. Hearing impairment [normal hearing employees, hearing impaired employees (worse ear hearing loss of 15 dB or more on a minimum of two out of the four (speech relevant) frequencies 0.5, 1, 2, and 4 kHz)] was defined as independent variable and age of the participants was included as covariate in the analyses. Five different dependent variables (DV) were measured: DV1: perceived recovery, DV2: perceived fatigue, DV3: subjective emotional well-being, DV4: subjective physical symptoms, DV5: cortisol level.

Time of measurement was used as repeated measurement factor. Overall, each study participant participated in the study for two consecutive days. To participate in the study, each study

participant came to our laboratory of the University of Graz directly after his/her regular working hours. On both days the participants had to work in the study (performance tests, etc. – Vienna Test System, Schuhfried GmbH) at least three additional hours to simulate a situation of long working hours (day 1: three to max. five additional hours; day 2: three additional hours). The examination procedure is based on the “Grazer fatigue paradigm” (Deixelberger-Fritz et al., 2003), which is well-established for experimental studies of stress, and especially fatigue. With the choice of a long period of execution and carrying out the investigation after a normal working day of the participants, the approach emphasizes the results of Healy et al. (2004). These results suggest that a reliable measurement of fatigue may only be possible after a working duration of at least 1–2 h on top of the usual working hours per day.

Two measurement times were analyzed for all dependent variables (subjective measures and saliva cortisol level): (1) at the end of the study session of the first day of the laboratory study, and (2) at the end of the study session of the second day of the laboratory study. In addition, a third measurement time was available for saliva cortisol level: the waking cortisol level on the second day of the study.

## Pure-Tone Audiometry

Pure-tone audiometry was conducted in the beginning of the first study session, using a standard Audiometer (Micromate 304, Madsen Electronics). Following the WHO (Mathers et al., 2000) and the European Working Group on Genetics of Hearing Impairment [EUWG] (1996) hearing loss was measured by audiometry and calculated on the basis of the pure-tone average (PTA) of hearing thresholds at 0.5, 1, 2, and 4 kHz.

## Saliva Cortisol

To measure cortisol in saliva, saliva samples were obtained with Salivette tubes (Sarstedt) at three measurement times during the study: (1) at the end of the study session of the first day of the laboratory study, (2) the waking cortisol level on the second day of the study and (3) at the end of the study session of the second day of the study. Measurement time (1) and (3) were instructed by the investigator. Only measurement time (2), the waking cortisol level had to be carried out independently by the study participants. The participants were instructed to take the saliva sample 30 min after waking up in the morning and not to brush their teeth, eat, drink, smoke, or do physically demanding activities before providing the saliva sample. The exact time had to be recorded in a protocol. The saliva samples were analyzed at the Technical University of Dresden (Department of Psychology, Biopsychology, Prof. Dr. Kirschbaum) by a professional blind to the experimental conditions. There, the samples were centrifuged for 5 min at a rotation speed of 3,000 rotations/min. The cortisol concentration was measured using cortisol luminescence immunoassay (CLIA) with a high sensitivity of 0.16 ng/ml.

## Subjective Emotional Well-being

For the measurement of the current subjective emotional well-being a category adjective checklist (German version) consisting

of 24 items (BSKE-24-ak) from Janke et al. (1986) was used. The BSKE is based on the German Adjective Checklist EWL (Janke and Debus, 1978). It assesses the current emotional state multidimensional. The eight different sub-dimensions of the BSKE are: balance, lifted mood, activation, excitement, irritability, anxiety/sadness, de-activation, and extraversion. Responses are based on a seven-point scale ranging from 0 (not at all) to 6 (most intensive). Reliabilities are given as 0.70 to 0.90 (Janke and Debus, 1978). Example item: “Feeling of emotional well-being (e.g., pleasant, satisfied) ... 0 (not at all) to 6 (most intensive).” Two measurement times were analyzed: (1) at the end of the study session of the first day of the study, and (2) at the end of the study session of the second day of the laboratory study.

### Subjective Evaluation of Perceived Recovery

For the measurement of perceived recovery, the German version of the scale for perceived recovery (SwE) from Kallus and Eibel (2007) was used. Responses are based on 7 descriptive categories and 51 fine adjustments from 0 (not at all recovered) to 51 (extremely strong recovered) following the method of the category subdivision approach (Heller, 1985). Participants have to assess their current perceived recovery by following a two-step procedure: First participants have to scale their perceived recovery in one of seven descriptive categories (“not at all recovered” to “extremely strong recovered”) and afterward, they have to select one out of 10 levels within the initially selected descriptive category (except for the two extrema not at all/extremely strong recovered, where only one level is available). Two measurement times were analyzed: (1) at the end of the study session of the first day of the study, and (2) at the end of the study session of the second day of the laboratory study.

### Subjective Evaluation of Perceived Fatigue

For the measurement of perceived fatigue, the German version of the scale for perceived fatigue (SwM) from Kallus and Eibel (2008) was used. Responses are based on 7 descriptive categories and 51 fine adjustments from 0 (not at all fatigued) to 51 (extremely strong fatigued) following the method of the category subdivision approach (Heller, 1985). Participants have to assess their current perceived fatigue by following a two-step procedure: First participants have to scale their perceived fatigue in one of seven descriptive categories (“not at all fatigued” to “extremely strong fatigued”) and afterward, they have to select one out of ten levels within the initially selected descriptive category (except for the two extrema not at all/extremely strong fatigued, were only one level is available). Two measurement times were analyzed: (1) at the end of the study session of the first day of the study, and (2) at the end of the study session of the second day of the laboratory study.

### Subjective Physical Symptoms

For the measurement of the current subjective physical symptoms the 24-item German version of the multidimensional physical symptom list (MKSL-24-ak) from Erdmann and Janke (1994) was used. The seven different sub-dimensions of the MKSL are: pain; nausea, cholinergic symptoms; vegetative symptoms; adrenergic symptoms; general physical relaxation;

palpitations; flushing, sensation of heat. Responses are based on a seven-point scale ranging from 0 (not at all) to 6 (most intensive). Reliabilities are given as 0.30 to 0.70 (Krejczka, 2006). Example item: “Feeling physical weakness or physical exhaustion ... 0 (not at all) to 6 (most intensive).” Two measurement times were analyzed: (1) at the end of the study session of the first day of the study, and (2) at the end of the study session of the second day of the laboratory study.

## Statistical Analyses

The statistical analyses of the data were conducted using the software SPSS for Windows. MANCOVAs and ANCOVAs with repeated measures were used as statistical procedure. The analyses were based on a significance level of 5%.

## RESULTS

### Subjective Emotional Well-being

The results of a MANCOVA with repeated measures showed a significant effect of the covariate age. Following the univariate tests for the eight sub-dimensions, this effect reaches the level of significance only for the sub-dimension irritability,  $F(1,48) = 5.42$ ,  $p = 0.024$ ,  $\eta_p^2 = 0.101$ . All other effects do not reach the 5%-level of significance. The coefficients are shown in **Table 1**. Regarding the sub-dimension irritability, correlations between the age of the participants and their reported irritability at the end of the study sessions show that irritability tends to

**TABLE 1 |** Results of the ANCOVAs and MANCOVAs.

	<i>F</i>	<i>df</i>	<i>df</i> <sub>Error</sub>	<i>p</i>	$\eta_p^2$
<b>Subjective emotional well-being</b>					
Age	2.83	8	41	0.013	0.356
Hearing impairment	1.18	8	41	0.336	0.187
Time	1.08	8	41	0.396	0.174
Time × hearing impairment	0.51	8	41	0.842	0.091
<b>Subjective evaluation of perceived recovery</b>					
Age	0.10	1	48	0.752	0.002
Hearing impairment	0.11	1	48	0.747	0.002
Time	0.17	1	48	0.680	0.004
Time × hearing impairment	0.33	1	48	0.912	<0.001
<b>Subjective evaluation of perceived fatigue</b>					
Age	0.31	1	46	0.584	0.007
Hearing impairment	0.01	1	46	0.949	<0.001
Time	0.07	1	46	0.796	0.001
Time × hearing impairment	0.01	1	46	0.958	<0.001
<b>Subjective physical symptoms</b>					
Age	0.31	7	42	0.945	0.049
Hearing impairment	0.30	7	42	0.952	0.047
Time	1.00	7	42	0.444	0.143
Time × hearing impairment	1.77	7	42	0.120	0.227
<b>Cortisol level</b>					
Age	6.04	1	48	0.018	0.112
Hearing impairment	4.76	1	48	0.034	0.090
Time	0.50	1.06	51.03	0.496	0.010
Time × hearing impairment	3.52	1.06	51.03	0.064	0.068

decrease with age [t1:  $r = -0.227$ ,  $p = 0.109$ ; t2:  $r = -0.233$ ,  $p = 0.100$ ; partial correlation (controlled variable: hearing impairment): t1:  $r = -0.286$ ,  $p = 0.044$ ; t2:  $r = -0.300$ ,  $p = 0.035$ ].

## Subjective Evaluation of Perceived Recovery/Fatigue

Hearing impairment does not have a significant effect neither on the perceived recovery of the participants nor on their perceived fatigue at the end of the study sessions. Also, the covariate age does not significantly impact the results and all within-subject effects did not reach the 5%-level of significance. The coefficients are shown in **Table 1**.

## Subjective Physical Symptoms

The result of a MANCOVA with repeated measures showed no significant effect of hearing impairment for subjective physical symptoms. Also, the covariate age as well as effects of measurement time did not reach the 5%-level of significance (see **Table 1**).

## Cortisol Level

The results of an ANCOVA with repeated measures showed a significant effect for the covariate age and for hearing impairment. Furthermore, the effect time x hearing impairment just failed significance. The results of the analysis of covariance indicated that although age had a significant effect on the cortisol level, group differences remained significant. All other effects do not reach the 5%-level of significance (see **Table 1**). The descriptive statistics are shown in **Table 2**. Hearing impaired employees tend to show lower cortisol levels than normal hearing employees. The effect is most pronounced for the waking cortisol level of the second day (t2). Follow-up analyses (ANCOVAs) that were conducted for each time point, show that the effect only reaches the level of significance for this time of measurement (see **Table 3**). Hearing impaired employees show a significant lower waking cortisol level than normal hearing employees.

## DISCUSSION

The aim of the study was to examine whether age and hearing impairment do have an impact on psychophysiological and

**TABLE 3 |** Cortisol level – results of the ANCOVAs.

	<i>F</i>	<i>df</i>	<i>df</i> <sub>Error</sub>	<i>p</i>	$\eta^2_p$
<b>t1</b>					
Age	1.31	1	48	0.258	0.027
Hearing impairment	0.25	1	48	0.621	0.005
<b>t2</b>					
Age	4.68	1	48	0.035	0.089
Hearing impairment	4.00	1	48	0.051	0.077
<b>t3</b>					
Age	2.79	1	48	0.101	0.055
Hearing impairment	1.76	1	48	0.192	0.035

subjective effects of long working hours. The results show that from a subjective point of view (subjective emotional well-being, subjective evaluation of perceived recovery/fatigue, subjective physical symptoms), no significant group differences can be shown in our study. Furthermore, with one exception for the sub-dimension irritability of the subjective emotional well-being, the covariate age does not have a significant impact on the subjective results. Regarding the sub-dimension irritability it can be shown that irritability tends to decrease with age. However, the findings of the current study do not support the previous research results that older employees seem to have a stronger need of recovery than younger employees (e.g., Jansen et al., 2002; Kiss et al., 2008). Furthermore, the findings are contrary to previous studies which have suggested a reduced subjective emotional well-being of hearing impaired employees (Monzani et al., 2008) and a higher need of recovery after work of people with poorer than of people with better hearing status (Nachtegaal et al., 2009). A possible explanation for these results may be that hearing impaired employees may have a variety of conscious and unconscious coping strategies to cope with demanding working situations. This is an important issue for future research. Furthermore, the motivation of the participants during the study was not assessed. It could be argued that the different groups do differ in their motivation. Maybe older and/or hearing impaired participants do not have to prove themselves as strongly as others. It may be that these participants have perceived the study less demanding than others. The result that the irritability of the participants at the end of the study sessions tends to decrease with age can also be seen as indication for this. Therefore, participant's motivation should be included in future studies.

Interestingly, data of salivary cortisol reveal that the non-significant subjective results are not supported by the objective physiological saliva cortisol data. A significant effect of hearing impairment was shown for the cortisol level. Furthermore, the effect time x hearing impairment just failed significance and a significant effect for the covariate age can be reported. The results of the analyses indicated that although the covariate age had a significant effect on the cortisol level, group differences remained significant: Hearing impaired employees tend to show lower cortisol levels than normal hearing employees. The effect is most pronounced for the waking cortisol level of the second day (t2). Follow-up analyses that were conducted for each time point showed that the effect only reaches the level of significance

**TABLE 2 |** Descriptive statistics: cortisol level – hearing impairment groups.

	Hearing impairment groups	<i>M</i>	<i>SD</i>	<i>N</i>
Cortisol t1 [nmol/l]	Normal hearing group	2.49	1.39	30
	Hearing impaired group	2.49	1.92	21
	Total	2.49	1.61	51
Cortisol t2 [nmol/l]	Normal hearing group	24.24	14.79	30
	Hearing impaired group	19.91	11.19	21
	Total	22.46	13.48	51
Cortisol t3 [nmol/l]	Normal hearing group	2.48	1.02	30
	Hearing impaired group	2.27	1.31	21
	Total	2.40	1.14	51

for this time of measurement. Hearing impaired employees show a significant lower waking cortisol level than normal hearing employees. Following Boucsein and Backs (2000) an increase of cortisol level is an indicator for mental and emotional strain. Following these results, long working hours seem to have a psychophysiological impact on normal hearing employees. The comparison of normal hearing and hearing impaired employees shows that at least three hours of experimentally induced longer working hours result in a stronger response of the stress system of normal hearing employees in the morning of the following day. This effect differs from the expectation that the effort of a hearing impaired participant must expend in order to receive the same perceptual performance as a normal hearing employee (effortfulness hypothesis; Rabbitt, 1968; Kahneman, 1973; McCoy et al., 2005). This might also have an impact on psychophysiological reactions of the organism measured with saliva cortisol. To exclude an effect of possible confounding variables on the waking cortisol level, group differences regarding variables such as awakening time, sleep duration and perceived sleep quality were analyzed (e.g., Edwards et al., 2001). The results show that within our sample, normal hearing and hearing impaired participants do not differ significantly within these variables.

Furthermore, the idea arises that following Steptoe et al. (1998, 2000) which emphasize that job strain is able to influence the cortisol level, lower cortisol levels of hearing impaired employees compared to normal hearing employees (esp. at t2) may also be explained by different levels of job strain of the participants. Unfortunately, this variable was not included in the study but the profession of the participants was surveyed. Additionally they were asked if they have a leadership position which may also correlate with subjectively experienced job strain. Regarding the two hearing impairment groups, no significant differences can be shown concerning the professions of the participants. Also, they do not differ significantly with regard to leadership positions. Another explanation that is not proven yet is that hearing impaired employees anyway have to struggle with a lot of impairment-related difficulties during their normal working life and therefore the additional expense of some additional working hours has not that much negative influence on them at the first sight. It is therefore likely that normal hearing employees are more affected by long working hours than their hearing impaired colleagues, especially after the first day of their occurrence. Another explanation of the results may be that especially persons with mild hearing impairment, who were often part of samples with persons of working age, are able to compensate their impairment and adapt to the situation quite well. Further studies should investigate whether the effect can be confirmed for extended periods of long working hours which might be more demanding than 2 days with overtime hours.

## STUDY LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

This study has some limitations. First, our study participants had to work long working hours on two consecutive days.

Especially regarding the non-significant subjective effects but also regarding effects on the cortisol level (see also Marchand et al., 2012), it is supposed that this singular overtime event was maybe not severe enough to make possible subjective effects of long working hours visible. Further studies should therefore address extended periods of long working hours to receive more information.

Second, we did not test our participants on “normal” working days without working overtime hours. We therefore recommend that future research shall include days without extended working hours as additional control condition. Other possibilities to enable a comparison between normal and long working hours are the inclusion of a baseline measurement of cortisol level before the sessions of additional work and/or the inclusion of a control group working normal working hours, into the study design.

One limitation of the study is that young/old comparisons in psychophysiological parameters can always be questioned, as the physiological system and the systems reactivity normally change with increasing age (Janke and Kallus, 1995).

Furthermore, from a practical point of view it would be interesting to examine possible demanding working situations in future studies that are more and more typical for a global working world, like audio-conferences during unusual working hours (e.g., late in the evening, very early in the morning) and/or in foreign languages. Another facet with practical implications is the impact of environmental conditions of the workplace like noise or lack of space or privacy like it could be found in open-plan offices. In addition, the investigation of different categories of work (e.g., professionals, white-collar workers, blue-collar workers) should be addressed in future studies.

## CONCLUSION

The results of our study show no significant effects for age and hearing impairment on the intensity of subjective consequences of long working hours. But, age and hearing impairment do matter from a psychophysiological point of view. Psychophysiological responses (saliva cortisol level) on long working hours differ significantly between hearing impaired and normal hearing employees. Interestingly, the results suggest that long working hours were more demanding for normal hearing than for hearing impaired employees. Furthermore, normal hearing employees tend to show a higher waking cortisol level after 1 day with long working hours than hearing impaired employees. To uncover possible long-term effects further research is still required.

## ETHICS STATEMENT

This study was carried out in accordance with the recommendations of the ethics committee of the University of Graz with written informed consent from all subjects. The study was approved by the ethics committee of the University of Graz.



## AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication.

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# The Importance of Context in Screening in Occupational Health Interventions in Organizations: A Mixed Methods Study

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In occupational health interventions, there is a debate as to whether standardized or tailored measures should be used to identify which aspects of the psychosocial work environment should be targeted in order to improve employees' well-being. Using the Job Demands-Resources model, the main aim of the present study is to demonstrate how a mixed methods approach to conducting screening enables the identification of potential context-dependent demands and resources in the workplace, which should be targeted by the intervention. Specifically, we used a mixed methods exploratory sequential research design. First, we conducted four focus groups ( $N = 37$ ) in a sample of employees working in grocery stores in Italy. The qualitative results allowed to identify one possible context-specific job demand: the use of a work scheduling IT software, whose implementation resulted in a high rotation between different market's departments. From the qualitative results, this context-specific demand seemed to be related to workers' well-being. Thus, in a subsequent questionnaire survey ( $N = 288$ ), we included this demand together with generic measures of social support and psychological well-being. Results confirmed that this context-specific job demand was related to emotional exhaustion. Furthermore, it was found that social support moderated the relationship between this specific job demand and emotional exhaustion showing among employees whose activities depended on the IT software, employees that perceived higher levels of social support from colleagues experienced lower levels of emotional exhaustion with respect to their colleagues who perceived lower levels of social support. The present study confirms that mixed methods approach is useful in occupational health intervention research and offers a way forward on helping organizations prioritize their intervention activities.

**Keywords:** screening, psychological well-being, mixed methods, job demands-resources model, context

## INTRODUCTION

For decades, studies have emphasized the role of work in determining psychological well-being (Cartwright and Cooper, 2008). According to the 'Stress in America' survey (American Psychological Association, 2014) work is the second most reported source of stress after money. Furthermore, both the European Union (Levi and Levi, 2000; European Agency for Safety and Health at Work [EU-OSHA], 2013) and the National Institute for Occupational Safety and Health



(National Institute for Occupational Safety and Health [NIOSH], 2015) have recognized the key role played by the psychosocial work environment in managing psychosocial risks and employees' well-being. Psychosocial risk factors have been defined as 'those aspects of work design and the organization and management of work, and their social and environmental contexts, which have the potential for causing psychological, social or physical harm' (Cox et al., 2000, p. 14).

Occupational health interventions, which have been defined as "planned, behavioral, theory-based actions that aim to improve employee health and well-being" (Nielsen and Abildgaard, 2013, p. 278), are generally recommended because they target the sources of low psychological well-being (such as psychosocial risk factors), rather than the symptoms of low psychological well-being (International Labour Organization [ILO], 2001; European Agency for Safety and Health at Work [EU-OSHA], 2010). Despite these recommendations, there is still a long way to go. Considering stress as a condition of decreased well-being, a recent Cochrane systematic review conducted by Ruotsalainen et al. (2014) evaluated the effectiveness of occupational health interventions. They concluded that among the interventions considered there was little evidence of organizational interventions having an effect. Furthermore, the European Survey of Enterprises on New and Emerging Risks (European Agency for Safety and Health at Work [EU-OSHA], 2015) shows that although it is a legal requirement in the EU, only 3 out of 4 companies surveyed in the 28 European countries conducted a regular psychosocial risk assessment. In the European Countries, systematic approaches to manage employee well-being have been developed such as the Management Standards (United Kingdom), Work Positive (Ireland), START (Germany), SOBANE (Belgium), and INAIL-ISPEL (Italy) (Zoni and Lucchini, 2012). These methods employ a systematic approach where the intervention goes through the phases of initiation, screening, action planning, implementation, and evaluation. All of these methods recommend the use of standardized questionnaires that can be used across occupational and organizational settings for screening the psychosocial work environment.

Recently, standardized measures have been criticized for failing to consider the organizational context and therefore it may be difficult for organizations to develop suitable actions that target problem areas specific to the organization (Nielsen et al., 2014). In the present study, we focus on the screening phase because a thorough screening is crucial to ensure that suitable intervention activities that target the sources of low well-being are developed and implemented (Nielsen et al., 2014). Using a mixed methods approach, we first conducted focus groups to identify psychosocial risks specific to the local context and then test whether they are related to well-being outcomes in a survey. The study contributes to the existing literature in three ways. First, we address the call of Guglielmi et al. (2013) to understand how mixed methods design, i.e., combining quantitative and qualitative measures, could be useful in conducting context-specific screening for psychosocial risks. Second, a limitation of the above European methods to manage employee well-being is that they identify risks

and build well-being profiles independently without considering the relationship between particular risks and well-being. We address the call of Nielsen et al. (2010a) and explore the interplay between the psychosocial work environment and well-being. Furthermore, the contribution of the study is to enhance knowledge concerning the intervention literature and particularly regarding the screening study.

## Theoretical Framework: Job Demands Resources Model

It is essential to rely on strong and validated theoretical models to understand the relationship between psychosocial risk factors and their consequences on employees (Nielsen et al., 2010b). The Job Demands-Resources (JD-R) model is one of the most widely used models concerning psychological well-being (Demerouti et al., 2001; Bakker and Demerouti, 2007; Bakker et al., 2014). The JD-R model posits that psychosocial risk factors can be divided into two categories: job demands and job resources. An important feature of the JD-R model is that demands and resources are not pre-defined, but should take into account the local context (Bakker et al., 2014). For example, pupil misbehavior could be a particular job demand for teachers (e.g., Bakker et al., 2007), or emotional labor for healthcare employees (e.g., de Jonge et al., 2008). Thus, the JD-R model is useful when assessing psychosocial risks in specific occupational groups as specific job demands and job resources could be specific to certain job positions (Bakker et al., 2014).

The JD-R model is based on two main propositions: the flexibility of the model and the existence of two processes, a health impairment and a motivational process (Bakker et al., 2014). The flexibility of the model relies in the fact that: (a) job characteristics can be modeled in job demands and job resources; (b) the model can be applied to all work environments and can be tailored to specific occupations. These characteristics of the JD-R model are really important in occupational health interventions as they allow researchers to conduct studies strongly based on the scientific literature, but also considering the real context where the studies are conducted.

There are two processes by which psychosocial factors may influence well-being. The health impairment process postulates that job demands could lead to employees' depletion of energies and that demands constitute the most important antecedents of burnout. This process could also be related to different relevant outcomes, both health-related, such as depressive symptoms (e.g., Hakkanen and Schaufeli, 2012) and job-related such as absenteeism (e.g., Vignoli et al., 2016). The motivational process states that job resources are the antecedents of work engagement. Moreover, one assumption of the JD-R model is that although job demands and job resources trigger different processes (i.e., the health impairment process and the motivational process), they also interact in predicting employees' psychological well-being in two possible ways: (a) job resources could buffer the impact of job demands on burnout; (b) job demands could amplify the impact of job resources on work engagement (Bakker et al., 2014). Focusing on JD-R model could be useful in order to help organizations in designing interventions aimed to enhance

employees' well-being not only through the decreasing of job demands, but especially understanding the role of job resources, which interacting with job demands, could decrease the negative effects of these on psychological well-being (Bakker et al., 2014). In the present study, we operationalized psychological well-being using two outcomes: emotional exhaustion (the most central component in burnout) and work engagement in line with the JD-R model (Salanova et al., 2010).

## The Importance of Screening

Screening is an important part of occupational health interventions because it enables the identification of the risk factors on which to focus intervention activities (Nielsen et al., 2010a). Previous research has demonstrated how failing to develop activities that address the most pertinent problems perceived by employees may lead to the intervention failing to bring about the desired improvements in employee well-being (Aust et al., 2010).

Questionnaires can either be standardized to identify job demands and resources across occupational and organizational settings or tailored to the intervention in question (Nielsen et al., 2014). Both methods have advantages and disadvantages. The advantages of the standardized questionnaires are threefold. First, standardized questionnaires are generally recommended because they allow for comparisons across occupational groups and they allow for benchmarking within different groups of the same organization or different organizations (Nielsen et al., 2010a). Second, some demands and resources are believed to be non-specific, e.g., social support (Johnson and Hall, 1988). Thus, well-known psychosocial risk factors could be measured using standardized measures as they are already been used in organizational contexts. Finally, standardized measures have most often undergone rigorous validation procedures. A disadvantage is that for use in occupational health interventions, standardized questionnaires have drawbacks in that they are difficult to relate to the local context and work experiences of employees and thus are difficult to translate into concrete action plans (Nielsen et al., 2014). Likewise, tailored questionnaires have their advantages and disadvantages. Although some demands and resources (e.g., work pressure and autonomy) can be found in almost every occupational group, organizations have procedures or dynamics specific to them (Nielsen et al., 2014).

Tailored measures may enable researchers and occupational health practitioners to identify important context-dependent demands and resources. Tailored questionnaires capture the local context (Dewe, 1989) and can be used to develop detailed action plans that are meaningful to employees (Nielsen et al., 2010a). In a qualitative study, Nielsen et al. (2014) found that the use of a tailored questionnaire enabled participants to develop detailed and meaningful action plans, however, this method is not without its disadvantages. The disadvantages of the tailored questionnaires are that they do not allow for comparison across organizational settings and occupational groups and each tailored questionnaire needs their own thorough validation. Furthermore, one limitation of the Nielsen et al. (2014) study is that all demands and resources were measured using tailored items.

This approach is very time-consuming and requires a high level of expertise in developing and validating questionnaires. As a result, the method may not be feasible in many organizations as researchers and occupational health practitioners may lack the expertise and time to develop questionnaires that only contain tailored measures. We argue that it is important only to use tailored measures to capture context-specific demands and resources that generic measures cannot capture. In the present study, we use the StART method (Guglielmi et al., 2013), which may combine the best of both worlds. It uses a mixed methods design to analyze both well-known demands and resources (e.g., workload and social support) and demands and resources specific to the organization. Mixed methods approach has been broadly defined as *"the type of research in which a researcher or a team of researchers combines elements of qualitative and quantitative approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the purpose of breadth of understanding or corroboration"* (Burke Johnson et al., 2007, p. 123). Specifically, Following the research design proposed by Creswell and Plano Clark (2011), this study employs the *exploratory sequential design* first collecting and analyzing qualitative data (using focus groups) to gather useful information for developing a quantitative instrument (questionnaire) in order to test and generalize the qualitative findings in a tailored questionnaire. The purpose of this mixed methods research design is the need to test or measure qualitative exploratory findings (Creswell and Plano Clark, 2011).

Context has not been sufficiently recognized in the literature and it has been defined as *"situational opportunities and constraints that affect the occurrence and meaning of organizational behavior as well as functional relationships between variables"* (Johns, 2006, p. 386). Acknowledging the importance of considering the local context on the one hand but acknowledging the limitations of this method on the other, we used focus groups to identify risk factors that cannot be identified using standardized measures. To the best of our knowledge, the present study is the first to examine how a sequential mixed methods design can be used to develop context-specific items, that in combination with standardized scales to conduct screening of job demands and job resources can be used to inform the development of action plans to manage the psychosocial work environment and employee well-being. Mixed methods research designs have several advantages in identifying demands and resources in organizations. First, a mixed method approach 'provides a better understanding of research problems, as only one type of data could provide an incomplete understanding' (Creswell and Plano Clark, 2011, p. 5). This is because the mixed methods approach could overcome the limits of both qualitative and quantitative methods (Cortini, 2014).

This means that using only quantitative data or qualitative data could lead to the omission of important information about the context, e.g., important context-dependent demands and resources which cannot be detected using standardized quantitative measures only. Second, mixed methods, especially the sequential design, enable the researcher to generate and verify theories in the same study. This is possible because

qualitative research can produce information about context-dependent demands and resources. It can then be tested whether these demands and resources are linked to well-being outcomes.

Finally, as Johnson and Turner (2003) argued that using mixed methods can balance out the drawbacks of each methods leading to a more in-depth analysis of the processes and mechanisms and the opportunities to compare quantitative data between different groups. For these reasons, mixed methods research may be suitable to develop screening tools that capture demands and resources specific to the local context.

## THE PRESENT STUDY

Given that tool oriented research in the organizational psychology field had not given enough attention to context (Johns, 2006) the main aims of the present study are (a) to demonstrate how mixed methods research can help identify context-specific job demands and resources; and (b) to analyze the links between job demands and job resources and psychological well-being. Such information is useful for organizations when they want to prioritize which actions to take to ensure employees well-being. In order to achieve these aims, a study was conducted in a large retail chain in Italy. Data were collected during the screening of psychosocial risk factors (demands and resources) in the company, an activity which is mandatory in Italy. As required by Italian law, different homogeneous groups (i.e., groups of employees who may be exposed to similar risks in the workplace) were identified. In the present study, we focus on the largest homogenous group composed by employees working in grocery stores. The qualitative and quantitative studies will be presented. Firstly, we used a qualitative approach as it allows to collect information about the context, which could not be easily gathered through standardized measures. From the qualitative results, potential context-specific demands and resources have been identified and hypotheses about how these context-specific demands and resources are linked to well-being outcomes have been developed. Subsequently, in the quantitative study, we tested whether these context-specific factors are related to well-being outcomes and how demands and resources may interact.

## Study 1: Qualitative Screening

### Method

In this section, the qualitative study and its results will be presented. The main aim of this study was to identify potential context-specific demands and resources.

### Participants and procedures

We gained access to the employee database to select a representative sample of employees based on the following information: age, organizational tenure, job position, and workplace (grocery store where the employees worked). Based on this dataset, a representative sample of 60 employees was identified and invited to participate in four focus groups (15 employees were selected for each focus groups). The recommended size for a focus group is between 10 and 12

people (Krueger and Casey, 2015). We expected drop-out due to maternity leave, sickness leave, incompatibility between focus groups scheduling and shift work of that week, or unwillingness to participate in the study. A general communication about the project was sent by e-mail to all the supervisors and, as many of the employees did not have access to e-mail, the communication was advertised on the bulletin boards in every grocery store. An invitation to participate was sent in an informative letter to their supervisor. Participation in the study was promoted by the Safety manager, and through telephone calls to supervisors a few days prior to the scheduled focus groups. The final sample included 37 participants (mean participants for focus group was 9.2), and the participation rate was 61.6%. Of these 62.2% were female, mean age was 44.6 years ( $SD = 8.87$ ) and the average organizational tenure was 12.62 years ( $SD = 9.46$ ). Focus group were recorded and then transcribed verbatim.

### Measures

Four main parts composed the focus group's structure. In the first part, the interviewer presented him/herself and the aim of the focus group and answering questions about the project. In the second part, the researcher read the definition of stress presented in the Framework Agreement on stress at work (ETUC, 2004). Subsequently, the interviewer invited the participants to identify demands and resources in their job thinking in the past 6–12 months. To ensure all major aspects of the psychosocial work environment had been covered, respondents were then probed about demands and resources using the European Agency for Safety and Health at Work as Stressful Characteristics of Work divided in two main categories: work content (work environment and work equipment, task design, workload/workplace and work schedule) and work context (organizational culture and function, role in the organization, career development, decision latitude/control, interpersonal relationship at work, home-work interface).

### Data analysis

Two researchers analyzed data from focus groups with NVivo software (version 10) using the thematic analysis technique. A codebook was created and nodes were developed based on the Cox et al. (2000) categories of context of work (organizational culture and function, role in organization, career development, decision latitude/control, interpersonal relationships at work, home-work interface) and content of work (work environment and work equipment, task design, workload/workplace, work schedule). Researchers analyzed the text passages and assigned codes to statements which referred to the main job demands and job resources. In case of disagreement, the two researchers discussed until reaching consensus.

### Qualitative Results

The thematic analysis identified the presence of a potential context-dependent job demand in the population. In fact, besides giving many information about the categories presented before, some employees mentioned an IT software called Brase. This software was mentioned in two out of the four focus groups, possibly because that not all grocery stores had implemented the software. Furthermore, in some stores not all the employees'



activities depended on the Brase IT software. Several issues were reported relating to having your work scheduled according to the Brase IT software, specifically workers reported the following statements: “I have never had stress problems but, with Brase you stay 2 h in the butcher’s department, 1 h in the gastronomy department and so on. It is stressful because I change too much, it makes me crazy”; “I have to go to other departments and I’m not able to do the job”; “The aim of Brase is optimizing times, but without knowing what to do, we have the double amount of work”; “Brase produced confusion, it’s the second time I caught the flu. I stayed in the bakery department and then in the fish department and then you got sick. Basically, we did something similar also before but not to the same extent”; “Brase is the first cause of stress, I begin ten activities and in the end neither is performed well. It makes us feel frustrated and there is no satisfaction in working in this way.” Furthermore, the Brase IT software was discussed in relation to the working schedule. One worker reported that: ‘We just have work shifts that you know when you enter but you don’t know when you are going to quit, and, in addition to this, they change our work shifts under the wire. In addition, with Brase they (the coordinators) took half of a day to organize the working hours and they give it to you on Saturday for Monday.’ Moreover, it was also mentioned that: ‘Top management should be closer to employees. Take for example Brase, if they had asked for our collaboration, then it would be different.’ One of the company manager confirmed us that Brase had been developed to optimize time and enhancing the organization’s productivity through enabling the individual grocery store’s coordinator to organize the employees’ tasks more efficiently. The consequence of the implementation of the Brase software was a high rotation between different market’s departments and consequently the IT software was perceived by participants to have a negative influence on their well-being. In conclusion, participants perceived the Brase software to be a demand in their jobs that was associated with low well-being. The information about the local context dependent IT software was fed into questionnaire development. In line with the exploratory sequential design, we used the input from the qualitative study to inform the questionnaire. To ensure a high response rate in a sample of employees with little formal education, we decided to only include one item on Brase, which was ‘Do your work activities and the planning of them depend on ‘Brase’ software?’

## Study 2: Quantitative Screening Method

This translation of qualitative results into a one-item measure in the questionnaire, allowed us to test: (a) the hypothesis that the Brase IT software was as a job demand that was related to poor well-being and (b) whether any resources in the grocery stores could buffer the negative impact of the Brase IT software on employees’ well-being. Testing these two hypotheses provides us with important information on which demands and resources organizations need to prioritize in the development of subsequent action plans.

We suggest employees working in grocery stores employing the Brase IT software may perceive Brase as a job demand because

our qualitative findings suggested that after the implementation of Brase, employees reported their working conditions had worsened. As the health-impairment process of the JD-R model postulates that job demands are related to emotional exhaustion, we propose that the problems associated with the Brase IT software may result in it being related to emotional exhaustion, i.e., that employees reported it took them twice as long to do the job and employees did not know how to perform new job tasks in sections of the grocery store they had not previously worked in and these issues are likely to be related to emotional exhaustion. In order to test and generalize the qualitative results and according to the JD-R model we formulated the following hypothesis:

**Hypothesis 1:** We expect that employees whose working time is scheduled using the Brase IT software will report higher levels of emotional exhaustion.

Employees who have to deal with Brase reported to experience frustration and confusion as they are not able to do the job. For this reason, we hypothesize that Brase would be negatively associated with work engagement. Although the original JD-R model suggests that job demands are related to burnout and not work engagement, scholars have called for the need to understand the relationship between job demands and work engagement. Specifically, Schaufeli and Taris (2014) in their recent critical review of the JD-R model suggest that future research should investigate the direct and indirect effect of job demands on work engagement. Furthermore, the Brase IT software could affect the meaning of work perceived by the employees, as they have to change too many activities without clear goals. In fact, meaning of work refers to ‘finding a purpose in work that is greater than the extrinsic outcome of the work’ (Arnold et al., 2007, p. 195). In line with this, meaning of work has been found to be related to work engagement in recent studies (e.g., Beukes and Botha, 2013; Ghadi et al., 2013). Thus, we developed the following hypothesis:

**Hypothesis 2:** We expect that employees whose working time is scheduled using the Brase IT software will report lower levels of work engagement.

As the economic crisis and the increasingly complex labor markets put pressure on organizations, it may not be feasible to reduce employees’ job demands (for example reducing the amount of work). In the case of the Brase IT software, the company had introduced the IT software with a view to reduce costs. It was therefore not feasible to recommend the Brase software be abandoned. As suggested by Bakker et al. (2014) in their review of the JD-R model, interventions should aim to prevent burnout and foster work engagement through improving resources at work, especially when it is not feasible to decrease the level of job demands. As previously reported, job demands and job resources trigger different processes (i.e., the health impairment and the motivational processes), but they may also interact. First, job resources may buffer the impact of job demands on emotional exhaustion. Bakker and Demerouti (2007) proposed that job resources relating to the interpersonal and social relations are important in ensuring worker well-being. In



the present study, we propose that because employees working according to the Brase IT software reported had to cope with 'not being able to do the job,' 'not knowing what to do,' thus social support may function as a valuable job resource able to buffer the negative impact of working in grocery stores that had implemented the IT software. Employees who seek information about how to do the jobs within the retail store from colleagues or could count on colleagues' support, may be better able to cope with the demands created by the rotation between jobs. Many studies confirmed the moderating role of social support in the relationship between job demands and well-being outcomes as research on social support demonstrated its ability to moderate against job stress (Bakker et al., 2004). For example, Demerouti et al. (2011) demonstrated that social support buffers the relationship between work-family conflict and absenteeism. Moeller and Chung-Yan (2013) found that social support moderates the relationship between amounts of work and decrease the level of related job stress. Similarly, Xanthopoulou et al. (2007) found that social support moderated the relationship between workload and emotional exhaustion. Therefore, we formulated the following hypothesis:

**Hypothesis 3:** We expect that being a Brase worker results in lower levels of emotional exhaustion for employees that perceive high levels of social support from colleagues.

We propose that employees whose work schedule is organized with the Brase IT software and who experience high levels of support will report lower levels of exhaustion than those who report low levels of support. Job demands and job resources may also interact to predict work engagement. It is possible that employees who employ social resources such as the support of others to deal with the demands of the job may become more engaged with their job because they feel they are more capable of doing the job and thus they feel able to dedicate themselves to the task at hand. They may also come to feel energized through the interaction with colleagues to solve any problems created by the Brase IT software such as working in parts of the grocery store where they do not know how to do the job. Bakker et al. (2007) found in a sample of teachers, supervisor support moderated the relationship between pupil misbehavior and work engagement, such that teachers who experienced pupil misbehavior were more engaged in their job if their supervisor supported them. We therefore propose a fourth Hypothesis:

**Hypothesis 4:** We expect that being a Brase Worker results in higher levels of work engagement for employees that perceive high levels of social support from colleagues.

We propose that employees whose work schedule is organized according to the Brase IT software will report higher levels of work engagement if they feel supported by their colleagues.

### Participants and procedures

In total, 107 grocery stores participated in the study. Each grocery store had an average of 27 employees. For participation in the survey part of the screening, a representative sample of 775 grocery shop workers were identified based on organizational personnel records. We selected the sample using the following

criteria: age, organizational tenure, job position, and workplace. In order to test and generalize the qualitative findings and avoid bias, employees who had attended a focus group were not invited. Participants convened in group meetings lasting approximately 2 h. In the first part of these meetings, the researcher explained the national regulation concerning health and well-being at work and the project that involved that company. Then employees completed the questionnaire. A researcher was present during the session in case participants needed more information. Participants in the survey were invited through an informative letter sent to their supervisor. Participants totalled 551 (response rate = 71.1%) and worked in grocery stores of different sizes: 35.2% worked in big grocery stores (3,500–15,000 sqm of sales area); 52.3% worked in medium grocery stores (2,000–3,500 sqm of sales area); 12.5% worked in small grocery stores (0–1,000 sqm of sales area). This distinction created by the company is relevant as it results also in different procedures among the grocery stores. The Brase IT software had only been introduced in medium grocery stores and therefore we only included employees who from these stores in our analyses. The final sample of the quantitative study was 288. Most of the participants (70.5%) were female and the mean age was 46.3 years ( $SD = 7.7$ ). Organizational tenure mean was 19.1 years ( $SD = 8.8$ ) and the mean of working hours in a week was 31.4 h ( $SD = 5.9$ ). Most of the participants (90.6%) had permanent contracts. Ethical approval was not required for this study in accordance with the national and institutional guidelines.

### Measures

In line with the focus group, we developed a general questionnaire composed of many scales related to the content and context factors (Cox et al., 2000) categorized into job demands and job resources. The final questionnaire was very long (133 items). More specifically, in order to test our study hypotheses, we included validated measurement of social support from colleagues, emotional exhaustion and work engagement. Furthermore, according to the mixed methods exploratory sequential design and the qualitative results, we developed one item concerning the Brase software.

**Being a Brase-worker.** One item was developed based on the results of the focus groups: 'Do your work activities and the planning of them depend on 'Brase' software?' Responses to this item were dichotomous ('yes' or 'no').

**Social support from colleagues.** To investigate this job resource, four items from scale Karasek's (1985; Italian version: Cenni and Barbieri, 1997, Unpublished) have been used. This standardized scale was chosen because social support is a generic resource (Johnson and Hall, 1988). The scale is a four-point Likert scale, ranging from '1' (definitely not) to '4' (decidedly). One example item is 'People I work with are helpful in getting the job done.' Cronbach's alpha was 0.71.

**Emotional exhaustion.** Emotional exhaustion was measured with the emotional exhaustion dimension of the MBI-General Survey (Schaufeli et al., 1996; Borgogni et al., 2005). One example item is 'I feel emotionally drained from my work.' The 5-item scale was

scored on a 7-point frequency scale (0 = never to 6 = every day). Cronbach's alpha was 0.81.

**Work engagement.** The short nine-item version of the Utrecht Work Engagement Scale (Schaufeli et al., 2006; Italian version: Balducci et al., 2010) was used, consisting of three for each dimension: vigor, dedication, and absorption. One example item is 'At my job, I feel strong and vigorous.' All the items related to dimensions of work engagement were scored on a seven-point scale ranging from '0' (never) to '6' (always). Cronbach's alpha was 0.87.

Moreover, five control variables, which could potentially be correlated with psychological well-being outcomes were introduced: gender (e.g., Purvanova and Muros, 2010), age (e.g., Ahola et al., 2008), organizational tenure (e.g., Van Dam et al., 2008), working hours (e.g., Leonardi et al., 2013) and type of contract (e.g., Pirani and Salvini, 2015).

### Data analysis

Statistical analyses were performed using SPSS version 20. At a first step, control variables, which showed a significant correlation with our well-being outcomes, were entered. To test the hypotheses, hierarchical regressions were used. In step 2, Brase and social support were introduced testing hypotheses 1 and 2. In the last step, the interaction term between Brase and social support was introduced in order to test hypotheses 3 and 4. Both the independent and the moderator variable were mean-centered.

### Quantitative Results

Results presented in **Table 1** shows descriptive statistics and correlations between variables.

Concerning the 288 participants, 116 (40.3%) had their work organized by the Brase IT software. Results of the Pearson correlations showed that having your work scheduled by the Brase IT software is positively related to emotional exhaustion ( $r = 0.14$ ,  $p < 0.05$ ), but not to work engagement ( $r = -0.02$ ,  $p > 0.05$ ), social support ( $r = 0.05$ ,  $p > 0.05$ ). The relationships between social support and outcome variables are in the expected direction: social support is positively related to work engagement ( $r = 0.37$ ,  $p < 0.001$ ) and negatively related to emotional exhaustion ( $r = -0.28$ ,  $p < 0.001$ ). As working hours and type of contract are not related to emotional exhaustion and work

engagement, they were excluded from the regression analyses. Results presented in **Table 2** support Hypothesis 1: Brase was positively related to emotional exhaustion ( $\beta = 0.15$ ,  $p < 0.01$ ). Brase and work engagement were not related ( $\beta = -0.04$ ,  $p > 0.05$ ), thus Hypothesis 2 was rejected.

Concerning the first moderation Hypothesis, our third Hypothesis, social support from colleagues moderated the relationship between Brase and emotional exhaustion ( $\beta = -0.16$ ;  $p < 0.05$ ,  $\Delta R^2 = 0.014$ ). The direction of this relationship reported in **Figure 1** indicates that Brase employees who perceived higher levels of social support from co-workers experienced lower levels of emotional exhaustion with respect to their colleagues who perceived low social support. Thus, Hypothesis 3 was supported. Moderation analysis shows that social support from colleagues does not moderate the impact of Brase on work engagement ( $\beta = 0.13$ ;  $p > 0.05$ ,  $\Delta R^2 = 0.01$ ), thus Hypothesis 4 was rejected. Furthermore, social support affects work engagement ( $\beta = 0.38$ ;  $p < 0.001$ ).

## DISCUSSION

In the present study, we demonstrated how a mixed methods approach (in particular the exploratory sequential design) may be suitable for identifying the demands and resources that organizations need to address to ensure employee well-being. Using focus groups, we identified a context-dependent job demand: organization's use of a IT software to schedule employees' work in different departments of the grocery stores. In a quantitative survey, we confirmed that employees working under this IT software reported higher levels of emotional exhaustion, thus confirming what has been suggested from the qualitative results, which was that the Brase IT software was a contextual job demand. These results jointly gave many information both from a quantitative prospective (data supported the effects of the specific job demand) and from a qualitative perspective (results from the focus group suggested how this specific job demands could interfere with the workers' well-being) indicated that the organization should prioritize planning activities to address the use of this IT software to schedule employees' work. The review of Ruotsalainen et al. (2014) revealed that interventions to change working schedules had little

**TABLE 1** | Means, standard deviations, reliabilities, and Pearson correlations for all variables ( $N = 288$ ).

Variables	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8
(1) Gender <sup>a</sup>	0.29	0.46	–							
(2) Age	46.33	7.67	–0.13*	–						
(3) Tenure	19.11	8.85	–0.03	0.64***	–					
(4) Working hours	31.41	5.95	0.42***	0.16**	0.25***	–				
(5) Contract <sup>b</sup>	0.91	0.29	–0.05	–0.13*	–0.08	–0.06	–			
(6) Brase <sup>c</sup>	0.40	0.49	–0.02	0.04	0.04	0.02	0.05	–		
(7) Social support	2.88	0.62	0.04	–0.05	–0.01	0.05	0.01	0.05	–	
(8) Exhaustion	18.65	7.59	–0.13*	0.21***	0.24***	–0.02	0.05	0.14*	–0.28***	–
(9) Engagement	4.80	1.13	–0.01	–0.07	–0.18**	–0.06	–0.08	–0.03	0.37***	–0.40***

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ , <sup>a</sup>Male = 1; 28.7%, <sup>b</sup>Tenured = 1; 92%, <sup>c</sup>Brase yes = 1; 22.9%.

**TABLE 2 |** Interaction effect between Brase and social support from colleagues on emotional exhaustion and work engagement ( $N = 288$ ).

	Emotional exhaustion	Work engagement
<b>Step 1: Control variables</b>		
Gender <sup>a</sup>	-0.13*	-0.01
Age	0.08	0.06
Tenure	0.18*	-0.22**
$R^2$	0.08***	0.03*
<b>Step 2: Main effects</b>		
Brase <sup>b</sup>	0.15**	-0.04
Social support	-0.29***	0.38***
$\Delta R^2$	0.10***	0.15***
<b>Step 3: Two-way interaction</b>		
Brase $\times$ Social support	-0.16*	0.13
$\Delta R^2$	0.01*	0.01

<sup>a</sup>Male = 1; <sup>b</sup>Brase yes = 1, \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .  $\beta$ -values are presented.

effect. Our study provides valuable information as to what the issue was concerning working schedules, i.e., that these were planned using an IT software program that brought about a range of problems. Such detailed information may help organizations develop interventions address the underlying problems.

In light of the contextual constraints that the grocery stores face it would not be feasible for them to abandon the IT software altogether and we therefore tested whether social support be a resource that could protect against the negative impact of having your work scheduled according to the Brase IT software. We found that employees who work under the Brase IT software and who experience low support report higher levels of exhaustion. We thus found the mixed methods exploratory sequential design may be a useful approach to identify job demands and job resources in occupational health interventions. Our mixed methods research design allows for first exploring the organizational context and dynamics qualitatively identifying context-specific job demands and job resources, and then quantitatively verifying findings thus enabling generalization to the broader working population.

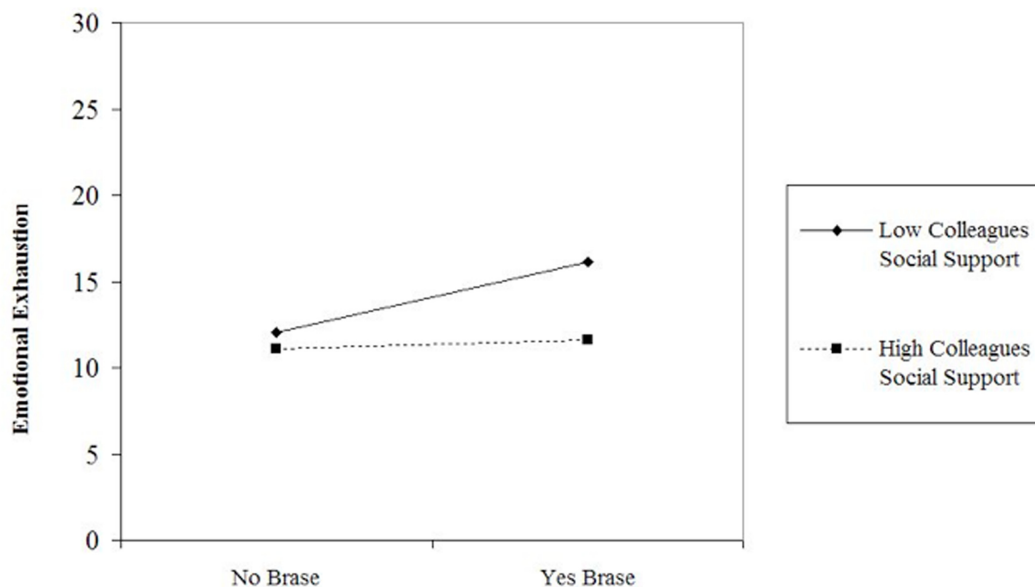
## Major Findings and Theoretical Implications

In the first study, focus groups were conducted, during which employees identified a context-dependent job demand, i.e., a IT software called Brase that was used to schedule work activities and rotas. The qualitative findings showed that Brase was associated with different kinds of problems (e.g., ‘confusion,’ ‘lack of clarity,’ ‘work overload,’ ‘frustration,’ ‘not being able to do the job to a satisfactory standard,’ ‘not knowing how to do the job’ etc.). Qualitative findings allowed us to design the subsequent quantitative study in which it has been hypothesized that Brase could be considered a job demand and thus, that employees would experience higher level of emotional demands and lower levels of work engagement if they reported having their work scheduled by the Brase IT software. Concerning the first two hypotheses which suggested an association between having

your work scheduled according to the Brase IT software and psychological well-being (i.e., emotional exhaustion and work engagement), findings showed that Brase was positively related to emotional exhaustion (Hypothesis 1), but not work engagement (Hypothesis 2). The positive association between Brase and emotional exhaustion support the JD-R model suggesting that the main antecedents of burnout are job demands (Bakker and Demerouti, 2007; Bakker et al., 2014) as demonstrated also by the meta-analysis of Lee and Ashforth (1996), which showed that job demands are the most important predictors of burnout. Thus, findings suggest that Brase could be considered as a job demand as it is related only to emotional exhaustion and not to work engagement. Concerning the moderation hypotheses (Hypotheses 3 and 4), findings indicated that social support moderated the relationship between Brase and emotional exhaustion. Particularly, this means that Brase-employees who experience higher levels of social support report lower levels of emotional exhaustion compared to Brase-employees with lower levels of social support. The interaction was such that low levels of social support were related to high levels of emotional exhaustion among employees working according to the Brase IT software. This result is in line with the JD-R model suggesting that social support is an important moderator of the relationship between job demands and emotional exhaustion (e.g., Xanthopoulou et al., 2007). No support was found for the moderation of social support from colleagues on work engagement, despite this interaction is one of the two possible interaction processes proposed in the JD-R model. This result is in line with the health impairment process, which posits that job demands are related to burnout and not to work engagement. This was suggested by the lack of support for Hypothesis 2.

## Practical Implications

Findings of the present study offer some suggestions concerning how to use mixed methods exploratory sequential design in order to understand how we may identify context-specific job demands and resources. The combined use of qualitative and quantitative approach provides a reliable way for organizations not only to detect context-specific job demand and resources in a particular population but it could also provide useful suggestions on how to develop reliable and effective intervention activities modeled on specific groups of employees in the organization in order to enhance well-being. The results of the present study suggested that in a context where it may not be feasible to minimize job demands as the context-dependent job demand detected (i.e., having your work organized by the Brase IT software) was an essential part of the organization’s strategy to decrease costs associated to human resources increasing the resource of social support may be an effective strategy to minimize employees’ emotional exhaustion. An effective strategy for reducing the negative impact of having work scheduled by the Brase IT software may be to develop intervention activities focused on increasing social support. Such activities could include introducing a buddy system, where employees who were allocated to new departments of the supermarket would be allocated ‘a buddy’ who could show them the ropes. Another option could be to name a group of expert employees in each area of the



**FIGURE 1 |** Moderation of social support from colleagues on emotional exhaustion.

supermarket and make sure that (1) on each shift one such employee was at work in that department and (2) new employees knew whom they could contact for support.

## Strengths and Limitations and Suggestions for Future Research

The main strengths of the present study are the sequential mixed methods design that allowed us to identify context-specific job demands, the high participation and response rates (61.7% in qualitative study and 71.1% in quantitative study), and the use of two different samples for the qualitative and the quantitative studies of the project. Some limitations of the study have to be acknowledged in interpreting the results. First, only one context-specific item was developed on the basis of the qualitative findings and this could affect the validity of this research, as this item may not capture the range of issues related to the use of the IT software. However, as the item developed is context-dependent, and it is not measuring a psychological construct, but whether employees working in retail store that has installed the Base software, we argue the measure is sensitive to capture the essence of the demand. Organizations would be able to go back to the qualitative data to gain more information about the specific issues concerning the Brase IT software that might help them develop supportive actions. The quantitative study used self-report only data and no objective measures were included. It has been argued that issues related to common-method variance may have been overestimated in organizational research (Spector, 2006). Furthermore, our focus was on employees' own perceptions and experiences rather than objective measures of the constructs studied and participants rated different aspects, i.e., the use of an IT software, their perceptions of support from others and their own well-being. Social support and well-being constructs

would be very difficult to measure with objective data in a reliable way. For practical reasons, we were unable to obtain objective measures from the organization on the use of the Brase IT software as the organization was mainly interested in the costs concerning the amount of reduced working hours, not the actual use of the program. In addition, the quantitative section of this study is cross-sectional, thus it is not possible to draw inferences about causality. As the present study focuses on the screening phase of an intervention, it is important that feedback is provided shortly after data collection to keep up momentum. Future research should consider all the phases of occupational health interventions to understand whether the use of tailored measure enable the development and implementation of intervention activities that are successful in improving the psychosocial work environment and employee well-being.

## CONCLUSION

The contributions of the present study are twofold. We contribute to knowledge on (a) how to design screening in occupational health interventions considering the local context; (b) propose ways forward for analyzing psychosocial risk screening data to help organizations in taking appropriate action to manage their psychosocial work environment and the psychological well-being of employees. First, using a sequential mixed method design combined with both tailored and standardized measures may enable organizations to develop and implement intervention activities relevant to the local context. The present study highlights the importance of combining tailored and standardized measures to conduct screening and presents a way to integrate the organizational context into such screening. In this way, organizations could effectively screen their own



psychosocial work environment in a sensitive and cost-effective way. Second, based on a strong theoretical framework (the JD-R model) we explored how the interaction between job demands and resources may be useful for organizations that aim to enhance employees' well-being through increasing resources when it is not feasible to decrease job demands.

## AUTHOR CONTRIBUTIONS

MV, DG, MT, and FV conceptualized the mixed method study and chose the theoretical framework and they define the tools

used. MV and MT collected the data. MV performed the data analyses and wrote the first draft of the paper. KN revised the paper for methodological and theoretical content. MV wrote the final version of the paper accordingly to KN, DG, MT, and FV critical revisions of the work for important intellectual content. All the authors gave final approval of the paper.

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# Is a Transdisciplinary Theory of Engagement in Organized Settings Possible? A Concept Analysis of the Literature on Employee Engagement, Consumer Engagement and Patient Engagement

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Organizations are experiencing increased competition, disruptive innovation, and continuous changes in their social and economic context. Furthermore, the decrease of resources (economic and human) in such a demanding context make it imperative for organizations to find new models and strategies to make their service delivery more sustainable at the economic, environmental and psychological levels. In such a complex scenario the concept of engagement of the individuals involved in organized settings (either as service providers or as final receivers) is a promising lever for innovation. However, despite the number of studies on the matter, the debate on engagement is still very fragmented because the corpus of literature addressing the different areas of engagement is divided and diverse in its nature. In this paper, we discuss the results of a conceptual analysis of the literature conducted in order to investigate overlapping features and areas of divergence among three different areas of investigation and application of the engagement phenomenon in organized settings: the domains of employee engagement, consumer engagement, and patient engagement. These are deliberately selected as prototypical of the phenomenon of engagement along the “inside/outside” of organizational settings. The analysis consisted in a qualitative conceptual survey? Of the scholarly literature indexed with the key terms “employee engagement,” “consumer engagement,” and “patient engagement.” We performed a key-word based survey? Of the literature in the Scopus database. A total of 163 articles were selected and analyzed. The analysis cast light on the following areas of conceptual overlap among employee, consumer and patient engagement: (1) engagement is different from empowerment and activation; (2) engagement is a multi-componential psychological experience; (3) engagement is a self-transformative experience; (4) engagement develops within a relational context; (5) engagement is a systemic phenomenon. These findings, although preliminary and in need of further investigation, suggest the feasibility of promoting a transdisciplinary reflection on the phenomenon of engagement in organized settings.

**Keywords:** engagement, employee engagement, patient engagement, consumer engagement, work engagement, organizational settings, conceptual analysis

## INTRODUCTION

Organizations are experiencing increased competition, disruptive innovation and continuous changes in their social and economic context (Eldor, 2016). Furthermore, organizations have to deal with a more “critical demand”: clients are more conscious of their rights, more aware of their needs, and more informed about the options to cover such needs. Across sectors and market domains, clients are seeking a more democratic exchange with the organizations that provide services and products for their everyday lives. They are willing to closely examine all the possible options, advantages, and risks implied in different courses of choice, and they demand closer involvement in decision-making related to the coverage of their needs (Cova et al., 2011). Concepts such as *participatory society* (Mossberger et al., 2007; Wallace and Pichler, 2009), *community empowerment* (Perkins and Zimmerman, 1995; Zimmerman, 2000) and *co-creation* (Zimmerman, 2000; Bendapudi and Leone, 2003; Prahalad and Ramaswamy, 2004; Bovaird, 2007) describe the currently evolving sociological and anthropological paradigms driven by people wanting to be greater protagonists of their lives (Hamari et al., 2016; Schor, 2016). Signals which testify to this demand by clients for participation in, and authorship of, the relationship with organizations are retrievable in the different domains of people's daily lives: not only in the area of classic consumption behaviors but also in the healthcare sector, where citizens are more willing to assume an active and participatory role in regard to their health and care management. Today, patients, caregivers, and peers claim their right to judge the adequacy of care received. Moreover, patients rate hospitals and healthcare organizations according to the professionalism of their providers (Graffigna et al., 2016). And the development of new technologies and new forms of communication have allowed this transformation by fostering peer exchanges in many areas of human experience (Kaplan and Haenlein, 2010; Hamari et al., 2016), and by creating new virtual spaces in which it is possible to share information, knowledge and practices related to several domains of human lives.

But this is not all: the decrease of resources (economic and human) in such a demanding context make it imperative for organizations to find new models and strategies so that their service delivery is more sustainable at the economic, environmental and psychological levels. In other words, organizations today are seeking new ways to face the paradoxical need to “do more with less” (Pearson and Clair, 1998; Grewal and Tansuhaj, 2001).

In such a complex scenario, among practitioners as well as in the scholarly literature, the concept of engagement of the individuals involved in organized settings (both as service providers or final receivers) is a promising lever for innovation (Graffigna et al., 2014). In other words, this trend relies on the idea that promoting the active participation, together with the psychological commitment, of people involved in the organizational setting may yield better organizational, relational and psychological sustainability. As a consequence, a growing body of literature, in different disciplinary domains (e.g., management, psychology, sociological sciences, medicine,

nursing, political sciences, etc.), has started to address the idea of sustaining people's engagement and participation in organized sectors in order to achieve better organizational sustainability (i.e., employee engagement), improved quality in the relationship with their stakeholders, and general wellbeing and satisfaction among organizations' clients (i.e., consumer engagement and patient engagement in the healthcare domain).

However, despite the number of studies on the matter, the debate on engagement is still very fragmented because the corpus of literature addressing the different domains of engagement is divided and diverse in its nature. It pertains to different disciplines and moves from diverse points of observation. At present, therefore, those bodies of the literature (and thus of organizational practices) do not communicate, with the consequent loss of potential insights and cross-fertilization. Indeed, the literature on employee engagement has rarely crossed the intra-organizational boundaries of its analysis to bridge the level of human resources engagement with the level of clients' engagement with the organization (Kumar and Pansari, 2016). Furthermore, the literature has focused on the engagement of clients receiving services and products from organizations mainly operating in the area of commercial marketing, and it has rarely explored the domain of social and healthcare marketing.

*Is engagement therefore an experience that differs according to the organizational domain in which it is experienced and explored? Is engagement a changing phenomenon depending on the role of individuals who have such experience? Or on the contrary are there overlaps among the different areas of investigation and application of the engagement phenomenon (such as employee, consumer and patient engagement)? Is there any ground for starting a transdisciplinary reflection on engagement in organized sectors as a unique and common phenomenon?*

In this paper we discuss the results of a conceptual analysis of the literature conducted in order to provide some first answers to the above questions. The idea which inspired this analysis regards the potential of crossing disciplinary boundaries to establish a common, transdisciplinary conceptual foundation for engagement “inside and outside” organizational settings. The goal was ambitious and required conjoint efforts to achieve it. The purpose of this conceptual analysis of the literature was first to explore the feasibility of such interdisciplinary reflection by seeking areas of overlap or divergence among the conceptualizations of employee engagement, consumer engagement, and patient engagement. Other declinations and settings of application of the term “engagement” exist in the literature. We deliberately restricted our investigation to expressions of engagement related to individual actors (i.e., employees, consumers, patients) instead of collective ones (i.e., communities; stakeholders) to explore the phenomenon in its constitutive psychological and relational dimensions. Furthermore, we excluded from our preliminary analysis concepts such as student engagement, technological engagement, and spiritual engagement because they are less related to domain of organizational analysis and to organizations' relations with



their adult customers. However, conceptual comparison among all these key terms is valuable and should be further explored in future research.

## METHODOLOGY

This review followed the process of conceptual analysis (Morse, 1995) which followed the process of reference retrieval and analysis described in the next sections (see **Figure 1**).

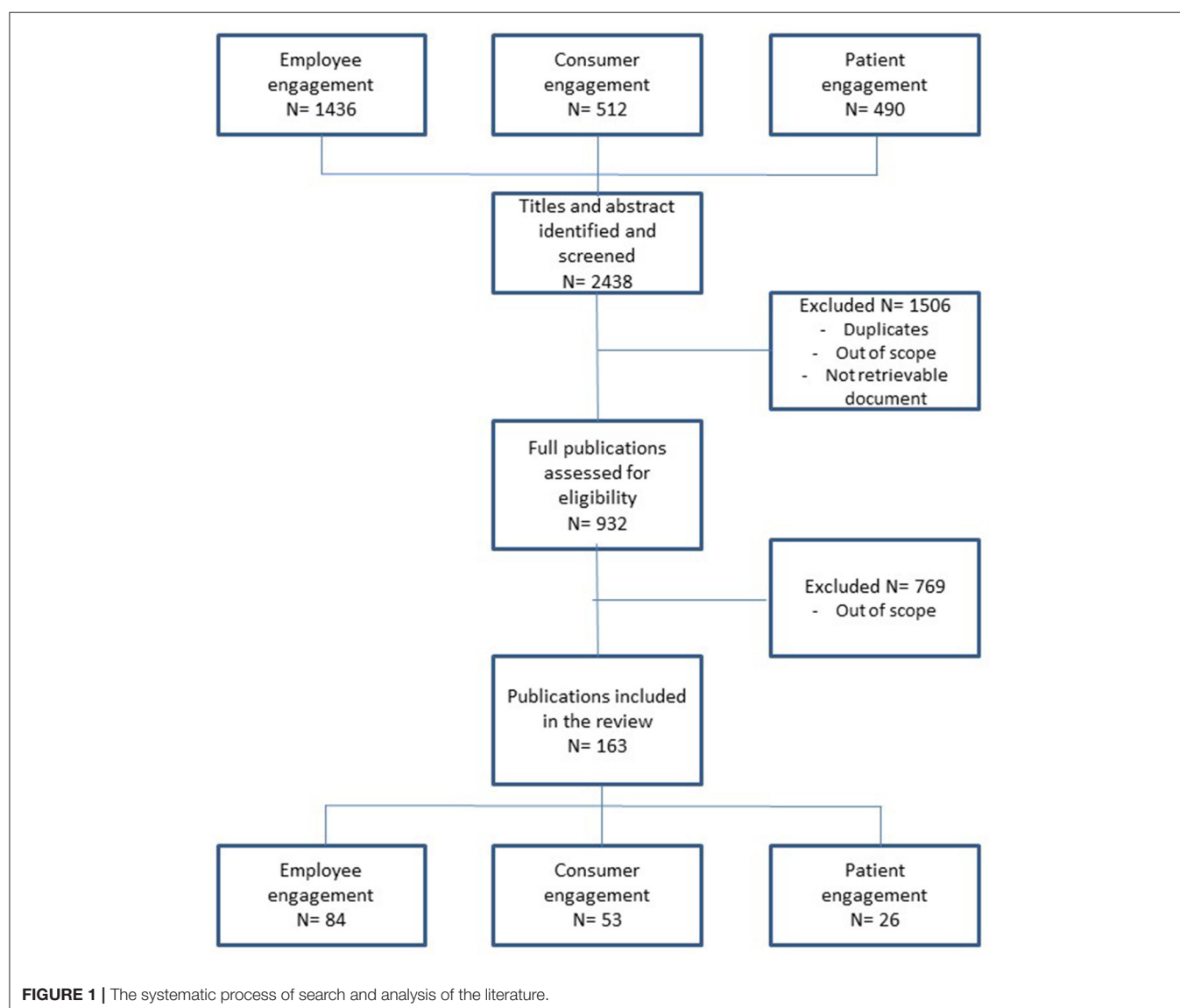
### Search Strategy Performed for the Conceptual Analysis

The survey? Was based on a two-step search process following the advice of Greenhalgh and Peacock (2005): a protocol driven search, and a secondary purposive search of seminal articles.

Initially, a key-word based search was performed in Scopus Database. This database was selected because of its broad and

multidisciplinary coverage of scientific literature. We included in the analysis original articles, reviews, and conceptual articles. We opened the analysis to multidisciplinary articles indexed with the terms of interest. Our search was based on the following broad strings of key words: [employee\* OR work\* OR job\* OR consum\* OR client\* OR costum\* OR patient\* OR caregiver\*] AND engagement AND [concept\* OR defin\* OR theor\* OR framework]. We searched for peer-reviewed scholarly papers in the medical, nursing, sociological, psychological, and business literatures. The search was limited to references published in English. We did not impose any time restriction on the search strategy. Due to the large number of articles generated by this search, we limited our analysis to articles presenting the searched-for key words in the title, abstract, and indexed key words.

We then conducted a purposive (“snowball”) search for papers relevant to our analysis based on insights gained from the conceptual analysis performed on the first emerging references.



**FIGURE 1 |** The systematic process of search and analysis of the literature.

This second phase of the search was performed in other Scientific Databases—Psychinfo, Ebsco, Isi Web of Science, Google Scholar—in order to carry out a broader search of the relevant literature.

## Inclusion Criteria

Only manuscripts with a conceptual definition or theoretical framework of employee engagement, patient engagement, and consumer engagement were included in our analysis. We considered as “conceptual” manuscripts which deeply discussed the epistemological underpinnings of the construct/phenomenon under analysis and specified the components of such constructs which should be assessed in empirical research (as suggested by Jaccard and Jacoby, 2010; Castro et al., 2016).

Initially, duplicates were eliminated from the database of references generated by the systematic search. Thereafter, all titles and abstracts were screened to exclude irrelevant records. Finally, the full text of the remaining references was screened to assess if they were eligible for our analysis. We only selected papers which described how the constructs under analysis were understood, described and operationalized. This selection process continued until conceptual saturation was achieved in terms of theoretical understanding and description of the constructs under investigation.

## Analytical Process

We based our conceptual analysis on the principles of the Walker and Avant (2005) and Haase et al. (1992) analysis strategies. Following the principles of qualitative content analysis, we performed an in-depth analysis of the retrieved references that included continuous comparison across emerging definitions and continuous validation of the concepts emerging during the process of analysis. This analysis enabled us to clarify the theoretical roots of the concepts under investigation by simultaneously comparing and contrasting the retrieved references in order to understand their inner characteristics, their areas of theoretical overlap, and mutually exclusive attributes. More precisely, the aim of our analysis was to critically appraise the existing definitions of the phenomena under investigation in order to detect their attributes, antecedents, consequences and empirical referents (Castro et al., 2016). The analytical process was recursive and moved through the following steps: (1) The definitions found in the literature were coded and divided into meaningful units. Codes concerned the main areas of investigation: concept definition; attributes, antecedents and consequences. (2) The coding sheet was continuously regenerated to become inclusive of new insights emerging from the analysis. The codes attributed were then revised and clustered into broader categories and themes. (3) The coding sheets produced by the analysis of each construct were then compared and contrasted in order to detect areas of theoretical overlap and divergent features. (4) A final step of interpretation and theoretical abstraction was performed in order to synthesize the main conceptual features of each construct and to build a final comprehensive taxonomy of the overlapping and divergent conceptual areas of the three constructs.

## RESULTS

### Employee Engagement

#### Main Current Definitions of Employee Engagement

The ongoing debate on employee engagement (and related synonyms such as “work engagement” and “job engagement”) began in the early 1990s. Although there exist many empirical investigations and theoretical studies on these concepts, the scholarly debate still presents some areas of opacity and theoretical gaps. Several definitions of employee engagement exist, and no single shared framework has been established. Furthermore, scholars point out the separation and poor dialogue between the scholarly literature and the managerial debate on this concept, resulting in multiple and divergent definitions of employee engagement, together with poorly shared and structured strategies to promote it. Furthermore, there is still controversy on the conceptual boundaries between employee engagement and other related organizational constructs, such as psychological empowerment, organizational commitment, job satisfaction; job involvement and job affect (Dalal et al., 2008; Newman and Harrison, 2008; Shuck, 2011; Shuck et al., 2013; Eldor, 2016). Some critical scholars have even argued that employee engagement is nothing more than a “*new blend of old wines*” (Newman et al., 2010). In this context of open debate, in order to lay the bases for a conceptual analysis of employee engagement, in the following sections we review the most established and cited definitions of the concept (see **Table 1**). Schaufeli et al. (2002) define the concept as “*a positive, fulfilling work related state of mind that is characterized by vigor, dedication, and absorption*” and they oppose this state of mind with the contrary experience of burnout, in line with Maslach and Leiter’s (1997) view of engagement as “*a persistent positive affective state characterized by high levels of activation and pleasure*,” whereas the experience of burnout is characterized by parallel but opposite dimensions such as exhaustion, cynicism and ineffectiveness. Macey and Schneider (2008) define engagement at work as “*a desirable condition, [which] has an organizational purpose, and connotes involvement, commitment, passion, enthusiasm, focused effort and energy, so it has both attitudinal, and behavioral components*”: the experience of involvement, passion, enthusiasm and energy lived by the employee. The managerial literature mainly tends to associate employee engagement with work satisfaction, still using the Gallup conceptualization of work engagement. For instance, Harter et al. (2002) define the concept as the “*individual’s involvement and satisfaction with, as well as enthusiasm for, work*,” while Rothbard (2001) defines work engagement as “*one’s psychological presence in or focus on role activities*.” Still highly influential in the debate on employee engagement is the seminal conceptualization of Kahn (1990), who first defined work engagement as “*the harnessing of organizations members’ selves to their work roles, by which they employ and express themselves physically, cognitively, and emotionally during role performance*.” Building on this seminal definition, Shuck and Wollard (2010) broadened the conceptualization of work engagement by stating that it reflects the holistic and simultaneous expression of individuals’ physical, emotional and cognitive energy in their

**TABLE 1 |** Definitions of “employee engagement.”**References**

Schaufeli et al., 2002, p. 74	“a positive, fulfilling work-related state of mind that is characterized by “vigor, dedication and absorption”; this experience is opposed to the contrary experience of burnout”
Maslach and Leiter's, 1997, p. 417	as “a persistent positive affective state characterized by high levels of activation and pleasure,” whereas the experience of burnout is characterized by parallel but opposite dimensions such as exhaustion, cynicism and ineffectiveness
Macey and Schneider, 2008	“a desirable condition, [which] has an organizational purpose, and connotes involvement, commitment, passion, enthusiasm, focused effort and energy, so it has both attitudinal and behavioral components”: the experience of involvement, passion enthusiasm and energy lived by the employee
Harter et al., 2002	individual's involvement and satisfaction with, as well as enthusiasm for, work
Rothbard, 2001, p. 656	“one's psychological presence in or focus on role activities”
Kahn, 1990, p. 694	“the harnessing of organizations members' selves to their work roles, by which they employ and express themselves physically, cognitively and emotionally during role performance”
Shuck and Wollard, 2010, p. 103	“an individual employee's cognitive, emotional and behavioral state directed toward desired organizational outcomes”
Rich et al., 2010	there are three subcomponents of work engagement: physical engagement, emotional engagement and cognitive engagement
Eldor, 2016, p. 332	“a combination of individuals' deeply physical, emotional and cognitive connectedness with the significant facets of their lives: work, personal life and community”

work roles. Particularly, they define work engagement as “*an individual employee's cognitive, emotional and behavioral state directed toward desired organizational outcomes.*” Rich et al. (2010) extended Khan's definition further by stating that there are three subcomponents of work engagement: physical engagement, emotional engagement, and cognitive engagement. More recently Eldor (2016) has defined work engagement as “*a combination of individuals' deeply physical, emotional and cognitive connectedness with the significant facets of their lives: work, personal life, and community*” which is crucial for providing an organization with a competitive advantage.

### Attributes of Employee Engagement

Some constitutive attributes of employee engagement seem to recur in the literature analyzed.

#### Multidimensionality

Authors generally agree in defining employee's engagement as a complex and multidimensional psychological experience of the individual at work. Particularly, engagement is articulated into three main psychological components: cognitive engagement, affective engagement, and behavioral engagement. These three dimensions appear to overarch all the specific psychological manifestations of the engagement experience. Furthermore, in order to make the experience of engagement effective, the three dimensions should be consistent and simultaneously implied.

#### Relationality

The scholarly debate agrees in positioning employee engagement within the broader debate on organizational relationships, together with kindred concepts (such as psychological empowerment, organizational commitment Mowday et al., 1979, and job satisfaction Locke, 1969). The concept of employee engagement, indeed, is deeply relational in its nature. Although it denotes an individual trait or state (Macey and Schneider, 2008), it is always described as the result of the type of contact and exchange that an individual may entertain, both at the

psychological and performance levels, with his/her job task and the overarching organizational setting in which this is performed.

#### Individual identity

In the seminal theorization of Kahn (1990) subsequently resumed by other scholars, employee engagement is linked to individuals' self-expression and self-actualization. In particular, engagement is a function of how an individual lives, expresses and attributes meaning to his/her job role. Furthermore, the expression of employee role identity in the definition of engagement does not seem to be detached from the other roles experienced by the individual. Definitions of employee engagement suggest that good integration among different self domains into a more coherent experience of self-identity is crucial for work engagement. Work engagement is often described as the consequence of individual personal development.

#### Driving

In all theorizations, work engagement is described as a “force” driving employees' performance. The motivational nature of engagement emerges from the literature analyzed, and it is also retrievable in the empirical studies which assess the role of engagement in predicting the quality and quantity of job performances and organizational competitiveness. Furthermore, empirical investigations often treat work engagement as a mediator or a moderator of other variables in employees' or organizations' performances.

### Antecedents of Employee Engagement

Several empirical studies have attempted to explore and model the relationship between engagement and several types of predictor. Our analysis made it possible to cluster the main recurrent precursors of employee engagement into the following three categories.

#### Individual resources

There is much debate on the individual characteristics which may sustain or hinder work engagement (Bakker and Demerouti,

2008; Bakker and Leiter, 2010). For instance, individuals' attitudes toward their jobs (Mackay et al., 2017); individuals' perceptions of closeness and alignment with organizational values and mission (Ilkhanizadeh and Karatepe, 2017); employees' level of self-efficacy and perceived control over their jobs (Noblet et al., 2016; Chmiel et al., 2017) employees' goal orientation (Adriaenssens et al., 2015), optimism, personal capital (Karatepe and Karadas, 2015), and psychological empowerment (Kimura, 2011); and employees' dedication to task completion (Porter, 1996; Eldor and Harpaz, 2016) are also considered precursors of employees' engagement.

### **Job resources**

Studies have demonstrated a positive relationship between various features of the job and employees' engagement. These features are, for instance, the learning climate, the level of autonomy, role fit, job control, task significance, the supervisor's support and feedback, and task variety (Schaufeli and Bakker, 2004; Hakanen et al., 2006; Bakker and Demerouti, 2007; Crawford et al., 2010; Halbesleben, 2010; Shuck, 2011; Eldor and Harpaz, 2016).

### **Organizational resources**

Other potential antecedents of work engagement are attributable to organization characteristics, such as organizational climate, learning climate, organizational structure, and quality of the interpersonal relationships among colleagues and between different roles (Schaufeli et al., 2009; Kimura, 2011).

### **Consequences of Employee Engagement**

The broad interest of scholarly as well as practitioners' debate in employee empowerment is largely due to the intra-organizational and extra-organizational outcomes that it is supposed to promote. Although final agreement on the main outcomes of employee engagement has still to be reached, and some scholars even point to the lack of knowledge about the added value of employee engagement in promoting organizations' competitive advantage (Bakker et al., 2011; Eldor, 2016), some general domains of employee engagement appear recurrent in the literature analyzed.

### **Employee performance**

Studies have demonstrated that a high level of work engagement predicts a greater commitment of employees to their job tasks, by also improved effectiveness in task completion (Rich et al., 2010; Shuck, 2011, and the perceived satisfaction with one's own work. Furthermore, highly engaged employees are likely to solve or overcome organizational obstacles (Ulrich, 1994; Barney and Wright, 1998; Gorton and Schmid, 2004).

### **Organizational performance**

The engagement of employees has also been discussed as a potential predictor of organizational outcomes, such as level of customer satisfaction (Salanova et al., 2005), sales improvement (Xanthopoulou et al., 2008; Demerouti and Cropanzano, 2010), innovation (Hakanen et al., 2008), and costs reduction (Eldor, 2016).

### **Personal fulfillment**

Furthermore, work engagement is linked to extra-organizational outcomes primarily to do with individuals' self-actualization and well-being. A seminal study by Schaufeli and colleagues demonstrated the linkage between work engagement and individuals' positive emotions and well-being perception (Menezes De Lucena Carvalho et al., 2006; Bakker and Demerouti, 2008; Macey and Schneider, 2008; Shimazu et al., 2016). Furthermore, studies have highlighted the influence of work engagement on employees' perception of quality of life, their satisfaction with life, and generally their overall ability to integrate in the community of reference and assume a satisfactory social role.

## **Consumer Engagement**

### **Main Current Definitions of Consumer Engagement**

Consumer engagement is today considered an important milestone for post-modern marketing, as testified by the topic's growing coverage by the managerial as well as scholarly literature (Gambetti and Graffigna, 2010). However, the theoretical foundation for this concept is at its beginnings, and a shared and solid background is still lacking (France et al., 2016; Harmeling et al., 2017). Also in the case of consumer engagement, some scholars have pointed to the risk that it is an "old wine in a new bottle" (Brodie et al., 2011; Harmeling et al., 2015), thus using the same critical metaphor as applied in the employee engagement literature. The opacity in definition of the concept is also related to the multiple marketing settings in which engagement is considered and discussed: the vast majority of studies have assessed the phenomenon in the domain of consumer-brand relationships (Bowden, 2009; Graffigna and Gambetti, 2015). Others, particularly managerial studies, have mainly focused on engagement toward media communication and advertising (Calder and Malthouse, 2005; Wang, 2006; Kilger and Romer, 2007; Heath, 2009; Hennig-Thurau et al., 2010; Tafesse and Tafesse, 2016). Finally, Harmeling et al. (2015) have suggested that a distinction should be drawn between consumer engagement (as an outcome of marketing actions) and engagement marketing (as all the specific marketing strategies enacted by a company to produce consumer engagement).

The majority of studies (see Table 2) describe consumer engagement as a multidimensional phenomenon which encompasses cognitive, affective and behavioral components of consumers' experience (Bowden, 2009; Brodie et al., 2011; Hollebeek, 2011). Hollebeek and Chen (2014) defined consumer engagement as the level of a consumer's cognitive, emotional and behavioral investment in specific brand interactions (Hollebeek, 2011; Hollebeek and Chen, 2014; Hollebeek et al., 2016). However, although scholars tend to agree on the complex and multifaceted nature of consumer engagement, contributions in the literature tend to focus on isolated and specific dimensions of it. For instance, several authors have based the definition of consumer engagement on its behavioral manifestations, which are seen as more objective and explorable (Goldsmith et al., 2010, 2011; Van Doorn et al., 2010; Verhoef et al., 2010; Jaakkola and Alexander, 2014; Verleye et al., 2014). Others argue for considering the psychological complexity that lies behind



**TABLE 2 |** Definitions of “consumer engagement.”

References	
Kumar and Pansari, 2016, p. 2	“the attitude, behavior, the level of connectedness (1) among customers, (2) between customers and employees, and (3) of customers and employees within a firm”
Hollebeek et al., 2016, p. 6	A customer's motivationally driven, volitional investment of focal operant, resources (including cognitive, emotional, behavioral, and social knowledge and skills), and operand resources (e.g., equipment) into brand interactions in service systems”
Jaakkola and Alexander, 2014	A customer's motivationally driven, volitional investment of focal operant resources (including cognitive, emotional, behavioral, and social knowledge and skills), and operand resources (e.g., equipment) into brand interactions in service systems (p. 6)
Verleye et al., 2014, p. 69	“Voluntary, discretionary customer behaviors with a firm focus... customers’ interactive, cocreative experiences with a firm”
Vivek et al., 2012, p. 127	“Beyond the purchase... events and activities engaged in by the consumer that are not directly related to search, alternative evaluation and decision making involving brand choice”
Brodie et al., 2011, p. 9	“Psychological state that occurs by virtue of interactive, cocreative customer experiences with a focal agent/object (e.g., a brand) in focal service relationships”
Hollebeek, 2011, p. 790	The level of an individual customer's motivational, brand-related and context-dependent state of mind characterized by specific levels of cognitive, emotional and behavioral activity in direct brand interactions”
Bijmolt et al., 2010, p. 341	“Customers can cocreate? value, cocreate competitive strategy, collaborate in the firm's innovation process, and become endogenous to the firm”
Kumar et al., 2010, p. 297	“Customers contribute to firms in many ways that are beyond direct transactions”
Van Doorn et al., 2010, p. 253	“Customer behavioral manifestations toward the brand or firm, beyond purchase”
Verhoef et al., 2010, p. 247	“A behavioral manifestation toward the brand or firm that goes beyond transactions”
Gambetti et al., 2012	“CBE as characterized by three relational phases marked by increasing levels of brand enacting that are related to the brand ability to progressively “approach” its consumers, building with them a bond which shows a growing relationship strength. In the first phase of the CBE process the brand reveals its appearance to consumers, then in the second its body, and finally in the third its soul”
Sprott et al., 2009, p. 92	“BESC is the consumers’ tendency to include important brands as part of their self-concept”
Bowden, 2009, pp. 64–66	The process of engagement traces the temporal development of loyalty by mapping the relationships between the constructs of calculative commitment, affective commitment, involvement, and trust as customers progress from being new to a brand to becoming repeat purchasers of a specific brand
Calder and Malthouse, 2005	“Media engagement takes into account the effectiveness of a message and the environment within which that message is presented”
Wang, 2006, pp. 356–358	“Engagement is defined as a measure of the contextual relevance in which a brand's messages are framed and presented based on its surrounding context”
Graffigna and Gambetti, 2015	“CBE seems to be shaped by a complex psychological contact experience between consumer and brand, in which the brand gets incorporated in consumers’ imagery, social networking and inter-generational life experiences by acting as their “dream carrier,” “relationship facilitator” and “compass”

consumer engagement. They define it as a psychological state of mind and discuss its cognitive and emotional components (Heath, 2009; France et al., 2016). However, the nature of consumer engagement is still a matter of debate. Some scholars argue that it should be considered a state of mind circumscribed to a specific moment and setting of contact with the brand/company (Sprott et al., 2009). Others suggest a broader definition as a complex process which develops in time along the consumer experience journey (Bowden, 2009; Brodie et al., 2011; Gambetti et al., 2012; Graffigna and Gambetti, 2015; Maslowska et al., 2016). Finally, similarly to the case of scholarly debate on employee engagement, the conceptual boundaries between consumer engagement and other related concepts such as consumer empowerment (Rapp et al., 1993; Tiu Wright et al., 2006), consumer involvement (Gilles and Kapferer, 1985; Mittal, 1995), consumer commitment (Moorman et al., 1992; Morgan and Hunt, 1994), brand attachment (Thomson et al., 2005; Smaoui, 2008; Whan Park et al., 2010) and brand experience, still remain matters to be debated.

## Attributes of Consumer Engagement

### *Psychological ownership and self-transformation*

The phenomenon of engagement is described as a “self-transformation” (Harmeling et al., 2015) of the consumer, in

the sense that s/he deliberately becomes an active agent in the relationship with the brand (Van Doorn et al., 2010) but also that s/he incorporates attributes of the brand itself into personal self-expression and determination (Sprott et al., 2009). Graffigna and Gambetti (2015) also postulated that consumer engagement coincides with consumers’ self-transformation and achievement of a better balance in the brand relationship in a renewed “eudaimonic project.”

### *Multicomponentiality*

Most studies view consumer brand engagement as a consumer's multidimensional activation state with cognitive, affective and behavioral components (Bowden, 2009; Brodie et al., 2011; Hollebeek, 2011) and influenced by motivational drivers (Calder and Malthouse, 2005; Van Doorn et al., 2010; Malthouse and Peck, 2011). In this regard, consumer brand engagement has been defined as the level of a consumer's cognitive, emotional and behavioral investment in specific brand interactions (Hollebeek and Chen, 2014).

### *Intentionality*

The motivational nature of engagement is a recurrent topic in the scholarly debate: consumer engagement is described as a propulsive and positive energy that links consumers and

brand in pursuit of? Shared goals of brand/product performance and experience. In particular, consumer engagement is often described as the consequence of a deliberative positive attitude (and conduct) toward the company (Calder and Malthouse, 2005; Malthouse and Peck, 2011). In a seminal manuscript, for instance, Van Doorn et al. (2010) defined consumer engagement as the “consumer’s behavioral manifestation toward a brand or firm, beyond purchase, resulting from motivational drivers.”

### Relationality

Bowden (2009) was the first to posit analysis of consumer engagement within of the consumer/brand relationship. Also more recent studies read consumer engagement in light of individuals’ interaction with a company: for instance, Kumar and Pansari (2016) describe consumer engagement in terms of three levels of connectedness: (1) among customers, (2) between customers and employees, and (3) of customers and employees within a firm. Furthermore, Verleye et al. (2014) describe consumer engagement as “*voluntary, discretionary customer behaviors with firm focus...customers’ interactive, co-creative experience with a firm.*”

## Antecedents of Consumer Engagement

### Consumer resources

The level of consumer psychological empowerment and self-confidence is considered to be a precursor of engagement behavior (Füller et al., 2009; Tsai and Men, 2013; Morrongiello et al., 2017). Moreover, generally the level of consumer motivation, is considered crucial in generating engagement (Van Doorn et al., 2010). Recently, Harmeling et al. (2015) have also argued for the importance of other consumer resources for engagement, such consumers’ networks (defined in terms of consumers’ interpersonal ties); *consumer persuasion capital* (defined in terms of “degree of trust, goodwill and influence” of a customer on other potential costumers); *customer knowledge stores* (in term of accumulation of specific knowledge related to the company and the brand); and *customer creativity* (in terms of capacity to contribute with novel ideas to marketing decision making).

### Brand features

How brand features and “brand personality” impact on consumer loyalty and consumer brand attachment is much debated in the scholarly as well as managerial literature (Chaudhuri and Holbrook, 2002; Malär et al., 2011). Consistently, the ability of the brand to generate emotional attachment is considered to be one of the antecedents of consumer engagement (Morrongiello et al., 2017). Furthermore, the experiential dimension of the consumer-brand touch point and the ability of the brand to be perceived as close to consumers’ values and preferences are other elements considered crucial for the development of engagement (Gambetti et al., 2012; Graffigna and Gambetti, 2015).

### Marketing initiatives

Consumer engagement has also been widely discussed as the consequence of deliberate marketing efforts, such as purchase incentives, co-creative platforms, and better interactive

communication between consumers and brands (Fuchs et al., 2010; Kozinets et al., 2010; Gambetti et al., 2016). Harmeling et al. (2015) argue for an “engagement marketing” as a specific set of marketing initiatives aimed at increasing consumer engagement, considered as one of the outcomes of “engagement marketing.”

## Consequences of Consumer Engagement

### Company revenue

Some studies demonstrate that high levels of consumer engagement are linked to increased revenue and lower costs (Fuchs and Schreier, 2011; Schmitt et al., 2011) and increased decision making and purchase behaviors (Ramani and Kumar, 2008; Bowden, 2009; Sprott et al., 2009; Van Doorn et al., 2010; Kumar and Pansari, 2016).

### Consumers’ loyalty

Studies claim that consumer engagement is related to an enhanced brand equity (Hoeffler and Keller, 2002; Schultz and Block, 2011) and generally to high consumer retention. Some studies have also highlighted that high levels of consumer engagement are related to better satisfaction and affection in the customer-brand relationship, enhanced brand trust, and consumer commitment to the company (De Matos and Rossi, 2008; Bowden, 2009; Gambetti and Graffigna, 2010; Hollebeek, 2011).

### Word of mouth and advocacy

Furthermore, consumer engagement has also been associated with an increased tendency of consumers to advocate a brand in their peer-networks, mainly through social media (Kozinets et al., 2010; Libai et al., 2010; Brodie et al., 2013). Scholars have also focused on consumer-to-consumer interactions and consumer-brand interactions in online communities as functions of engagement and as sources of value co-creation (Brodie et al., 2013), and the generation of new ideas and solutions which may contribute to new product development and better marketing strategies (Van Doorn et al., 2010; Harmeling et al., 2017; Morrongiello et al., 2017).

## Patient Engagement

### Main Current Definitions of Patient Engagement

The literature debate on patient engagement started later than those on employee and consumer engagement, and its beginning dates to only about a decade ago (Barello et al., 2012). However, interest in the concept, again in both the scholarly and the practitioners’ literature, has greatly increased in recent years (see Table 3). Despite this growing production of studies on the topic, however, no consensus has yet been reached on a shared definition of patient engagement, and several perspectives coexist. Furthermore, it is interesting that in the case of patient engagement (more than in the case of the concepts previously analyzed) several different disciplines have approached the topic (i.e., medicine, nursing, political science, management, psychology, social science, and even computer science!, see e.g., Barello et al., 2014). This unavoidably leads to a richness of perspectives, but also to the risk of a “Babel” of different languages, epistemological underpinnings,

**TABLE 3 |** Definitions of “patient engagement.”

References	
Hibbard et al., 2009	Patients' motivation, knowledge, skills, and confidence to make effective decisions to manage their health.
Gruman et al., 2010	Set of behaviors including two overarching domains: (1) “managing health” behaviors, which is both the self-management of chronic disease and the adoption of healthy behaviors, and (2) “managing healthcare” behaviors, which can be both patient and “consumeristic” behaviors.
Graffigna et al., 2014	Process-like and multi-dimensional experience, resulting from the conjoint cognitive (think), emotional (feel) and conative (act) enactment of individuals toward their health management. In this process patients go through four successive phases (disengagement, arousal, adhesion and eudaimonic project). The unachieved synergy among the different subjective dimensions (think, feel, act) at each stage of the process may inhibit patients' ability to engage in their care.
Légaré and Witterman, 2013	[“engagement” is] the process of individuals' responsabilization that ensures that clear information lead to the best decision for the person who is seeking the care thus improving self-management.
Mittler et al., 2013	Engaging consumers refers to the performance of specific behaviors (“engaged behaviors”) and/or an individual's capacity and motivation to perform these behaviors (“activation”) aimed at gaining health.
Mahmud, 2004	It is a process that leads to setting healthcare priorities. It consists in empowering people to provide input in decisions that affect their lives and encourages support for those decisions, which in turn improves the public's trust and confidence in the healthcare system.
Dearing et al., 2005	Developing “engagement” means fostering those client-therapist working alliances that help the client gain a more realistic understanding of the nature, process, and expected outcomes of treatment.
Davis et al., 2007	Option for patients to be informed partners in their care, including a recasting of the care relationship where clinicians enact the role of adviser, and patients or designated surrogates for incapacitated patients serving as the locus of decision making.
McBride and Korczak, 2007	It is a process that will allow, at different levels, the wider community to have a say in the future direction of their health.
Dunston et al., 2009	Dialogic and co-productive partnership between health system, health professionals and citizen/health consumers through which these actors become co-productive.
Forbat et al., 2009	[engaging patients means] working in partnership with service-users having them inform (i) service redesign/improvement, (ii) policy, (iii) research, and (iv) their own care/treatment. It also implies balancing powers among patients and health providers.
Schley et al., 2012	Engaging clients in the therapeutic encounter means developing collaboration, perceived usefulness, and client-therapist positive interaction.
Mulley et al., 2012	Process of shared decision making described as a sequence of three types of conversation: team talk, option talk and decision talk. [Engaging patients] means creating a preference diagnosis which has a unique profile of risks, benefits and side effects.
Sanders and Kirby, 2012	A collaborative, bidirectional process whereby patients' knowledge and experience is shared in a dialogue with program developers, health practitioners and researchers. It involves actively harnessing the consumer's voice to strengthen the quality, relevance and effectiveness of an intervention.
Carman et al., 2013	Shared power and responsibility among the actors of the care process where (i) the patient becomes an active partner in defining agendas and making decisions; (ii) the information flow is bidirectional; (iii) patients act also as representatives of consumer organizations.
Patel and Rajasingam, 2013	The [engaged] patients have the ability to balance clinical information and professional advice with their own needs and preferences. It is a collaborative approach where shared decision making, equal distribution of power and exchange of clinical information are enacted.
Higgins et al., 2017	“individual desires and capabilities, partnering with providers and institution maintaining the power hierarchy and increasing the confidence and skill levels of patients.”

and sensibilities. In particular, the different definitions of patient engagement available in the literature appear to focus on different levels of the engagement phenomenon (Fumagalli et al., 2015). In other words, the majority of authors consider engagement in terms of a behavioral state of the individual (e.g., Gruman et al., 2010), mainly overlapping it with patients' skills in self-managing their health and care. A few other scholars have attempted to provide a theoretical foundation for the dimensions involved in the experience of “engagement” and the developmental process of such subjective experience (i.e., Hibbard et al., 2009; Graffigna et al., 2014). Finally, others have proposed a more systemic definition of patient engagement in an attempt to describe all its organizational components (Carman et al., 2013; McCormack et al., 2017).

Hibbard et al. (2009) describe “engagement” as “the patients' motivation, knowledge, skills, and confidence to make effective decisions to manage their health.” This framework starts from the consideration that the level of “engagement” may affect

individuals' healthcare choices and daily disease management, thus having an impact on healthcare utilization, costs and clinical outcomes. Four gradients of “engagement” have been identified by these authors, although they are not described at the psycho-social and clinical level. Furthermore, also in this case, the conceptualization fails in explaining of the dynamicity that governs the increase in patients' “engagement.” Gruman et al. (2010) for instance, describe “engagement” as a set of behaviors and actions that allow individuals to effectively manage their health and healthcare in order to obtain the greatest benefits. This definition emphasizes the role of individuals in shaping their behaviors in order to interact in the best way possible with the health care. But it appears merely taxonomic and does not offer insights into the dynamics occurring when individuals engage in their health care. Moreover, this proposal reduces the concept of “engagement” to its behavioral manifestations alone. Carman et al. (2013) provide a more dynamic conceptualization of “engagement” as a continuum of possible interactions between

the patients and the healthcare system (i.e., from “consultation” to “partnership” to “shared leadership”). This definition of patient “engagement” has the indubitable strength of considering “engagement” as a systemic phenomenon which is the outcome of actions carried out at different levels of complexity (i.e., individual, relational, communitarian, organizational, and health policy). However, also this conceptualization is insufficient because it reduces the “engagement” process to merely the behavioral/conative dimensions of the patient’s experience, and because it does not explain the dimensions that may sustain or inhibit the passage from one stage to the other of the continuum. Graffigna et al. (2014) define “engagement” as a “process-like and multi-dimensional experience, resulting from the conjoint cognitive (think), emotional (feel) and conative (act) enactment of individuals toward their health management.” In this process, patients go through four successive phases (i.e., “disengagement,” “arousal,” “adhesion,” and “eudaimonic project”). In their conceptual framework, these authors discuss “engagement” as a process, and they describe its different phases in psychological terms. However, also this model appears weak in explaining the dynamic passage from one to the other phase of the process. Furthermore, it fails to define? The contextual and organizational elements that may sustain or inhibit the “engagement” process. Finally, Higgins et al. (2017) propose considering engagement as an encompassing level of patients’ participation in health care, since engagement relies on “individual desires and capabilities, partnering with providers and institution maintaining the power hierarchy and increasing the confidence and skill levels of patients.” In particular, the authors consider the attributes of care personalization, access, commitment, and therapeutic alliance as constitutive of the engagement phenomenon.

## Attributes of Patient Engagement

### *Self-determination*

Patient engagement is described as the result of the individual’s choice to change his/her attitudes and behaviors toward health care. Furthermore, patient engagement has also been discussed as an ethical principle for modern medicine, in order to give voice to patients regarding their needs and preferences in the care journey, and thus to enhance their self-determination rights also in health care. Hibbard (2017) has defined the state of engagement and activation as the patient’s self-perception of his/her self as agent in the healthcare process. Graffigna et al. (in press) further elaborated on this point by defining patient engagement as the change of the patient’s “role identity” along the healthcare journey: from passive recipient to co-author of the care process.

### *Complexity*

As in the case of the previously analyzed concepts, also patient engagement is described as a complex phenomenon which involves several dimensions of individuals’ functioning, as well as different actors. Authors who focus on the individual’s experience of engagement, describe this as the result of several psychological dimensions. Shared by the various definitions is the assertion that engagement results from a conjoint and

parallel activation of the individual at the cognitive, behavioral and emotional levels. The large number of studies on the intra-individual and psychological factors involved in the engagement process confirm this variety of components. Other authors assume a broader perspective in defining engagement by detecting several organizational components and layers of analysis which determine it. These authors propose to consider patient engagement as the result of several factors belonging to healthcare organizational functioning and the surrounding socio and economical context. *Driving nature*: patient engagement, too, is considered and studied as the potential driver of change in patients’ clinical behavior and in healthcare organizational performances. At the individual level, scholars tend to link the experience of engagement to a sort of motivational lever which drives patients to change their attitudes and conduct in healthcare. Also authors who assume a more systemic and organizational perspective agree that engagement is a potential source of change and enactment of improved organizational processes.

## Antecedents of Patient Engagement

### *Relational factors*

Some authors describe engagement as a function of the dyadic patient/physician relationship. They thus restrict the concept of “engagement” to the domain of therapeutic alliance (Higgins et al., 2017) and shared decision making (i.e., Davis et al., 2007; Mulley et al., 2012). Other studies suggest a broader vision of inter-individual factors at the basis of “engagement”: in particular, they focus on the role of complex networks of peer-to-peer exchanges (i.e., Dunston et al., 2009) and on the dialogue between the citizen and the healthcare system conceived as a whole (Mahmud, 2004; McBride and Korczak, 2007).

### *Intra-individual factors*

Studies have highlighted the intra-individual factors involved in shaping “engagement,” more often with exclusive reference to the cognitive aspects of self-efficacy, perceived locus of control, and health literacy (Légaré and Witteman, 2013; Mittler et al., 2013; Smith et al., 2013; Prey et al., 2014). Furthermore, some authors propose engagement as the consequence of patients’ level of empowerment (Fumagalli et al., 2015). Some authors have also highlighted the role of positive emotions and psychological elaboration of the illness condition as predictors of patient engagement (McCusker et al., 2016; Prey et al., 2016). By contrast, there is less agreement in the literature on the association between patient engagement and socio-cultural characteristics of the individual such as gender, age, level of education (Hibbard et al., 2008; Bos-Touwen et al., 2015) and level of income (Skolasky et al., 2008; Rask et al., 2009).

### *Organizational factors*

Personalization of the care approach (Higgins et al., 2017) and the level of patient centricity assumed by the healthcare organization (Borghi et al., 2016) are discussed as crucial antecedents of patient engagement. Furthermore, the issue of access to the healthcare system and to the needed resources is considered a fundamental



factor influencing engagement, as well as the level of perceived quality of care (Carman et al., 2013).

## Consequences of Patient Engagement

### *Improved patients' health management and better clinical outcomes*

There are indications that patient engagement in the care process may indeed improve health outcomes across disease conditions (Saft et al., 2008; Munson et al., 2009; Green et al., 2010; Stepleman et al., 2010; Begum et al., 2011; Skolasky et al., 2011; Alexander et al., 2012). For example, studies have found that patients who were actively involved in their care plans were more likely to trust their clinicians (Becker and Roblin, 2008), more likely to adhere to treatment prescriptions (Hibbard et al., 2008) and less likely to experience adverse clinical events and hospital readmissions (Hibbard et al., 2008). Patient engagement also seems to contribute to fostering sustainable lifestyles and avoiding unsafe conduct (Jordan et al., 2008; Hibbard, 2009; Reid et al., 2010; Cosgrove et al., 2013).

### *Improved patients' satisfaction and quality of life*

Patient engagement is helpful in fostering personal growth and integration not only into the healthcare environment but also into the reference community by promoting satisfaction, opportunities for action, and self-expression (Martinez et al., 2009; Heesen et al., 2011; Bolderston, 2016). Furthermore, it may contribute to enhancing quality of life with the goal of increasing wellness and generating strengths and resilience in individuals after acute events (Haywood et al., 2017).

### *Healthcare costs reduction*

The patient's engagement, in terms of better sensitization, knowledge, and empowerment in his/her process of care and cure, thus seems to be crucial for achieving an efficient balance between the increase in healthcare demand and the reduction of economic resources allocated to the healthcare system in all mature societies today (Laurance et al., 2014; Graffigna et al., 2016). Furthermore, patient engagement may not only contribute to reducing the direct costs of the healthcare system; it may also concur in (re)orienting economic resources in the management of healthcare systems to reduce waste of money (Fisher et al., 2011; Hibbard and Greene, 2013).

## DISCUSSION

### **Employee, Consumer, and Patient Engagement: Divergences and Overlaps**

The foregoing conceptual analysis, although preliminary and partial, has cast light on some interesting conceptual areas of overlap as well as divergence among the phenomenon of employee engagement, consumer engagement, and patient engagement selected as expressions of different positions and experiences of engagement along the "insid/outside" organizational continuum. Our research was prompted by an interest in exploring the feasibility and proposability of transdisciplinary reflection on engagement in organized settings.

Although flourishing, the literature debate on these concepts appears fragmented and distant from a shared and clear theoretical conceptualization. In all cases, the pragmatic importance of the engagement concept seems to drive the ongoing reflection, sometimes leading to a lack of academic consensus. To contribute to grounding a common sensibility on these topics we propose here some interpretative keys which appear recurrent among the three concepts.

### **First Proposition: Engagement Is Different from Empowerment and Activation**

In general terms, engagement may be described as a specific psychological experience which differs from those of psychological empowerment and activation due to its relational nature and its broad spectrum of influence at the micro, meso and macro levels of an organizational system.

Although across the three corpuses of literature analyzed, the potential intertwining between engagement and other psychological concepts such as empowerment and activation is still a matter of debate, the majority of scholars seem to consider such concepts as diverse and autonomous, whereas they are interrelated. In the literature on employee and consumer engagement, empowerment is proposed as an antecedent of engagement, whereas activation is considered to be a potential behavioral outcome of it (Eldor, 2016; Harmeling et al., 2017). In the literature on patient engagement, empowerment and activation are often treated as overlapping phenomena, and engagement is generally viewed as an encompassing concept, or rather as a predictor empowerment or activation (Menichetti et al., 2014; Fumagalli et al., 2015).

The areas of contradiction and debate still present in the literature suggest that the analysis of the conceptual boundaries among engagement, empowerment and activation should be envisaged as a future priority line of investigation in this field. However, this also testifies to the tendency, both in managerial practice and empirical research, to consider engagement as a new and original concept which needs specific foundation and assessment.

### **Second Proposition: Engagement Is a Multi-Componential Psychological Experience**

A large amount of empirical research has been conducted over the past three decades to assess the inner components of employee, consumer and patient engagement, their antecedents and their consequences. Although not only the psychological literature has conducted analysis of engagement in these different settings, all authors seem to assume that engagement relates to a specific individual psychological experience. However, there is no agreement among scholars in regard to the nature of such experience: in the literature analyzed, some authors describe it as a state of mind, others as an individual trait (Macey and Schneider, 2008). In regard to patient engagement and consumer engagement, some authors propose viewing engagement as a psychological process articulated into incremental levels or positions (Hibbard, 2009; Carman et al., 2013; Graffigna et al., 2014). However, further debate on this point is needed across areas of engagement investigation.

Nevertheless, it appears established (particularly in the literature on employee engagement and patient engagement) that engagement should be viewed as a multi-componential psychological experience which affects the individual at several levels of his/her functioning: emotional, cognitive and behavioral. Furthermore, seminal studies in the domain of employee and patient engagement have also pointed out that engagement results from a good balance and conjoint activation of all these three dimensions of the individual's functioning.

Furthermore, no consensual developmental model of engagement seems to exist: the established theories and their related assessment measures seem to more concerned with determining the various factors describing engagement than with describing where the individual is positioned in his/her engagement experience. In other words, there is still scant consideration of the potential dynamic process leading an individual to acquire a growing degree of engagement along his/her course of experience. In particular, in the literature on employee engagement, no dynamic conceptualization of engagement was retrieved, apart from Schaufeli et al.'s (2002) conceptualization of engagement as the opposite pole on a continuum with burnout. Similarly, consumer engagement is mainly described by authors as a state of mind or a behavioral response to marketing actions (Van Doorn et al., 2010; Harmeling et al., 2017). But some studies have discussed the importance of assuming a developmental and processual perspective in studying it (Bowden, 2009; Gambetti et al., 2012). Finally, more widely shared seems to be the conceptualization of patient engagement as the incremental result of individual maturation or healthcare organizational changes (Hibbard et al., 2008; Carman et al., 2013; Graffigna et al., 2014).

### Third Proposition: Engagement Is a Self-transformative Experience

Across the body of literature analyzed, engagement is described as the result of an individual's deliberate decision to modify his/her role in the organizational setting. In the case of employees, engagement is the conscious and deliberate decision of individuals to assume a more proactive role in task completion and in organizational life participation (Eldor, 2016). In the area of consumer behavior, engagement is a function of the free decision of clients to engage in a deeper, more loyal and more participative relationship with the company (Verleye et al., 2014; Kumar and Pansari, 2016). Finally, in the case of patients, engagement is related to the individual's decision to take an active and partnership position in the care journey (Coulter and Ellins, 2007; Hibbard and Cunningham, 2008).

Engagement is thus also described as the result of a sort of self-transformation and or acquisition of psychological ownership of one's role in the organizational setting. This self-transformation in the direction of a new role identity in the organization appears not only distinctive of the literature debate on engagement, but also promising for laying the bases of an engagement theory within organizational settings. In other words, the development of individuals' engagement in organizations, in the case of both "producers" or "clients" of organizational services and processes,

consists in the development and assumption of the new role of "co-authors" of the organizational processes themselves.

### Fourth Proposition: Engagement Develops within a Relational Context

The literature on employee engagement positions the theoretical development of this concept within the paradigm of organizational relationship theories (Macey and Schneider, 2008). Similarly, scholars involved in the debate on consumer engagement set this concept within the domain of brand relationship theories (Bowden, 2009) and within the framework of value co-creation (Vargo and Lusch, 2008). Finally, the analysis of patient engagement is located within the framework of patient-centered medicine (Bardes, 2012), which advocates the collaborative and democratic relationship between healthcare professionals and patients.

Thus, it is evident that engagement in organized settings is a purely relational concept which relates to how an individual may relate (in a more or less engaged way) with another individual, a task, or even the organization as a whole. In other words, engagement in organized settings may be defined as a psychological experience which qualifies the systemic relation that occurs within organizations at the level of symbolic and interpersonal exchanges. This ultimately relational nature of engagement may be considered another fundamental component of this concept which differentiates it from the kindred concepts of activation and empowerment. These latter concepts, in fact, appear more related to the level of power, skills and knowledge of single individuals in performing their activities than to how individuals change their state of mind and self-identity in relation to an organizational goal or setting. As suggested by Fumagalli et al. (2015) in regard to patient engagement (but this theorization seems exportable to the other settings of analysis), engagement may be considered the motivational level and enabler of empowerment and activation.

### Fifth Proposition: Engagement Is a Systemic Phenomenon

On the basis of the previous arguments, and due to the assumption of the multi-componential and complex nature of the engagement phenomenon evidenced by the literature analyzed, we assume that an oversimplifying approach to the analysis (and promotion) of engagement in organized settings is not advisable. The issue of "disengagement"—both of employees and end clients—requires a holistic and systemic approach to investigate and solve its underlying causes. Furthermore, due to the inner relational nature of engagement, not only intra-psychological or individual factors to improve (or hinder) engagement should be explored: rather, a multilevel approach to this concept should be preferred. From our perspective, engagement should be seen as a new paradigm in organization functioning and services delivery, oriented to supporting cooperation and "co-authorship" among all the different actors involved in such processes, both as producers and end clients. This means fostering the emergence of an organizational ecosystem of

engagement including synergic actions addressing the multi-layer factors affecting the engagement of both employees and of consumers.

## CONCLUSIONS AND STUDY LIMITS

Engagement is today considered a promising means to sustain the transformation and survival of organizations in the current competitive scenario. Promoting a more participative and co-authorial involvement of human resources and end clients in organizations appears to be an ethical and pragmatic priority for both scholars and practitioners. However, promoting the effective engagement of both employees and consumers (and patients in the care of healthcare organizations) should be seen as a long and complex process, which needs continuous fine-tuning between evidence from scientific research and clinical practices. Employees' and clients' voices in this process should also be taken into greater consideration. Actualization of the organizational engagement imperative, in other words, requires a deep cultural change in how organizational processes and services are designed and delivered. At present, although a large body of evidence has been produced in the literature, the debate on engagement still appears to be in its infancy and needs further investigation to reach better consensus and theoretical foundation. Furthermore, the debate on engagement in diverse organizational settings and related to different actors involved in such settings (such as employees, consumers and patients) has never been bridged? With the consequent loss of cross-fertilization and transmission of insights and useful knowledge.

In this scenario, some crucial questions oriented our investigation and the preliminary results reported in this paper: *can we consider engagement as a unique phenomenon*

*across organizational settings? Are the engagements of employees, consumers and patients diverse or similar in their inner psychological nature? Is it possible to overcome theoretical boundaries to open a cross-disciplinary debate on engagement in organizational settings?*

Although our concept analysis of the literature was preliminary and limited, some first promising insights emerged in regard to interesting similarities among these three variants of the engagement phenomenon: employee, consumer, and patient engagement. However, a more systematic and broad analysis of the literature should be conducted. Our analysis was limited to only three forms of engagement, whereas other concepts such as student engagement, stakeholder engagement, and organizational engagement should be included in the analysis to furnish further insights into the nature of engagement in organized settings. Moreover, not only should the previous literature on engagement be taken into account in order to propose a shared foundation of engagement in organizations, but new transdisciplinary research should be conducted to explore this phenomenon better and to investigate how engagement may change across organizational settings and cultural domains.

Our preliminary analysis was only aimed at proposing an agenda for future conjoint research and investigation in the area of engagement in organized settings. We truly believe that only a multi-disciplinary and multi-stakeholder consensus can transform engagement from a “buzzword” to a shared corpus of knowledge and best practices!

## AUTHOR CONTRIBUTIONS

GG, ideated and conducted the analysis and prepared the manuscript.

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# Burnout Disrupts Anxiety Buffer Functioning Among Nurses: A Three-Way Interaction Model

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Over the last 40 years, job burnout has attracted a great deal of attention among researchers and practitioners and, after decades of research and interventions, it is still regarded as an important issue. With the aim of extending the Anxiety Buffer Disruption Theory (ABDT), in this paper we argue that high levels of burnout may disrupt the anxiety buffer functioning that protects people from death concerns. ABDT was developed from Terror Management Theory (TMT). According to TMT, reminders of one's mortality are an essential part of humans' daily experience and have the potential to awake paralyzing fear and anxiety. In order to cope with death concerns, people typically activate an anxiety-buffering system centered on their cultural worldview and self-esteem. Recent ABDT research shows that individuals with post-traumatic stress disorder are unable to activate such anxiety buffering defenses. In line with these results, we hypothesized that the burnout syndrome may have similar effects, and that individuals with higher levels of burnout will be less likely to activate an anxiety buffering response when their mortality is made salient. Participants were 418 nurses, who completed a questionnaire including: a mortality salience (MS) manipulation, a delay manipulation, and measures of burnout, work-related self-efficacy, and representation of oneself as a valuable caregiver. Nurses are daily exposed both to the risk of burnout and to mortality reminders, and thus constituted an ideal population for this study. In line with an anxiety buffer disruption hypothesis, we found a significant three-way interaction between burnout, MS and delay. Participants with lower levels of burnout reported higher levels of self-efficacy and a more positive representation as caregivers in the MS condition compared to the control condition, when there was a delay between MS manipulation and the assessment of the dependent measures. The difference was non-significant for participants with higher levels of burnout. Theoretical and practical implications of findings are discussed.

**Keywords:** Anxiety Buffer Disruption Theory, Terror Management Theory, mortality salience, burnout, work self-efficacy, nurses

## INTRODUCTION

Burnout has been a phenomenon of significant interest over the last 40 years and it continues to attract much attention both as a research topic and a social issue. On one hand, researchers have devoted their attention to the study of its nature and consequences (Schaufeli et al., 2009). On the other hand, practitioners have tried to develop prevention interventions and strategies to cope with it. After decades of research and interventions, burnout still has a remarkable impact on those who experience it. The present study was designed to extend our knowledge



of the psychological processes surrounding burnout by testing the hypothesis that individuals with higher levels of burnout display a disruption in their anxiety buffer functioning.

According to Terror Management Theory (TMT; Greenberg et al., 1986; Solomon et al., 2015), human awareness of the inevitability of death creates the potential for paralyzing fear and anxiety. In order to cope with death concerns, a number of psychological defenses are activated, which protect individuals from threats of vulnerability and death. A recent development of TMT, the Anxiety Buffer Disruption Theory (ABDT; Pyszczynski and Kesebir, 2011), posits that post-traumatic stress disorder (PTSD; American Psychiatric Association, 2013) entails a disruption of these anxiety-buffering mechanisms, thus leaving individuals affected by PTSD vulnerable to death anxiety and to anxiety in general. In this study, we argue that a similar effect occurs for individuals who experience higher levels of job burnout. As a consequence of prolonged exposure to stressors on the job, people with higher levels of burnout are expected to cope less effectively with death reminders, compared to people with lower levels of burnout.

## THEORETICAL FRAMEWORK

### The Burnout Syndrome

Job burnout has been defined as “a psychological syndrome in response to chronic interpersonal stressors on the job” (Maslach et al., 2001, p. 399). Three dimensions of this syndrome have been distinguished: emotional exhaustion, feelings of cynicism and detachment from the job, and a sense of reduced effectiveness and lack of accomplishment. Emotional exhaustion manifests itself in loss of energy, depletion, fatigue, and debilitation, thus constituting the individuals’ physical and psychological strain response to prolonged stressor exposure. Cynicism (also referred to as depersonalization) refers to negative, callous responses to various aspects of the job and to detached attitudes and withdrawal behaviors aimed at protecting the individual from stress responses (for the effects of dehumanization of patients on nurses’ stress symptoms, see Trifiletti et al., 2014). Reduced efficacy is associated with feelings of incompetence and lack of achievement and productivity at work.

Research on burnout originated in the 1970s (Freudenberger, 1974; Maslach, 1976) and was originally carried out in human service occupations (see, e.g., Maslach and Jackson, 1981) with interviews and case studies that provided a first, vivid insight into the experience of depleted energy and loss of perceived significance of one’s job (Schaufeli et al., 2009). Some years later, the study of burnout was extended to other professions, such as managers, white and blue collar workers and so forth. Over the last 45 years, it has become a topic of increasing interest, both for researchers concerned with its causes and consequences, and for practitioners interested in the development of prevention strategies and interventions (Schaufeli et al., 2009). Thousands of books, journal articles, and other scientific works have been published on burnout. Despite this increasing body of scientific knowledge, burnout is still recognized as an important social phenomenon that is not yet fully understood.

Even though the challenges faced by modern organizations are largely different from those of the past, two basic contributors to burnout can explain its persistence in the workplace (Schaufeli et al., 2009). The first is the imbalance between demands and resources (Aiken et al., 2001, 2002; Bakker and Demerouti, 2007), which enhances exhaustion and reduces professional efficacy. The second is alienation from corporate values, which promotes detachment from the job or from service recipients. Consistent with these two basic contributors, a number of organizational and individual difference variables, such as job demands and job resources (Schaufeli and Bakker, 2004), role conflict and ambiguity (Maslach et al., 2001), comfort with touch (Pedrazza et al., 2015a; see also Pedrazza et al., 2015b, 2017), agreeableness, consciousness, extraversion, and proactive personality (for a meta-analysis, see Alarcon et al., 2009), have been identified as possible antecedents of burnout.

Burnout has been associated with a multitude of individual and organizational negative effects (Maslach et al., 2001; Schaufeli et al., 2009). Individual outcomes include symptoms such as anxiety, irritability, depression, obesity, insomnia, and alcohol use (e.g., Iacovides et al., 1999; Jansson-Frojmark and Lindblom, 2010; Ahola et al., 2012). Organizational outcomes include lower performance (Bakker et al., 2004; Taris, 2006), job withdrawal (absenteeism, intention to leave the job, and actual turnover; e.g., Leiter and Maslach, 2009), decreased job satisfaction, and reduced commitment to the job or the organization (e.g., Dolan, 1987; Cropanzano et al., 2003). In the present research, we propose that higher levels of burnout may reflect disrupted functioning of the anxiety buffer system posited by TMT.

### Terror Management and Anxiety Buffer Disruption

According to TMT (Greenberg et al., 1986; Solomon et al., 2015, in press), human beings’ awareness of the inevitability of death conflicts with the biological predisposition toward continued survival, thus creating a potential for paralyzing terror. The anxiety-buffering system protects humans from the potentially paralyzing effects of anxiety and fear of death through proximal and distal defenses, which help to preserve well-being and effective functioning. Activation of proximal defenses occurs when death concerns are in current focal attention. These defenses aim to remove death-related thoughts from consciousness (e.g., by suppressing death-related thoughts, or denying one’s vulnerability to death). Activation of distal defenses occurs when death-related thoughts are on the fringes of consciousness. Faith in cultural worldviews and maintenance of self-esteem are the two key distal defenses that form the anxiety-buffering system. Cultural worldviews are shared conceptions of reality that imbue human existence with meaning, structure, and purpose, and promise literal or symbolic immortality to those who live up to their standards. Self-esteem is the belief that one is living up to the standards prescribed by one’s cultural worldviews and is indeed a valued member of one’s group (which can provide literal or symbolic immortality).

An impressive amount of empirical evidence supports the theory and the protective role of cultural worldviews and self-esteem (see Pyszczynski et al., 2010). Hundreds of studies have consistently shown that people who are reminded of their mortality defend their cultural worldviews to a greater extent and enhance their sense of personal value (for a meta-analysis, see Burke et al., 2010) compared to people who are not exposed to death reminders. These effects of mortality salience (MS) are more clearly revealed after a delay or distraction, when death thoughts are not in focal consciousness (Arndt et al., 2004). Additional support for the theory comes from research showing that threats to cultural worldviews and to self-esteem lead to increased accessibility of death-related thoughts (Hayes et al., 2010). When the anxiety buffer is undermined, thoughts of death come closer to consciousness.

Recently, the ABDT (Pyszczynski and Kesebir, 2011; Pyszczynski and Taylor, 2016) has posited that disruption of anxiety-buffering mechanisms plays an important role in PTSD. According to DSM-5 (American Psychiatric Association, 2013), PTSD is a severely debilitating disorder that results from direct or indirect exposure to a traumatic event and is characterized by four types of symptoms: (a) the trauma is persistently re-experienced (e.g., through intrusive thoughts or nightmares), (b) trauma-related stimuli are actively avoided, (c) the individual is overwhelmed by negative thoughts and emotions, (d) he/she manifests excessive arousal and reactivity. In addition, individuals affected by PTSD may experience either feelings of detachment from one's body or feelings of unreality, distance, or distortion. Detachment from others and loss of interest in previously enjoyed activities are also characteristic of this disorder. These reactions prevent effective cognitive and emotional processing of the stressful event (see Cadamuro et al., 2016). ABDT posits that traumatic experiences pose a serious threat to core assumptions of individuals' cultural worldviews, such as the belief that the world is a meaningful and just place (Pyszczynski and Kesebir, 2011). While moderate experiences of trauma are usually associated with intensified attempts to defend one's cultural worldviews, severe traumatic experiences can lead to a total breakdown in the individual's system of beliefs about the meaningfulness of existence, thus leaving the person defenseless in the face of fears and anxiety.

The idea that individuals with PTSD symptoms do not activate anxiety-buffering responses when facing mortality reminders has been tested in a number of studies. Abdollahi et al. (2011), in two experiments conducted among survivors of 2005 Zaranj earthquake, found that peritraumatic dissociation 1 month after the event (considered to be a predictor of PTSD shortly after the experience of trauma) and that severity of PTSD symptoms 2 years later were associated with atypical anxiety buffering responses (i.e., lack of worldview defense) following a manipulation of MS. In a similar vein, two studies conducted in the aftermath of the Ivory Coast civil war (Chatard et al., 2012) showed that salience of mortality (compared to a control condition) enhanced the accessibility of death-related thoughts among participants with high, but not among participants with low levels of PTSD symptoms (Study 1), and increased reports of trauma symptoms among those more exposed, but not among

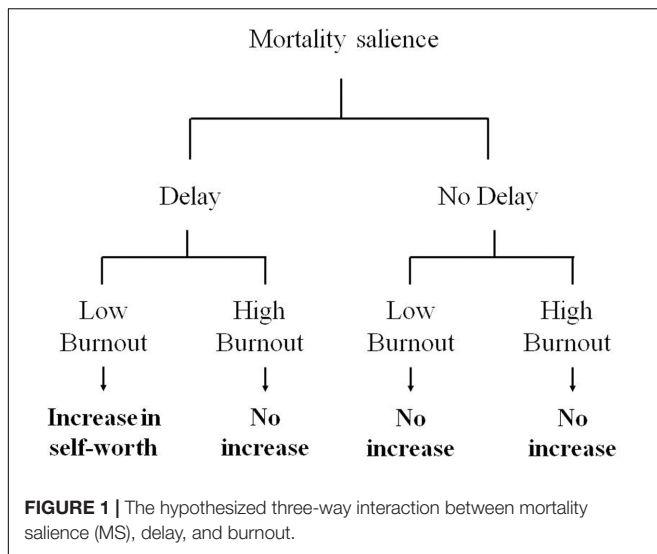
those less exposed, to the war (Study 2). Further evidence has been provided by Kesebir et al. (2011) in a study with female victims of domestic violence, showing that MS (compared to a control condition) activated a worldview defense response among participants who did not meet the criteria for PTSD diagnosis, but failed to do so among participants who meet the criteria. Finally, in two studies with American college students, Edmondson (2009) found that participants with moderate and high but not those with low symptoms of trauma exhibited greater accessibility of death-related thoughts when exposed to death reminders.

## THE PRESENT RESEARCH

Overall, the findings reported above indicate that anxiety-buffering defenses are compromised among individuals with high levels of PTSD. In the present study, we aim to extend ABDT, by showing that a disruption of the anxiety buffer functioning can be observed also among people with higher levels of job burnout. Whereas PTSD develops as a result of exposure to a severe trauma, the burnout syndrome is the consequence of chronic exposure to stressors on the job. Just as severe traumatic experiences cause a shattering of the individual system of benevolent beliefs that provide security in a threatening world (Pyszczynski and Kesebir, 2011; Pyszczynski and Taylor, 2016), chronic exposure to work stressors similarly poses a threat to the meaning and value of one's work. Indeed, a similar range of individual symptoms can be observed in people affected by PTSD and people with higher levels of burnout, such as fatigue, anxiety, insomnia, negative feelings and thoughts, irritability, avoidance and detachment, loss of interest in activities. Based on these considerations, we hypothesized that a disruption of anxiety-buffering mechanisms may be found among individuals with higher levels of burnout. In this study, burnout was assessed in terms of emotional exhaustion, which is commonly regarded as the core dimension of burnout (Maslach et al., 2001). However, it should be noted that the other two dimensions cannot be simply dismissed or considered as unnecessary, and that a comprehensive understanding of burnout needs to take into account the multidimensional nature of this phenomenon.

In this study, the above mentioned prediction was tested with a sample of nurses. Nurses are a professional group at high risk for the development of burnout (Maslach, 2003; Adriaenssens et al., 2015). Research has indeed shown that clinically significant levels of burnout are found in 30–50% of people working in this profession (Aiken et al., 2002; Gelsema et al., 2006; Poncet et al., 2007). Nurses are also frequently exposed to reminders of mortality, such as corporeality (see Goldenberg et al., 2000), disease, and death of patients. Hence, nurses represent a particularly relevant population for testing our hypothesis of disrupted anxiety-buffering mechanisms among people with higher levels of burnout.

Researchers have tested the main tenet of ABDT only with respect to one component of the anxiety buffering system, protection of cultural worldview. ABDT research has consistently shown that the typical increase of cultural worldview defense



following reminders of mortality is observed among people with low but not high levels of PTSD. However, there is no empirical evidence concerning the possible role that the self-esteem component of the anxiety buffer system might play in psychological distress. The present research aimed at filling this gap, by testing the anxiety buffer disruption hypothesis in relation to personal sense of worth. Salience of mortality and delay were manipulated in accordance with TMT research (see Burke et al., 2010) and nurses' work-related perceptions of self-worth were assessed by measuring work self-efficacy (the belief of being able to organize and execute the courses of action that are needed to attain specific types of performance at work; Bandura, 1986) and the representation of oneself as a valuable caregiver.

A graphical representation of our hypothesis is provided in **Figure 1**. We hypothesized that MS would lead to increased perceptions of self-worth as a sign of normal increase in anxiety-buffer functioning among nurses with lower levels of burnout, when a delay follows the MS manipulation. This would be consistent with the findings of many previous TMT studies (for a review, see Pyszczynski et al., 2004). However, if burnout entails a breakdown of normal anxiety-buffer functioning, MS would not produce increased perceptions of self-worth among nurses with higher levels of burnout (either with or without delay).

## MATERIALS AND METHODS

### Participants

Four hundred and eighteen nurses (337 women and 71 men, 10 did not report gender) working in different departments of a public hospital in the North East of Italy participated on a voluntary basis. The majority of respondents were aged between 41 and 60 years (67.4%), 29.4% were 40 years old or younger, and only 1% were over 60 years (9 missing data, 2.2%). Most (62.9%) had more than 15 years of clinical experience and 32.9% had 15 years of experience or less (26 missing data, 6.2%).

### Procedure

Participants were randomly assigned to complete one of four versions of a questionnaire which included the experimental manipulations and measures of the moderator and dependent variables. Participants individually filled in the questionnaire during working hours. Ethical approval was obtained from the Ethics Committee at the Department of Human Sciences, University of Verona, Italy. Written informed consent was obtained from each participant. Participants were informed about their right to withdraw or refuse to give information at any time without incurring any penalties. The anonymity and confidentiality of answers were guaranteed.

### Measures and Experimental Manipulations

#### Moderator: Burnout

The emotional exhaustion scale of the Maslach Burnout Inventory – General Survey (Schaufeli et al., 1996) was used. Participants were asked to indicate how often they had experiencing a list of five thoughts/feelings (e.g., “I feel burned out from my work”); they used a seven-point scale, ranging from 0 (*never*) to 6 (*always*). Cronbach's alpha was 0.90.

#### Mortality salience manipulation

Participants were randomly assigned either to the MS ( $n = 207$ ) or to the dental pain (DP; control) condition ( $n = 211$ ). In the MS condition, they completed the same two open-ended questions: “Please briefly describe the emotions that the thought of your own death arouses in you” and “Jot down, as specifically as you can, what you think will happen to you as you physically die and once you are physically dead” used in many previous TMT studies (Greenberg et al., 1990). In the control condition, participants answered two parallel questions about dental pain.

#### Delay manipulation

Terror Management Theory research has shown that MS manipulations do not increase death thought accessibility, worldview defense, or self-esteem striving immediately, but only after a delay (e.g., Greenberg et al., 1994). In the present study, delay was manipulated by using the 60-item Positive and Negative Affective Schedule (PANAS-X; Watson and Clark, 1994). Participants assigned to the delay condition ( $n = 209$ ) completed the scale immediately after the MS manipulation, while those assigned to the no-delay condition ( $n = 209$ ) completed the scale immediately before the MS manipulation. In both conditions, participants were asked to indicate to what extent they were experiencing a list of emotions (e.g., interested, ashamed) at the present moment. Responses were given on a seven-point scale, ranging from 1 (*not at all*) to 7 (*extremely*). The subscales of positive affect and negative affect had acceptable reliability (positive affect:  $\alpha = 0.82$ ; negative affect:  $\alpha = 0.85$ ) and were used as a manipulation check of the emotional effects of the MD manipulation.

#### Dependent variables

To measure work self-efficacy, we used six items (e.g., “I'm always able to handle emergencies and contingencies that arise in my work”; “I'm always up to duties that are assigned to me”) of the

work self-efficacy scale by Caprara (2001). Participants answered the items using a seven-point scale, ranging from 1 (*completely disagree*) to 7 (*completely agree*). Cronbach alpha was 0.83.

The representation of the self as a valuable caregiver was measured with six items of the ability to provide effective help dimension of the mental representation of caregiving scale, developed by Reizer and Mikulincer (2007) with a sample of undergraduates. The wording of items was adapted to fit caregiving in the nursing profession (e.g., “I know when I do the right thing for my patients, even if they don’t thank me for that”; “Patients tend to trust me”). Responses were given on a seven-point scale ranging from 1 (*not at all*) to 7 (*very much*). Reliability was acceptable ( $\alpha = 0.82$ ).

## RESULTS

Data were analyzed with SPSS 20 (IBM Corp., 2011) and with Hayes’ (2013) PROCESS macro for Windows.

### Preliminary Analyses

To inspect whether participants reported similar burnout levels across the four manipulated experimental conditions, a 2(Mortality salience: MS vs. DP)  $\times$  2(Delay: delay vs. no delay) ANOVA was applied to emotional exhaustion scores. No significant effect emerged,  $F(1,414) \leq 1.42$ ,  $ps \geq 0.24$ ,  $\eta_p^2 \leq 0.003$ .

A 2(Mortality salience)  $\times$  2(Delay) MANOVA was applied to positive and negative affect scores to test effects of experimental manipulations on positive and negative affect. Results showed a marginal multivariate effect of MS,  $F(2,413) = 2.94$ ,  $p = 0.054$ ,  $\eta_p^2 = 0.014$ . Univariate statistics showed that participants reported higher levels of positive emotions in the MS ( $M = 4.86$ ,  $SD = 0.82$ ) than in the DP ( $M = 4.66$ ,  $SD = 0.92$ ) condition,  $F(1,414) = 5.68$ ,  $p = 0.018$ ,  $\eta_p^2 = 0.014$ . No other effect was significant. To check whether this result was a consequence of heightened salience of mortality, a one-way MANOVA was applied to positive and negative affect only for participants assigned to the delay condition (i.e., participants who filled in the PANAS-X *after* being exposed to the MS or DP instructions). Results replicated findings from the main analyses, for the multivariate effect of MS:  $F(2,206) = 3.95$ ,  $p = 0.021$ ,

$\eta_p^2 = 0.037$ , for the univariate effect:  $F(1,207) = 7.85$ ,  $p = 0.006$ ,  $\eta_p^2 = 0.037$ ; MS participants reported more positive emotions ( $M = 4.88$ ,  $SD = 0.84$ ) than DP participants ( $M = 4.54$ ,  $SD = 0.90$ ).

### Moderation Analyses

The hypothesis that MS will lead to more positive self-perceptions for low-burnout but not high-burnout nurses, if a delay follows MS manipulation, was tested using hierarchical regression. A three-way interaction between MS, delay manipulation, and burnout was expected. Experimental manipulations and burnout were entered as predictors at Step 1, the two-way interactions were added at Step 2, and the three-way interaction was added at Step 3. Burnout was mean centered and interaction terms were computed from this mean centered variable to avoid multicollinearity (Aiken and West, 1991). Correlations between the variables included in the regression models are reported in **Table 1**. Two regression models were tested, one for each dependent variable (work self-efficacy and self-representation as caregiver); 95% bootstrap confidence intervals ( $n = 1000$ ) were obtained with SPSS (regression coefficients) and the PROCESS macro (simple slopes; Hayes, 2013; Model 3). Results are reported in **Tables 2, 3**. The additional variance explained by the models at Step 3 was significant for each dependent variable; the three-way interaction between MS, delay and burnout was significant in both regression models (see **Table 2**). Simple slopes at 1 SD above and 1 SD below the mean of burnout are depicted in **Figures 2, 3**, respectively. When delay was present, MS increased work self-efficacy and self-representation as a valuable caregiver among nurses with low levels of burnout (work self-efficacy:  $b = 0.36$ ,  $SE = 0.10$ ,  $t = 3.81$ ,  $p = 0.0002$ , 95% CI [0.17, 0.55]; self-representation as a caregiver:  $b = 0.38$ ,  $SE = 0.10$ ,  $t = 4.00$ ,  $p = 0.0001$ , 95% CI [0.19, 0.57]), but not among nurses with high levels of burnout (work self-efficacy:  $b = 0.07$ ,  $SE = 0.09$ ,  $t = 0.77$ ,  $p = 0.44$ , 95% CI [−0.11, 0.24]; self-representation as a caregiver:  $b = -0.06$ ,  $SE = 0.09$ ,  $t = -0.67$ ,  $p = 0.50$ , 95% CI [−0.24, 0.12]). Consistent with previous research (e.g., Greenberg et al., 1994), simple slopes analyses of the effects of MS were non-significant when delay was not present, both at low (work self-efficacy:  $b = 0.01$ ,  $SE = 0.08$ ,  $t = 0.14$ ,  $p = 0.89$ , 95% CI [−0.15, 0.18]; self-representation as a caregiver:  $b = 0.06$ ,

**TABLE 1** | Descriptive statistics and pair-wise correlations between the variables ( $N = 418$ ).

	1	2	3	4	5
(1) MS (vs. control)	–				
(2) Delay	0.01	–			
(3) Burnout	0.06	0.05	–		
(4) Work self-efficacy	0.14**	−0.05	−0.11*	–	
(5) Self-representation as valuable caregiver	0.13*	−0.06	−0.05	0.46**	1
<i>M</i>	−0.01	0.00	0.00	5.26	5.21
<i>SD</i>	1.00	1.00	1.57	0.92	0.92

MS, mortality salience. Mortality salience was coded as −1 (control) and 1 (MS); delay was coded as −1 (no delay) and 1 (delay). Sample size for the representation of the self as a valuable caregiver was  $N = 416$ .

\*\* $p < 0.01$ ; \* $p < 0.05$ .



**TABLE 2 |** Hierarchical regression analysis, dependent variable: work self-efficacy ( $N = 418$ ).

Predictors	$\beta$	$b$	$SE$	LBCI	UBCI	$t$	$F$	$df$	$R^2$	$F_{\text{change}}$	$df_{\text{change}}$	$\Delta R^2$
Step 1							4.87**	(3,414)	0.03			
(a) MS	0.14	0.13	0.04	0.05	0.22	2.95**						
(b) Delay	-0.04	-0.04	0.04	-0.13	0.05	0.92						
(c) Burnout	-0.12	-0.07	0.03	-0.13	-0.004	2.39*						
Step 2							3.36**	(6,411)	0.05	1.82	(3,411)	0.01
(a)	0.14	0.13	0.04	0.05	0.22	2.94**						
(b)	-0.04	-0.04	0.04	-0.13	0.05	0.91						
(c)	-0.12	-0.07	0.03	-0.13	-0.01	2.53*						
$a \times b$	0.08	0.08	0.04	-0.01	0.16	1.74						
$a \times c$	-0.04	-0.02	0.03	-0.08	0.04	0.86						
$b \times c$	-0.08	-0.04	0.03	-0.10	0.01	1.54						
Step 3							3.56***	(7,410)	0.06	4.56*	(1,410)	0.01
(a)	0.15	0.14	0.04	0.05	0.22	3.07**						
(b)	-0.04	-0.04	0.04	-0.13	0.05	0.78						
(c)	-0.13	-0.08	0.03	-0.13	-0.02	2.76**						
$a \times b$	0.08	0.08	0.04	-0.01	0.16	1.76						
$a \times c$	-0.05	-0.03	0.03	-0.09	0.03	1.01						
$b \times c$	-0.08	-0.04	0.03	-0.10	0.01	1.58						
$a \times b \times c$	-0.10	-0.06	0.03	-0.12	-0.01	2.13*						

MS, mortality salience (vs. control) manipulation; LBCI, lower bound of 95% bootstrap confidence interval; UBCI, upper bound of 95% bootstrap confidence interval.

\*\*\* $p < 0.001$ ; \*\* $p < 0.01$ ; \* $p < 0.05$ .

**TABLE 3 |** Hierarchical regression analysis, dependent variable: representation of the self as a valuable caregiver ( $N = 416$ ).

Predictors	$\beta$	$b$	$SE$	LBCI	UBCI	$t$	$F$	$df$	$R^2$	$F_{\text{change}}$	$df_{\text{change}}$	$\Delta R^2$
Step 1							3.10*	(3,412)	0.02			
(a) MS	0.13	0.12	0.04	0.03	0.20	2.60**						
(b) Delay	-0.06	-0.06	0.04	-0.15	0.03	1.26						
(c) Burnout	-0.05	-0.03	0.03	-0.09	0.02	1.10						
Step 2							2.17*	(6,409)	0.03	1.24	(3,409)	0.02
(a)	0.13	0.12	0.04	0.04	0.20	2.60**						
(b)	-0.06	-0.06	0.04	-0.15	0.03	1.28						
(c)	-0.05	-0.03	0.03	-0.09	0.02	1.09						
$a \times b$	0.04	0.04	0.04	-0.05	0.12	0.81						
$a \times c$	-0.09	-0.05	0.03	-0.11	0.01	1.79						
$b \times c$	-0.01	-0.01	0.03	-0.07	0.05	0.24						
Step 3							2.98**	(7,408)	0.05	7.59**	(1,408)	0.03
(a)	0.13	0.12	0.04	0.04	0.21	2.75**						
(b)	-0.05	-0.05	0.04	-0.14	0.04	1.12						
(c)	-0.07	-0.04	0.03	-0.10	0.02	1.40						
$a \times b$	0.04	0.04	0.04	-0.05	0.12	0.83						
$a \times c$	-0.10	-0.06	0.03	-0.12	-0.01	2.11*						
$b \times c$	-0.01	-0.01	0.03	-0.07	0.05	0.28						
$a \times b \times c$	-0.14	-0.08	0.03	-0.14	-0.02	2.75**						

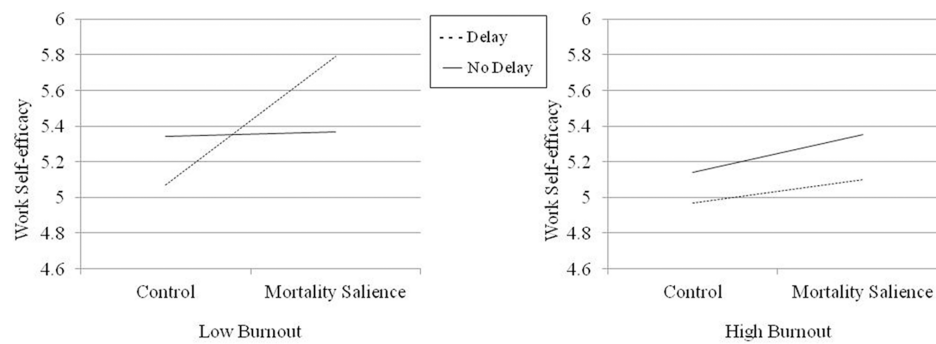
MS, mortality salience (vs. control) manipulation; LBCI, lower bound of 95% bootstrap confidence interval; UBCI, upper bound of 95% bootstrap confidence interval.

\*\* $p \leq 0.01$ ; \* $p < 0.05$ .

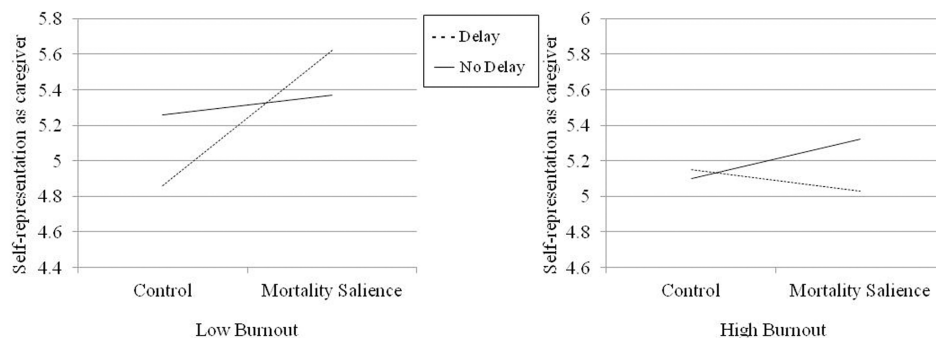
$SE = 0.08$ ,  $t = 0.67$ ,  $p = 0.50$ , 95% CI  $[-0.11, 0.22]$ ) and high (work self-efficacy:  $b = 0.10$ ,  $SE = 0.09$ ,  $t = 1.17$ ,  $p = 0.24$ , 95% CI  $[-0.07, 0.28]$ ; self-representation as a caregiver:  $b = 0.11$ ,  $SE = 0.10$ ,  $t = 1.29$ ,  $p = 0.20$ , 95% CI  $[-0.06, 0.29]$ ) levels of burnout. These results fully confirm our hypothesis.

## DISCUSSION

In the present study, a three-way interaction between MS, delay and burnout was expected. Results fully confirmed this hypothesis and showed that nurses with lower levels of burnout exhibited the typical anxiety buffering response to MS (when



**FIGURE 2 |** Work self-efficacy as a function of MS and delay at low and high levels of burnout.



**FIGURE 3 |** Representation of the self as a valuable caregiver as a function of MS and delay at low and high levels of burnout.

delay was present). In the MS condition (compared to the control condition), they increased their sense of personal worth by reporting higher scores on work self-efficacy and on self-representation as a valuable caregiver. However, consistent with an extended anxiety buffer disruption hypothesis, nurses with higher levels of burnout did not enhance their self-esteem when mortality was made salient.

These results extend ABDT, by showing that a disruption of anxiety buffering mechanisms may occur not only as a consequence of severe traumatic experiences, but also following exposure to mild/moderate stressors over a long period of time. Severe traumatic events cause a shattering of the individual system of beliefs in the world and in the significance of one's existence (Pyszczynski and Kesebir, 2011; Pyszczynski and Taylor, 2016). As a result, individuals are left vulnerable to intense anxiety and fear that deplete their resources; they are also likely to develop feelings of detachment and loss of interest. Indeed, these typical symptoms of PTSD are also characteristic aspects of the job burnout syndrome. In this case, exhaustion, detachment, and lack of accomplishment/reduced efficacy are the result of prolonged exposure to stressors on the job, which causes a loss of significance and value of one's job.

The present findings contribute to and extend ABDT also by providing support for the anxiety buffer disruption hypothesis in a different domain (a work context) and with a different

component of the anxiety buffer system (self-esteem). Our results converge with previous ABDT studies that show atypical absence of worldview defense among people exposed to traumatic experiences, such as earthquake (Abdollahi et al., 2011) or domestic violence victims (Kesebir et al., 2011), and extend them by showing that disrupted anxiety buffer functioning involves not only a lack of worldview defense, but also a parallel deficiency in self-worth protection.

According to TMT, mortality thoughts normally do not elicit negative affect because anxiety buffer defenses effectively protect people against the terror of death. However, findings of the present study and of previous ABDT research indicate that when the anxiety buffer system does not work properly, due to exposure to acute or chronic stressful events, fear, and anxiety become overwhelming and give rise to related symptoms, such as fatigue, numbing, avoidance and detachment, lack of interest and motivation.

Clearly, our results have important practical implications for professionals who are exposed to the risk of burnout, especially those who are exposed to mortality reminders to a greater extent, such as health professionals or police officers. It is likely that mortality reminders that these people frequently experience as part of their jobs act as continuous stressors, along with other problematic aspects of the work, and lead to a disruption of anxiety buffering functioning which leaves these individuals defenseless in the face of anxiety and fear. In this study,

we tested our hypothesis of disrupted anxiety buffers as a consequence of prolonged exposure to job stressors with a sample of nurses, who best exemplify the above-mentioned category of professionals. However, we believe that the present results would be replicated with other professionals who are at high risk for burnout and highly exposed to mortality reminders (e.g., physicians). Future research will explore this hypothesis.

An interesting question is whether the present results can be extended to professionals who are at risk of burnout but less exposed to mortality reminders (e.g., social workers). According to TMT, the answer to this question would be positive, because reminders of mortality are constantly present in daily life. However, this prediction needs to be tested in future studies.

It is interesting to note that participants in the MS condition reported higher positive emotions compared to participants in the control condition. This result is not consistent with TMT studies, where no effects of MS on affect are generally reported. The salience of mortality causes strong cognitive and behavioral reactions, but only weak or no (conscious) emotional reaction (DeWall and Baumeister, 2007). However, DeWall and Baumeister (2007) in a series of experiments, showed that reminders of mortality elicit an unconscious emotional response that make participants more “tuned” to positive emotional information. This counterintuitive response represents an automatic coping reaction to the thought of death. The result found in the present study is similar, but instead of automatically “tuning” to positive emotions, our participants consciously reported more positive feelings. This result can be similarly interpreted as a defensive response, in which MS participants exaggerate positive feelings as a way of denying that the thought of death is bothering them.

It is important to note some limitations of the present study. First, the sample was drawn from a specific professional category – nurses – who are highly exposed to both burnout and MS. A test of our hypothesis with a different sample is needed. A second limitation is that the sample was predominantly female and with a relatively prolonged work experience. Future research should analyze the effects of gender and work experience.

Overall, our findings are of potential interest to practitioners who assist burnout victims or offer organizational interventions to overcome burnout. Although it is necessary to recurrently assess nurses’ burnout, it is reasonable to assume that burnout scores have to be linked to professionals’ perception of its sources and roots. This kind of approach is surely more onerous but it allows for the possibility to intercept the multifaceted and intertwined features of professionals’ distress (for the effects of physicians’ dissatisfaction and work-related stress, see Pedrazza et al., 2016) and unease. Interventions may therefore trigger both personal responsibility for seeking support and organizational changes and innovation toward a more person-centered approach to burnout. Literature on helping professions shows that when professionals have to cope with stress without any type of co-workers’ supervisors’ or organizational support, an overwhelming sense of failure may arise (Boyas et al., 2012). This latter prevents nurses’ from developing problem-focused coping skills, causing them to engage easily in emotion-focused coping strategies typically associated to lower levels of well-being (Vungkhanching et al., 2016).

## CONCLUSION

Findings of the present study confirm ABDT theory and contribute to its extension to a different domain and to a different type of stressful experience.

## AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct and intellectual contribution to the work. In particular, TP developed the study concept. ET, MP, SB, and TP contributed to the design of the study. ET, MP, and SB conducted the study and collected the data. ET analyzed and interpreted the data, and drafted the manuscript. MP, SB, and TP provided critical revision of the manuscript. All authors approved the final version of the manuscript for submission.

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# Different and Similar at the Same Time. Cultural Competence through the Leans of Healthcare Providers

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Cultural competence (CC) for professionals and organizations has been recognized as a key strategy to reduce health care inequalities for migrants and to promote responsiveness to diversity. For decades its main aim has been matching health services to the cultural needs of migrant users. Otherwise literature highlighted the need to find a pragmatic middle way between the 'static' and the 'dynamic' views of culture that are recognizable in CC approaches. A pragmatic middle way to CC will be proposed as the way to respect diversity, even responding to cultural issues, without stereotyping or discriminating. To understand conditions that favor this pragmatic middle way this study aims to explore: (1) perceptions of healthcare providers in managing diversity; (2) strategies used to meet health needs at a professional and organizational level. A qualitative case study was conducted in a healthcare service renowned for its engagement in migrant sensitive care. Four different professional figures involved in CC strategies at different levels, both managerial and non-managerial, were interviewed. Data were analyzed using thematic analysis. Findings indicated that dealing with diversity poses challenges for healthcare providers, by confronting them with multilevel barriers to quality of care. A pragmatic middle way to CC seems to rely on complex understanding of the interaction between patients social conditions and the capacity of the institutional system to promote equity. Professional and organizational strategies, such as inter-professional and intersectional collaboration, cultural food adaptation and professional training can enhance quality of care, patient compliance responding to social and cultural needs.

**Keywords:** cultural competence, diversity management, health services, migrant, inequalities

## INTRODUCTION

According to International Organization for Migration, the estimated total number of international migrants has reached 244 million in 2015 (International Organization for Migration [IOM], 2016). In Europe, which has seen a consistent rise in the trend of migration since 2005, migrants are 76 million and constitute almost 9% of the total European population.

The evidence that inequities exist in the field of migrant health has demanded for a reorientation of health policies to better protect migrants' health and provision of equitable health services. In 2008, The World Health Organization called for migrant sensitive health policies, practices and health systems with the WHR61.17 Resolution on the 'Health of migrants' (World Health Organization, 2008). The utilization of health services by migrants differs from that by non-migrants, as both migrants' needs and their access to health care are affected by a number of factors

related to the process of migration, including health and socioeconomic status, self-perceived needs, health beliefs, health-seeking behavior, language barriers, cultural differences, trauma and newness (Norredam and Krasnik, 2011). In addition, migrants face legal obstacles in most countries when accessing health care and may receive poorer service quality for discriminative attitudes of health staff, impacting diagnostics, medication, medical follow-up, hospital visits and admission, as well as patients' adherence to treatment.

A key concept in this field is cultural competence (CC) for professionals and organizations, defined as: "a set of congruent behaviors, attitudes, and policies, that come together in a system, agency, or among professionals, and enable effective work in cross-cultural situations" (Cross et al., 1989, p. 28). Good practices in culturally competent health care include the training of staff, diversification of the workforce, use of cultural mediators, and adaptation of protocols, procedures and treatment methods (Office of Minority Health [OMH], 2001, 2013; Fernandes and Pereira Miguel, 2009; Mladovsky et al., 2012).

For decades the main aim of CC has been matching health services to the needs of migrant users, to bridge 'cultural gaps' (Ingleby, 2011). Social science criticized CC discourse by highlighting the lack of conceptual clarity around the use of the term 'culture' in clinical encounters and inadequate recognition of the 'culture of medicine' (Thackrah and Thompson, 2013). Narrow or static concepts of culture often conflate culture with race and ethnicity: they fail to capture diversity within groups and reduce the effectiveness of CC strategies by stereotyping health needs. Thus using culture as a concept to reduce health inequalities for 'diverse' groups entails risks which include categorization and overestimation of cultural dimensions at the expense of social, political and biographical ones (Kleinman and Benson, 2006).

Partly as a result of this criticism, the concept of culture assumed by researchers on health services has changed over time. Emphasis on its dynamic dimension permits to recognize that CC involves skills in intercultural communication, attitudes of respect and openness, and relevant knowledge (Ingleby, 2011). Another important dimension is professionals' self-assessment of their own culture and implicit assumptions. In this way many aspects of the CC formulation are also central aspects of patient centeredness (Saha et al., 2008). However, the dynamic conceptualization of culture has the advantage of reducing the risk of stereotyping medical practices but, at the same time, the disadvantage of limiting the ability of health services to focus on the needs of particular groups.

Since the cultural dimension in clinical practice is central, as health and disease experiences are inter-subjectively defined in symbolic exchanges (Scheper-Hughes and Lock, 1987), according to Ingleby (2011, p. 236) "between the 'static' and the 'dynamic' views of culture a pragmatic middle way has to be found." The 'pragmatic middle way' permits to respect diversity, even responding to cultural issues, without stereotyping or discriminating. In fact,

fear of discrimination involved by categorization is often presented as a dilemma which limits implementation of culturally competent strategies (Seeleman et al., 2015; Suphanchaimat et al., 2015), that remain patchy widespread in Europe.

Following Ingleby's suggestion, in our proposal we will examine, through a case study, how the pragmatic middle way is sustainable and may permit either to include the advantages and either to minimize the disadvantages of the 'static' and 'dynamic' approaches, above discussed. To understand conditions that favor the pragmatic middle way this study aims to: (1) investigate perceptions of healthcare providers in managing diversity, as well as examine the barriers faced in their practices; (2) identify strategies used to meet health needs at a professional and organizational level.

## METHOD

The study was conducted in an infectious diseases department of a hospital with a high percentage of migrant users, located in a suburban area in France renowned for its past and current engagement in migrant sensitive care. Semi-structured in-depth interviews were conducted in 2013 with four health providers who represented different professional figures at different levels, both managerial and non-managerial: a cultural mediator, a psychologist, the head physician and a psychiatric nurse. Participants were 3 women and 1 man: 3 are French and 1 has African origins. The service and 3 participants were chosen for their involvement in the Migrant Friendly Hospital Project, an European network dealing with migrant sensitive care (Migrant Friendly Hospitals, 2004) and for their expertise in cultural competent strategies. All subjects gave written informed consent and authorized and approved the use of anonymous data for publications.

An interview schedule was developed using open-ended questions. During face-to-face interviews participants were asked to describe priority health needs, the challenges of working with migrant patients and the strategies developed to overcome them. The average length of interviews was 60 min (minimum 45 – maximum 75). The interviews were transcribed verbatim and analyzed according to a data-led approach to maximize discovery and exploration (Braun and Clarke, 2006). The relevant material was selected and was subsequently encoded according to themes emerging from the data set. Specifically, our analysis involved different and iterative steps: data familiarization, initial coding generation, search for themes based on initial coding, review of themes, theme definition and labeling. Identified themes captured important aspects of the data in relation to the research questions. The credibility of analysis, as criterion for the qualitative research, was assessed through supervision sessions to check the coding strategies and to review the interpretation of the data, by discussing any reason of variation (Barbour, 2001). Rival configurations of themes were ultimately modified (Patton, 2002).

## RESULTS

The first section focuses on challenges that emerge from dealing with and understanding diversity, while the second one focuses on organizational and professional responses.

### Challenges in Healthcare Provision

#### Dealing with Diversity

Diversity is a daily and structural dimension of the clinical service environment. When we asked to describe what challenges emerge in the provision of healthcare services for migrants, interviewees stated that practices were mainly influenced by different barriers: not only diverse cultural beliefs and language differences, but also legal, social, psychological, and relational aspects connected to the migrant status.

For many patients hospitalization is the first chance to obtain a legal document for healthcare access. Relational asymmetry is exacerbated by the distance of migrant patients from biomedical thought and practices that require patients to maintain a state of passivity and rely on the superiority of expert knowledge. Thus, cultural and political dimensions enter into the clinical field and in the relationship between provider and patient giving rise to patient anxieties. Refusal of treatment (i.e., food, magnetic resonance, blood sampling) recurs in interviews as a significant example of patient cultural needs and low health literacy that are often at the origin of conflicts and misunderstandings. In particular, discrimination and marginalization are highlighted in relation to the weight of the stigma affecting those suffering from infectious diseases, which cause isolation, delay in care and mistrust in the relationship with the institution and with providers.

*I remember a patient, we suspected tuberculosis and so we put him in isolation, after it turned out that he didn't have tuberculosis. He was so angry, because for him it was discrimination, because he was black . . . You see, these little things, after explaining that it was a path that had to be explored, that fortunately he did not have TB, but for him we were racist because he was poor and black. (1)*

Dealing with diversity also means conflicts with organizational cultures tied to the bureaucratic model. An institutional culture that stresses cost efficiency, time pressure and standardized processes can limit the meeting of migrant health needs. These values can make providers interpret access regulation narrowly or fail to use interpreting services to reduce professional and organizational overload.

#### Understanding Diversity

The stories of respondents on their professional practice with diversity suggest a way of thinking about the migrant patient as having special needs and, at the same time, universal needs. In this way, diversity can be managed and assumed as the dialectic between universal and particular (Fassin, 2000).

*Migrants have exacerbated suffering because of migration, but there are other patients with serious suffering too. (1)*

*Migrant patients refuse treatment, but there are good 'Franco-French' people that do the same. (4)*

One interviewee in particular discusses the risks of a static vision of culture and of the definition of diversity in cultural terms:

*Culture; and I said human being: a 'Franco-French,' he is in a culture, isn't he? Also in a family history, and even there he is different from his sisters and brothers, and at the same time similar. For foreign people, it's not different! For me, bonding someone to his/her culture is a racist discussion. (1)*

From an organizational point of view, the principle of justice in care leads to respect for diversity and responsiveness of medical processes and is interpreted as the attainment of the same level for those that have less. In addition, the quality of taking charge of migrant patients is considered an excellent indicator for that of each patient. These values are the basis to develop professional and organizational strategies, described in the next sections.

### Health Service Responses

#### Professional Strategies

To provide health services that respond to the above challenges, the relational strategies of practitioners deal with the 'sense of otherness.' Basic knowledge of other cultural representations is recognized as an important attribute of providers, but there are primarily attitudes of openness, acceptance of doubt, a more participative communicative style, and relational skills. Respect for patients' values, preferences and expressed needs is important for every patient.

*Since providers are fixed in their own cultural model and they can't imagine or accept those who have a different model and that people can react differently to what they expect, it can't work. As you have this 'sense of otherness', the acknowledgment of diversity. . . everything is possible. It means adjusting practices, showing curiosity for ways of life. . . in sum the provider is primarily interested in the person instead of the disease, a unique person with their own peculiarities. . . this may change the relationship completely. . . the person may feel like they are accepted with their peculiarities, even the cultural ones. And trust and compliance become easy. . . To treat a migrant you don't have to be an anthropologist. (3)*

#### Organizational Strategies

To develop culturally competent services, recurrent strategies are utilized, as follows.

##### *Involvement of different stakeholders and integrative functions*

To enhance the quality of interventions, organizational inconsistencies are used as a source of information, notably through conflict understanding. For example, the preparation of 'traditional' food agreed with each patient, even of non-immigrant origin, is used as a lever for care quality during hospitalization. The cultural adaptation of food arises from an organizational criticality. Patients, who have already had severe weight loss caused by HIV, were worsening their condition by refusing served food and asking to be discharged. This could



endanger treatment continuity given their often precarious social situation. This project required creating a network to connect patients and different providers: the psychologist who created the project, mediators, nurses, doctors, social workers. In particular, the mediator and the psychologist provide an integrative function, by promoting communication in cases of conflicts or misunderstandings, thanks to their interface position between patients and the medical and social staff.

*In the morning we contact the nurses or the head physician and the psychologist to know if there is someone else who needs the meal. . . Care assistants see how the patient eats. They speak to the staff and then the staff to us. (2)*

The network also involves external stakeholders: it is funded partly by an NGO and is based on collaboration with a mediator association. In addition, in order to hinder the various social factors of vulnerability, the staff collaborates with a day-care center near the hospital for HIV patients, which provides daily meals as well as literacy and health education.

### Use of symbolic dimensions

The symbolic dimensions of disease are used during care to provide emotional support to patients. The mediators, who have different nationalities, eat with patients: the food is associated with a symbolism that recalls belonging and roots. At the same time sharing meals seems to reduce patient concern about stigma and isolation and to give relief by creating a moment for informal conversation in their native language.

*This reassured him about his HIV-positive status: it was possible to eat with him, without fear of being contaminated. . . there are all these dimensions here. . . and so we are friendly.' (1)*

In the same way, additional strategies allow for a greater number of family members during visits and the involvement of the worshippers of the different religions represented in the hospital. Organizational practices are aimed not only at patient care, but also at staff training, as described in the last section.

### Staff training regarding sensitivity to diversity

To support health staff in being sensitive to diversity (including the use of interpreting services), training sessions use clinical cases in which the cultural dimension is relevant. Moreover, the department organized staff exchanges with a Burundian hospital and voluntary weekly vacations in Africa to visit local hospitals and to attend traditional healing rituals. Lastly, an annual conference on ethno-cultural issues (e.g., about the symbolism of blood and death far from the land of origin) involves experts and associations, as an outcome of the MFH project.

These activities are stimulated by the head physician, who has an ethno-medical education and a key role in disseminating shared values and CC strategies. Although it is a priority, training has some areas of concern: difficulty in assessing the sensitivity of staff practices, high staff turnover and presence of countercultures.

*There are certain people who are particularly sensitive to this, others are almost neutral and finally there is a group that may be even a*

*little opposite: "why do we care so much about patients, especially migrants? The patient is there primarily to receive treatment." (3)*

## DISCUSSION AND CONCLUSION

Dealing with diversity poses some challenges for healthcare providers in the clinical relationship and multiple barriers to quality care services. Barriers are understood in a multilevel perspective (Suphanchaimat et al., 2015): (1) At the level of interaction between healthcare providers and migrant patients, trust and the possibility of recognizing diversity are affected by the asymmetrical relationship embodied in political and historical racial relations; (2) At the level of interaction between healthcare providers and their workplace context, there are conflicts between bureaucratic and patient-centeredness organizational cultures; (3) At the level of influence of external factors, differences are between approaches to health and wellbeing.

There is a complex understanding of diversity as a result of the interaction between values, beliefs, political conditions and the capacity of the institutional system to promote equity. For respondents, the migrant patient is not perceived as a 'distant' category, closed in that absolute of the difference mentioned by Fassin (2000), that undermines habitual ways of thinking and acting. In particular, the pragmatic middle way seems to rely on the following values: (1) The principle of justice seems to balance the opposition between the principle of universalism ('treating the equal equally') and that of particularism ('treating diversity differently'); (2) The uniqueness of the patient based on the recognition that 'all people are equal and different at the same time' emerges as a dialectic between universality and particularism (Fassin, 2000) leading to patient-centeredness; (3) Responses to cultural and social problems need to be related to disease and personal patient conditions.

An understanding of diversity built on a 'sense of otherness' overlaps patient-centeredness. It is comparable to that described by Fortin and Maynard (2015), who, between reifying and universalist views of diversity, found an approach called humanist, in which differences are contextualized. Whereas for the first, diversity is anchored to ethnic origins and tends to be interpreted as 'deviance to be eliminated,' the second one tends to ignore it in the name of the principle of universalism. Instead, physicians with a 'humanist' approach have a complex understanding of diversity and conflict is seen to lead to compromise and reconciliation between opposing actors. In this way CC for professionals deals with reflective practices to manage uncertainties and multiform aspects of the work (Bruno et al., 2011; Bruno and Dell'Aversana, 2017a,b,c).

The organizational culture enables the service to react constructively to organizational inconsistencies, using them as a way to innovate and learn (Bruno and Bracco, 2016). Organizational strategies, such as inter-professional and intersectional collaboration, cultural food adaptation and professional training are set up as a way to enhance quality of care, patient satisfaction and compliance responding to social and cultural needs. These different strategies help the service to

recognize the symbolic aspects of the disease, create relationships of trust between providers and patients and a way to negotiate and prevent conflicts. Such devices can reduce discontinuity in care and in the practitioner–patient relationship and rectify the absence of well-defined channels of communication which are considered to be antecedent factors of conflict (Fortin and Maynard, 2015).

Another key point for services is to conceive them as a network, since the quality of care and of the relationship with patients is proportional to the care of the relationships between all involved actors. This also seems necessary to protect the sustainability of interventions and to obtain economic resources during economic crisis (Paris, 2014; Mucci et al., 2016). These findings put emphasis on the importance of promoting a shared culture of CC and assessment strategies to monitor and make the quality of care visible: leadership and training experiences can be used as a catalyst for cultural change and innovation, in order to enhance the quality of service for every patient.

## ETHICS STATEMENT

The interviews included a statement about personal data treatment, in accordance with the Italian privacy law (Law Decree DL-196/2003). Practitioners authorized the use of

anonymous/collective data for scientific publications. The ethical approval was not sought, since practitioners approved the use of anonymous/collective data and the research is based on the study of psychosocial variables that refer to the work environment. For this reason, the study cannot be considered a medical research or an experiment on human subjects that need ethical approval following the Recommendations from WMA Declaration of Helsinki – Ethical Principles for Medical Research – Involving Human Subjects (World Medical Association [WMA], 2013).

## AUTHOR CONTRIBUTIONS

GD and AB conceptualized the study and chose the theoretical framework. GD collected and analyzed the data. AB supervised interpretation of data revising it critically. AB and GD wrote, improved and revised the manuscript several times.

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# The Wellbeing of Italian Peacekeeper Military: Psychological Resources, Quality of Life and Internalizing Symptoms

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Working as a peacekeeper is associated with the exposure to acute and/or catastrophic events and chronic stressors. Hence, the meager literature about peacekeepers' wellbeing has mainly analyzed Post-Traumatic Stress Disorder (PTSD). This study aims to deep the analysis of the wellbeing of peacekeepers military. Based on the few studies on this population, we hypothesized that Italian peacekeeper military officers and enlisted men ( $n = 167$ ; 103 males, 6 females, 58 missing) exhibit lower levels of internalizing symptoms (i.e., PTSD, depression, general anxiety, obsessions, and somatization) as compared to a control group ( $n = 60$ ; 32 males, 28 females). Moreover, we hypothesized that peacekeepers have higher levels of psychological resources (i.e., self-efficacy, self-esteem, social support) and quality of life (i.e., higher life satisfaction and lower general stress). We compared the groups by means of MANOVAs on the subscales of the Psychological Treatment Inventory (PTI; Gori et al., 2015). We found that Italian peacekeepers have lower internalizing symptoms and higher levels of self-efficacy and self-esteem than the control group; however, no statistically significant differences were observed on perceived social support. Finally, peacekeepers have a higher quality of life: scores reflect higher life satisfaction and lower distress than the control group. This study is in line with previous literature supporting the claim that Italian peacekeeper military officers have sufficient psychological resources for coping with the stressful situations implied in peacekeeping missions. Future studies should deepen the analysis of the military's psychological characteristics by comparing war veterans and peacekeeper military.

**Keywords:** military psychiatry, peacekeeping operations, psychological resources, PTSD, internalizing symptoms, quality of life

## INTRODUCTION

In the Cold War era, after a peace treaty was signed, unarmed or lightly armed military personnel acted as a buffer between warring factions. However, since the late 1980s, following the collapse of Cold War and an increase in conflicts worldwide, Peacekeeping Operations (PKOs) grew in both size and complexity (Raju, 2014). PKOs became more and more hybrid since they were characterized by modular and multi-actor actions. They employ many kinds of military



and civilian activities, at the same time working with multiple different institutions, in order to favor peacekeeping and peacebuilding (Tardy, 2014). Peace operations cover conflict prevention, peacekeeping, and peacebuilding (Smith, 2016). Accordingly, the High-Level Independent Panel on Peace Operations (HIPPO; United Nations, 2015) stressed that PKOs make use of many different tools, such as special envoys and mediators, and address many different scenarios, such as political missions, observation missions that include both ceasefire and electoral missions, or technical specialist missions. Though, it should be noted that PKOs have become more and more militarized, as the vision of peace has been joined to the means of violence (Pugh, 2012; Suhrke, 2012). Military violence in PKOs is an issue that has to be taken into account, even if it is rarely problematized and usually associated with the conflict belligerence only. Peacekeepers' violence is seen instead as peace operations for mitigating and deterring the violence of the belligerents (Charbonneau, 2012). In line with this, Kühn (2012) stressed that the term 'peace' has changed its real meaning in a virtual term that sometimes covers violent management techniques.

Because of this complexity, peacekeepers face a diversity of stressors that vary between missions related to the level of difficulty, the length of the mission, or the local culture (Shigemura and Nomura, 2002), and stressors common across missions. These common stressors can come from pre-deployment challenges, such as demands for adjustment due to the possibility of combat, uncertainty of the duration of the engagement, or anticipation of difficulties in communication with family. There are also deployment stressors. As for example, they can experience physical and psychological isolation and role conflict. Peacekeepers are trained for war, but in PKOs they are requested to maintain peace following strict rules of engagement. Moreover, they can also experience boredom and witness atrocities and they are exposed to dangers, such as land mines or endemic diseases. Finally, peacekeeping soldiers commonly experience also post-deployment stressors, such as guilt, reworking relationships, and changes in emotionality (cf. Raju, 2014).

Given the many stressors faced by peacekeeper soldiers, some scholars analyzed the wellbeing of these workers. While all working environments are associated with some stress (e.g., Shaw et al., 2012; Halouani et al., 2017) working as a peacekeeper may be one of the most stressful jobs (Keskinen and Simola, 2015).

Even if peacekeepers usually face situations characterized by lower stress as compared to traditional combat situations, such as the Vietnam War, they are exposed to stress as well. Lamerson and Kelloway (1996) stated that peacekeepers deal with both acute and/or catastrophic events and chronic stressors. More specifically, acute stressors are events characterized by a specific time of onset, high intensity, and low frequency of occurrence (such as being fired), while catastrophic events are also characterized by threat to life and/or involve larger groups as a community and cause prolonged suffering (besides the three acute stressors' features). Finally, chronic stressors have no specific time of onset and frequent occurrence, and they may have either low or high intensity.

Given the many stressors faced by peacekeepers, it is not surprising that the majority of studies about these workers' wellbeing analyzed the Post-traumatic Stress Disorder (PTSD).

The PTSD is defined by the Diagnostic and Statistical Manual of Mental Disorder (DSM-5; American Psychiatric Association [APA], 2013) as a clinical disorder that develops after the exposure to a traumatic event, such as the exposure to an actual or threatened death or sexual violence, both by means of a direct or indirect (e.g., witnessing in person the event) experience of the event. It is characterized by at least one of the following symptoms: intrusive memories or dreams about the event, dissociation (e.g., flashbacks), distress following the exposure to internal or external cues related to the traumatic event, and marked physiological reactions to these cues. Moreover, the person avoids the stimuli associated to the traumatic event, there are some alterations in cognition (e.g., not being able to remember important aspects of the event) and mood (e.g., inability to experience positive emotions), and marked alterations in arousal and reactivity linked to the event.

The studies on peacekeepers' health showed that some develop PTSD, despite many of them adjust well to the stressors experienced during the deployment; they do not develop neither PTSD nor other disorders (Weisaeth et al., 1993; MacDonald et al., 1996; Litz et al., 1997; Orsillo et al., 1998; Ismail et al., 2002; Mehlum and Weisaeth, 2002; Brett et al., 2003; Hotopf et al., 2003a; Michel et al., 2003; Klaassens et al., 2008; Sareen et al., 2008).

As far as concern other internalizing symptoms besides the PTSD ones (i.e., inner and covert behaviors such as rumination) and externalizing symptoms (i.e., overt behaviors such as aggressiveness), Klaassens et al. (2008) showed that the 83% of the Dutch veteran peacekeepers that participated in their research did not report significant psychological distress about 10 and 25 years after deployment. The 17% of peacekeepers scored instead above the cut-off of the instrument they used, which allows evaluating both internalizing (somatic complaints, cognitive problems, interpersonal sensitivity, depression, anxiety, phobic fear) and externalizing (hostility, paranoid thinking, psychoticism) symptoms. The percentage of peacekeepers with psychological problems, besides being small as compared to the percentage of not-impaired peacekeepers, is also equal to a Dutch norm group. The only group-difference found by Klaassens et al. (2008) concerns hostility, as peacekeepers have more hostility than the control group. In addition, also Chinese medical peacekeepers had a good mental health status 1 week after their arrival in Lebanon (Li et al., 2012). In line with these studies, Hotopf et al. (2003a) did not find higher risk for anxiety and depression symptoms in British peacekeepers.

Suicide is another mental health-related factor that has been studied more recently. The studies on this topic showed that the increased risk of suicide in peacekeepers veterans is higher in the ones who have prematurely repatriated (Ponteva et al., 2000; Thoresen et al., 2003, 2006; Thoresen and Mehlum, 2008). Moreover, mental health problems, living alone, and the break-up of a love relationship are suicide risk factors, while peacekeeping-related factors are not (Thoresen and Mehlum, 2006).

Finally, it is interesting to note that Proctor et al. (2009) highlighted that US peacekeepers who have been deployed, as compared to non-deployed soldiers, showed reduced proficiency in motor speed and sustained attention tasks, but also an improved proficiency in working memory tasks and fewer depression symptoms, about 7 months after deployment. Hence, these peacekeepers showed an adaptive response to the stressors faced during deployment, both as far as concern neuropsychological functioning and mood.

If the literature about peacekeepers' mental health is meager, the studies about their psychological resources (i.e., self-efficacy, self-esteem, social support) and quality of life (i.e., life satisfaction and general stress) are even less.

Concerning psychological resources, to the best of our knowledge, there is only the study by Dirkzwager et al. (2003) that, however, analyzed social support and coping strategies as PTSD predictors among Dutch peacekeepers. The results showed that fewer and more negative social contacts are associated with higher PTSD symptoms severity. In addition, the coping strategies associated to higher symptoms are the wishful thinking (i.e., the creation of beliefs according to desires and not accordingly to evidence and rationality) and accepting responsibility (i.e., over-evaluating one's contribution to the traumatic event, with following feelings of guilt) strategies, while planful problem solving and seeking social supports are associated with less PTSD symptoms.

Moreover, as far as we know, there is only one study addressing stress as an outcome of PKOs, and it showed that Italian peacekeepers did not have an increase in their self-report stress (Ballone et al., 2000). Hotopf et al. (2003b) analyzed instead demographic and peacekeeping related factor as predictors of stress.

In sum, the few studies about peacekeepers' health support the notion that the large majority of soldiers do not develop internalizing psychopathology, as for example PTSD (e.g., Ismail et al., 2002; Brett et al., 2003; Klaassens et al., 2008; Sareen et al., 2008). These results are in line with the studies that highlight that peacekeepers generally perceive their missions in a positive vein: the missions improve technical skills, self-efficacy and ability to cope with stress, and help them to feel useful (Mehlum, 1995; Weisaeth et al., 1996).

Since the literature on peacekeepers' wellbeing is limited, we aim to deepen the analysis of this aspect on Italian military peacekeepers. More specifically, we evaluate PTSD, as it is the most analyzed disorder in peacekeeper literature. Then, we analyze other internalizing symptoms since, as they are covert behaviors, they are more difficult to detect as compared to externalizing (overt) symptoms. Though, they are distressing and lead to a functional impairment as well as the externalizing ones. Finally, given that there are few studies on quality of life and psychological resources, we also aim to address this gap by analyzing them in the present research.

Based on the few studies on psychological wellbeing on peacekeepers, we hypothesize that Italian peacekeepers differ from a control group according to several factors: (i) peacekeepers have lower levels of PTSD symptoms (Weisaeth et al., 1993; MacDonald et al., 1996; Litz et al., 1997; Orsillo et al.,

1998; Ismail et al., 2002; Mehlum and Weisaeth, 2002; Brett et al., 2003; Hotopf et al., 2003a; Michel et al., 2003; Klaassens et al., 2008; Sareen et al., 2008); (ii) peacekeepers have lower levels of other internalizing symptoms, namely depression, general anxiety, obsessions and somatization symptoms (Hotopf et al., 2003a; Michel et al., 2003; Klaassens et al., 2008; Proctor et al., 2009; Li et al., 2012); (iii) peacekeepers have higher psychological resources that buffer the stress they experience (Mehlum, 1995; Weisaeth et al., 1996). More specifically, they have higher self-efficacy, self-esteem and perceived social support; (iv) as a consequence of (i), (ii), and (iii), peacekeepers report a higher quality of life, or they have higher life satisfaction and lower distress (Ballone et al., 2000).

The results of this study could help to develop preventive interventions (e.g., Di Fabio, 2016; Di Fabio and Kenny, 2016a,b; Di Fabio et al., 2016), such as selecting for peacekeeping missions soldiers with enough psychological resources (e.g., Di Fabio, 2014, 2015; Di Fabio and Saklofske, 2014; Di Fabio and Kenny, 2015; Di Fabio et al., 2017a) for coping with the associated stressors, and hence sustaining an healthy organization for military peacekeepers (Di Fabio, 2017a,b; Di Fabio et al., 2017b). Moreover, this study could suggest which psychological resources should be strengthened in order to avoid psychological maladjustment of soldiers engaged in peacekeeping missions.

## MATERIALS AND METHODS

### Participants

We recruited 227 participants: 167 peacekeepers (73.6% of the sample) and 60 subjects as the control group (26.4%).

Peacekeeper military officers were only selected if they were involved in a peacekeeping mission. Some of them did not provide their sociodemographic characteristics. Based on the available data, they were aged between 20 and 52 years ( $M = 31.70$ ,  $SD = 7.52$ ,  $n = 105$ ), and were mostly males (61.7%,  $n = 103$ ). There were few females (3.6%), and 34.7% participants did not report their gender. Concerning their education, the majority done a secondary school of second level (43.7%), while 13.2% completed the secondary school of first level, a few hold a master degree (4.8%), and 38.3% peacekeepers did not report their education level.

Finally, there were 39.5% enlisted men, 13.8% non-commissioned (or warrant) officers, and 2.4% commissioned officers (44.3% participants did not provide this information). It should be noted that such different rank in the Army are associated with different roles, and hence to varying degree and different kinds of stress. Enlisted soldiers might be defined as the backbone of the Army, as they have specific and operative tasks; hence, they are the workforce. Officers are instead the managers of the enlisted men, as they plan missions, they assign them to specific tasks, and they give them orders. Among officers, there is a distinction between non-commissioned (or warrant) officers and commissioned officers. Commissioned officers give orders and assign tasks to all the personnel, including non-commissioned officers. Non-commissioned officers give instead orders to enlisted man only and, by means of these orders,

they have to translate the commissioned officers' directions into instructions for the enlisted men with the aim of completing the job requested by the commissioned officers. They have a focused and technical expertise (United States Army, 2017).

Based on these definitions, it follows that while enlisted men have higher levels of stress associated to life-threatening events; officers have instead higher levels of stress associated to their management role and their responsibility for lower-ranked army soldiers.

The participants of the control group were 53.5% males and 46.7% females aged between 20 and 64 years ( $M = 30.67$ ,  $SD = 9.66$ ). With respect to their educational level, 18% participants completed the secondary school of first level, 65% had done a secondary school of second level, and a few held a master degree (17%).

## Materials

We administered some scales of the Psychological Treatment Inventory (PTI; Gori et al., 2015). The PTI has two different forms: a patient, or self-report version, and a form filled out by a clinician who knows him/her – the clinician version. In this study, we used some scales of the participant version only, which have to be filled by the participants by means of a 5-point scale (1 = not at all, 2 = somewhat, 3 = moderately, 4 = a good deal, and 5 = very much).

More specifically, for assessing the internalizing symptomatology, we administered the following scales: Post-traumatic stress disorder (e.g., The memory of a shocking experience that I have experienced is still tormenting me), Depression (e.g., I've lost interest in things I do), General anxiety (e.g., I feel anxious), Obsessions (e.g., I have difficulty concentrating), and Somatization (e.g., My shoulders and neck muscles are often stiffened, contracted). In addition, for evaluating the Psychological Resources, we administered the following scales: Self-efficacy (e.g., I am able to exploit my skills in a productive way); Self-esteem (e.g., I'm an interesting person); and Perceived social support (e.g., When I'm in trouble, I know I can rely on someone's help). Finally, in order to evaluate the Quality of Life, we administered the Life satisfaction (e.g., Overall, I'm happy with my life) and the Distress (e.g., At the end of the day I feel exhausted) scales.

The PTI has good psychometric properties;  $\alpha$  coefficients indicate good internal consistency for all scales, except for those examining profile validity. Test–retest reliabilities are also good, ranging from 0.75 to 0.95 (Gori et al., 2015). In the present research, the values of Cronbach's alpha are: Post-traumatic stress disorder,  $\alpha = 0.75$ ; Depression,  $\alpha = 0.79$ ; General anxiety,  $\alpha = 0.86$ ; Obsession,  $\alpha = 0.83$ ; Somatization,  $\alpha = 0.80$ ; Self-efficacy,  $\alpha = 0.85$ ; Self-esteem,  $\alpha = 0.71$ ; Perceived Social Support,  $\alpha = 0.75$ ; Life satisfaction,  $\alpha = 0.78$ ; Distress,  $\alpha = 0.78$ .

## Procedure

First, we asked for the authorization to the Department of Health Sciences of the University of Florence. Next, we asked for the authorization to conduct the research to the Staff of Defense, by means of their Communication Office.

Once we get the authorization, we gave the questionnaires to the Communication Office, which helped us in the administration of the questionnaire to the soldiers who were in service. The Communication Office organized the administration in a collective form and in a quiet place. Before filling the questionnaire, the participants were provided with the Informed Consent, which they had to sign in order to take part in the research.

The questionnaire comprehended the PTI, preceded by some demographic questions (gender, age, education level). Although assurances were given that data would be kept anonymous, some of the participants did not report these data.

## Data Analysis

We conducted the statistical analysis using the software SPSS.20. Three hypotheses were tested by means of three MANOVAs; internalizing symptoms, psychological resources, and quality of life were analyzed separately. Since many participants belonging to the peacekeeper group did not provide their demographics (i.e., gender, age, education level) and rank level (i.e., enlisted man, non-commissioned officer or commissioned officer), we did not control for these variables in the MANOVAs we performed in order to avoid a pronounced reduction of the number of participants.

The preliminary analyses that we done in order to check the normality assumption showed that some of the variables (i.e., the scales evaluating internalizing symptoms) have values of kurtosis and skewness that do not meet the  $\pm 1$  cut-off criteria (see **Table 1**). Moreover, the Box's Test of Equality of Covariance Matrices showed that the data violate the assumption of homogeneity of variance–covariance matrices for the MANOVA we conducted with the internalizing scales, and the Levene's Test of Equality of Error Covariance showed that the related assumption is violated for the Somatization scale. However, for all the other internalizing scales the assumption is met. About the MANOVAs with psychological resources and quality of life scales as dependent variables, the two above-mentioned assumptions are met instead.

In conclusion, the normality and homoscedasticity assumptions are violated for the MANOVA related to the

**TABLE 1 |** Kurtosis and Skewness values for the dependent variables ( $n = 227$ ).

PTI variable	<i>M</i> ( <i>SD</i> )	Kurtosis	Skewness
Self-efficacy	25.05 (4.97)	−0.04	−0.56
Self-esteem	19.85 (4.00)	0.07	−0.19
Perceived social support	20.19 (4.28)	−0.21	−0.03
Depression	9.68 (3.67)	1.59	1.93
General anxiety	10.48 (4.50)	1.65	2.68
Obsessions	9.05 (3.77)	1.37	1.11
Somatization	8.95 (3.99)	1.54	1.82
Post-traumatic stress disorder	10.41 (4.04)	1.30	1.10
Life satisfaction	18.63 (4.15)	−0.39	−0.60
Distress	8.13 (3.08)	1.04	0.50

PTI, Psychological Treatment Inventory.

internalizing symptoms only. We performed the MANOVA anyway, as it “is reasonably robust to moderate violations of normality” (Pallant, 2001, p. 219), especially if there are at least 20 subjects in each cell (Tabachnick and Fidell, 1996) or, even better, over 30, as in this case any violations of normality or equality of variance does not matter too much (Pallant, 2001). Hence, given that the sample size of our groups is well above 30 for both the peacekeepers and the control groups, we proceeded with MANOVAs analysis despite the normality assumption violations for some of the dependent variables.

## RESULTS

### PTSD and Other Internalizing Symptoms

For testing hypotheses 1 and 2, namely that peacekeepers have lower levels of PTSD symptoms or other internalizing symptoms; we performed a MANOVA with the following scales of the PTI as dependent variables: Post-traumatic stress disorder, Depression, General anxiety, Obsessions, and Somatization.

The multivariate test showed a statistically significant effect:  $F(5,221) = 12.81, p < 0.001, \eta_p^2 = 0.23$ . Subsequent ANOVAs showed that the peacekeeper group has significantly lower symptoms of Post-Traumatic Stress Disorder,  $F(1,225) = 17.88, p < 0.001, \eta_p^2 = 0.07$ , Depression,  $F(1,225) = 25.73, p < 0.001, \eta_p^2 = 0.10$ , General Anxiety,  $F(1,225) = 40.96, p < 0.001, \eta_p^2 = 0.15$ , Obsessions,  $F(1,225) = 51.65, p < 0.001, \eta_p^2 = 0.19$ , and Somatization,  $F(1,225) = 34.41, p < 0.001, \eta_p^2 = 0.13$ , (see **Table 2** for the descriptive statistics).

### Psychological Resources

Next, in order to test the third hypothesis, that peacekeepers have higher psychological resources, we conduct a MANOVA with

**TABLE 2 |** Means (SDs) of the internalizing symptoms by peacekeepers and control group.

PTI variable	Group	M (SD)	n
Depression	Peacekeepers	8.98 (3.33)	167
	Control	11.63 (3.88)	60
	Total	9.68 (3.67)	227
General anxiety	Peacekeepers	9.43 (3.94)	167
	Control	13.42 (4.67)	60
	Total	10.48 (4.50)	227
Obsessions	Peacekeepers	8.08 (3.39)	167
	Control	11.77 (3.48)	60
	Total	9.05 (3.77)	227
Somatization	Peacekeepers	8.08 (3.50)	167
	Control	11.37 (4.29)	60
	Total	8.95 (3.99)	227
Post-traumatic stress disorder	Peacekeepers	9.75 (3.88)	167
	Control	12.23 (3.93)	60
	Total	10.41 (4.04)	227

PTI, Psychological Treatment Inventory.

the following psychological resources as dependent variables: self-efficacy, self-esteem, and perceived social support.

The multivariate test showed a statistically significant effect:  $F(3,223) = 8.38, p < 0.001, \eta_p^2 = 0.10$ . Subsequent ANOVAs showed that the military group has significantly higher self-efficacy,  $F(1,227) = 25.06, p < 0.001, \eta_p^2 = 0.10$  and self-esteem,  $F(1,227) = 10.41, p = 0.001, \eta_p^2 = 0.04$ , than the control group. There is not difference on perceived social support,  $F(1,227) = 3.21, p = 0.08, \eta_p^2 = 0.01$  (see **Table 3** for the descriptive statistics).

### Quality of Life

Finally, in order to test the last hypothesis, that peacekeeper military officers have a higher quality of life, we done a further MANOVA with Life satisfaction and Distress as dependent variables.

The multivariate test showed a statistically significant effect:  $F(2,224) = 26.29, p < 0.001, \eta_p^2 = 0.19$ . Subsequent ANOVAs showed that the military group has significantly higher level of life satisfaction,  $F(1,227) = 29.74, p < 0.001, \eta_p^2 = 0.12$ , and lower level of distress,  $F(1,227) = 42.73, p < 0.001, \eta_p^2 = 0.16$ , than the control group (see **Table 4** for the descriptive statistics).

## DISCUSSION

This study aimed to analyze if low internalizing symptomatology and high psychological resources and quality of life characterize

**TABLE 3 |** Means (SDs) of the psychological resources by peacekeepers and control group.

PTI variable	Group	M (SD)	n
Self-efficacy	Peacekeepers	25.99 (4.72)	167
	Control	22.43 (4.75)	60
	Total	25.05 (4.97)	227
Self-esteem	Peacekeepers	20.35 (3.88)	167
	Control	18.45 (4.04)	60
	Total	19.85 (4.00)	227
Perceived social support	Peacekeepers	20.50 (4.30)	167
	Control	19.35 (4.14)	60
	Total	20.19 (4.28)	227

PTI, Psychological Treatment Inventory.

**TABLE 4 |** Means (SDs) of the quality of life by peacekeepers and control group.

PTI variable	Group	M (SD)	n
Life satisfaction	Peacekeepers	19.47 (3.90)	167
	Control	16.27 (3.92)	60
	Total	18.63 (4.15)	227
Distress	Peacekeepers	7.40 (2.72)	167
	Control	10.18 (3.12)	60
	Total	8.13 (3.08)	227

PTI, Psychological Treatment Inventory.



Italian peacekeepers, as suggested by the few studies on this topic (e.g., Mehlum, 1995; Weisaeth et al., 1996; Brett et al., 2003; Klaassens et al., 2008). While stress is present in almost all working environments, working as a peacekeeper may be among the most stressful (Keskinen and Simola, 2015). However, peacekeepers are selected based on a psychological assessment and they are trained for stressful situations; hence, we hypothesized that they have positive characteristics that buffer the stress experienced during missions.

We found that peacekeepers have lower PTSD symptoms than the control group, in line with previous studies (e.g., Brett et al., 2003; Klaassens et al., 2008). We extended the literature on this topic by analyzing other internalizing symptoms, namely depression, general anxiety, obsessions, and somatization symptoms. We hypothesized that the participants were selected for the mission since they were characterized by a low symptomatology. In line with this, we found significantly lower levels for all the internalizing symptomatology we analyzed.

With respect to psychological resources, we found, in line with Mehlum (1995) and Weisaeth et al. (1996), that peacekeepers have higher self-efficacy and self-esteem than the control group. These two resources are particularly important for military officers since they avoid a procrastination of the tasks and they favor a high commitment in the actions required by the missions. Hence, we can assume that peacekeepers have been selected based on their high level of psychological resources. However, they do not exhibit higher levels of perceived social support than the control group. They also do not report a lower level of perceived social support, in spite of being far from their country. This may be because missions were conducted with colleagues who offer the social support otherwise removed by being away from home. Perceived social support is important because it could prevent their psychological health impairment.

Finally, with respect to quality of life, in line with Ballone et al. (2000), we found higher reported quality of life among peacekeepers. They reported higher life satisfaction and lower distress as compared to the control group. We could explain this finding referring to the previous results: peacekeepers have higher psychological resources and lower internalizing symptomatology; consequently, they also have a higher quality of life. One question was whether these results could be accounted for based on a social desirability bias. The participants could have presented themselves in a positive vein for the fear of being identified and maybe fired out. Even though assurances were given that answers would be anonymous, we have to consider that they filled the questionnaire during their mission and in their place of work and that military personnel administered the questionnaires.

A limitation of the present study is the lack of demographic data of many participants, which do not allow to perform group differences analyses, such as between males and females, or between soldiers with different ranks (i.e., between enlisted men and non-commissioned officers), neither to

control for their effect when testing group differences by means of the MANOVAs. Moreover, the control group, even if comprehends 60 participants (i.e., more than the minimum of 30 cases recommended by Pallant, 2001 for performing MANOVA analysis), is smaller as compared to the peacekeeper group. Finally, our study is cross-sectional, and hence it does not allow proposing any casual relationships.

Despite these limitations, this study highlights the positive consequences of selecting peacekeepers based in part on their psychological resources to cope with stressful situations. We found low internalizing symptomatology and higher self-esteem, self-efficacy and quality of life in the military as compared to the control group. The study deepens our knowledge about the psychological characteristics of peacekeepers, which is a field understudied. Our findings suggest that it is valuable to select personnel who have military competences, but also high psychological resources that help them to cope with the stressors implied in their mission. Moreover, it would be useful to strengthen their perceived social support, given that it is an important resource.

Future studies should analyze further these psychological characteristics in peacekeeper military, especially by means of a comparison between war veterans and peacekeepers, in order to understand if there are some differences between peacekeeper and the military involved in the war.

## ETHICS STATEMENT

This study was carried out in accordance with the recommendations of the Staff of Defense with written informed consent from all subjects. All subjects gave written informed consent in accordance with the Declaration of Helsinki. The protocol was approved by the Staff of Defense.

## AUTHOR CONTRIBUTIONS

YL managed the literature search, performed the statistical analysis, and drafted the manuscript. MG and AD designed the work. YL, MG, AG, and AD interpreted the data and critically revised the intellectual content of the manuscript. All the authors approved the final version of the manuscript and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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# When and How Does Psychological Voice Climate Influence Individual Change Readiness? The Mediating Role of Normative Commitment and the Moderating Role of Work Engagement

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This research explores the linking mechanisms and conditional processes underlying the relationship between psychological voice climate and individual change readiness. In accordance with the social identity theory, we argued that normative commitment would mediate the relationship between psychological voice climate and individual change readiness; furthermore, work engagement would moderate the proposed indirect effect. Two-wave survey data were collected from 187 full-time employees in a government-owned institute of research and development and were adopted for moderated mediation analysis. The results showed that normative commitment mediates the relationship between psychological voice climate and individual change readiness. Furthermore, work engagement strengthens the effect of psychological voice climate on individual change readiness in an indirect manner via normative commitment. Based on the findings, the theoretical implications and practical suggestions were discussed.

**Keywords:** psychological voice climate, normative commitment, individual change readiness, work engagement, social identity theory, public sector

## INTRODUCTION

Faced with financial austerity and economic crisis, many public sectors of Western countries have turned to reforms aimed at cutting back on expenses and improving efficiency (van der Voet and Vermeeren, 2017). The literature on cutback management suggests that cutbacks may result in decreased job satisfaction and morale as well as increased work-related stress and intention to leave (Raudla et al., 2015). Due to the high failure rate of organizational change, researchers have made efforts to explore critical factors that may contribute to the successful implementation of organizational change (Rafferty et al., 2013). Starting from the notion that successful organizational change mainly depends on generating employee support and enthusiasm for proposed changes, rather than merely overcoming change resistance (Piderit, 2000), we concentrate our study around the concept of attitudes toward change. We argue that, although public bureaucracies are often viewed as unresponsive to reforms or strongly resistant to change, public organization leaders or



change agents can considerably increase the success rate of their change initiatives by gleaning insights into key antecedents of employees' attitudes toward organizational change.

Change readiness is one of the most prevalent positive attitude toward change that has been addressed in the literature of organizational change. By definition, individual change readiness reflects the extent to which an individual is inclined to accept, embrace, and adopt a particular way to change the current situation purposefully (Holt et al., 2007). Regarding the necessity and inevitability of change, organizations are thus encouraged to consider employee readiness factors in the implementation of change initiatives (Eby et al., 2000; Cunningham et al., 2002). Along with the essence and relevance of individual readiness in the organizational change context, most research has focused on the manners in which change initiatives have been launched and implemented (Oreg and Sverdlik, 2011) or has examined antecedents such as managerial support for the change and employee change efficacy in change competence (Eby et al., 2000; Rafferty and Simons, 2006). Such a perspective assumes that, during organizational change, certain buttons must be pressed to induce positive employee responses to change. However, instead of focusing on change-specific drivers of employee attitudes toward change, careful consideration of the internal context in which the organizational change occurs is required to ensure the success of change implementation (Herold et al., 2007). In other words, the pre-change internal context becomes important in fostering constructive employee responses to organizational change (van der Voet and Vermeeren, 2017).

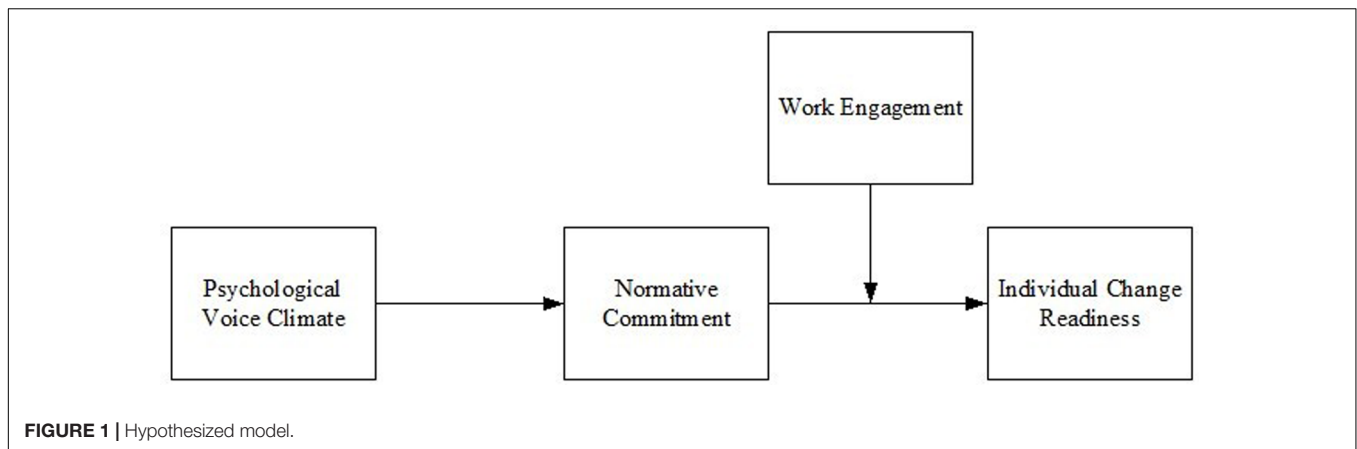
Tierney (1999) viewed the psychological climate, including dimensions of trust, participation, and support, as preconditions for an environment conducive to change. Similar to the concept of psychological climate, psychological voice climate involves employee perceptions to participate in organizational decisions by having the opportunity to advance their ideas and have them considered honestly by their employer (Farndale et al., 2011). Applying Blau's (1964) exchange theory, a positive voice climate generates long-term positive attitudes toward the organization because employees feel recognized, heard, and trusted by their immediate manager as well as the organization. Devos et al. (2007) found that, when employment relationships are characterized by high levels of mutual trust, employees are more open to organizational change. In line with van den Heuvel et al.'s (2017) argument on the internal context, we focus on the concept of voice climate to describe the internal context in which an organizational change takes place.

Prior research indicates that, when employees are frequently and consistently asked their opinions and offered opportunities to provide suggestions about work-related issues, they are likely to have greater commitment toward their organization (Farndale et al., 2011). Empirical studies have revealed that employees report greater change readiness when they feel emotionally attached to the organization (McKay et al., 2013). Recent studies have also increasingly paid attention to the way how the particular context of public organizations may influence the implementation of organizational change (Kickert,

2014; van der Voet et al., 2015). For instance, rather than affective commitment, normative commitment (i.e., the sense of obligation to remain with the organization) was found to be more important in public sectors than private sectors due to the nature and content of the written employment contracts and implicit psychological contracts (Boyne, 2002; Markovits et al., 2007). Moreover, normative commitment is relevant to the levels of individual change readiness that involve a sense of moral duty to do the right thing, as expected by the organization. This duty proceeding from the interiorized norm of reciprocity is important for change-relevant attitudes; as such, normative commitment should be integrated into a model of individual change readiness targeting public sector employees. Regarding the characteristics of employment in the public organizations, it is essential to develop the model specific for public sector employees. Thus, the first purpose of the study is to answer the important question—namely, whether the existence of psychological voice climate can enhance public sector employees' change readiness underlying the mechanism of normative commitment.

On the other hand, organizational change may become excessive when its demands exceed the employees' resources to cope with the impact of organizational change, thereby provoking negative reactions to change (Johnson, 2016). Under the circumstances, engaged employees are expected to continuously put a lot of energy into their work and keep concentrated on what they are doing until the job is complete (Gordon et al., 2015). Work engagement has also been suggested to enhance positive organizational change (Avey et al., 2008). In addition, work engagement has been found to increase employee effectiveness in achieving the organizational goals (Mackay et al., 2017). However, very few studies—with a limited number of exceptions—have examined the moderating role of work engagement in translating a pre-change work context (i.e., psychological voice climate) into a supportive response toward organizational change (i.e., individual change readiness) in public organizations. Thus, the second purpose of this study is to explore whether work engagement enhances the indirect effects of psychological voice climate on individual change readiness.

The current research is expected to contribute to the literature on voice climate, normative commitment, and individual change readiness in several ways. First, the research is the first to clarify how psychological voice climate influences individual change readiness through normative commitment. In this way, our knowledge demonstrates the importance of pre-change internal contexts for public organizations. Second, the research utilizes the social identity theory to clarify how psychological voice climate affects individual change readiness by revealing the mediation of normative commitment. Third, by investigating the moderating role of work engagement on the indirect effect of psychological voice climate on individual change readiness through normative commitment, the research makes contributions to the engagement literature by identifying the effectiveness of work engagement interventions. The proposed theoretical model is illustrated in **Figure 1**.



## THEORIES AND HYPOTHESES

### Psychological Voice Climate and Normative Commitment

The psychological voice climate determines the extent to which employees perceive that they are encouraged to display voice behavior in public. Existing literature (Morrison and Milliken, 2000; Morrison et al., 2011) defines voice climate as referring to employees' beliefs about whether a particular context is safe for them to speak up on suggestions as well as how effective their voice will be heard and acted upon.

Of the three components of organizational commitment, a less common—but equally feasible—view of commitment is normative commitment, which refers to the employee's belief that it is the individual's responsibility or obligation to be loyal to the organization (Meyer and Allen, 1991). Employees with greater normative commitment feel that they ought to keep staying in the organization (Meyer and Allen, 1997). According to social exchange theory, the exchange benefit includes not only the tangible goods and services, but also the intangible prestige, approval, status, and recognition, which are socially valued (Blau, 1964; Tekleab and Chiaburu, 2011).

Normative commitment rises as a result of a moral duty to repay the organization for benefits received from the organization itself or the socialization experiences that emphasize the importance and necessity of keeping loyal to the employer (Yucel et al., 2014). In addition to the observation of role models or the contingent use of rewards and punishment, a more specific reciprocity mechanism may operate in the development of normative commitment (Meyer and Allen, 1991). For example, the receipt of special favors from the organization may constrain employees to stay even when the organization is experiencing external or internal pressure for reforms or change. Yucel et al.'s (2014) study of top management teams indicated that CEO leadership both directly and indirectly enhanced employees' and top executives' normative commitment.

The current study seeks to extend existing research in this field by investigating the effect of positive voice climate on public sector employees' normative commitment. Employees usually consider normative commitment as a moral imperative based

on social norms or prior socialization experiences occurring in the organization (Meyer et al., 2006). Public sector organizations operate and function as traditional bureaucracies and tend to put emphasis on the importance of standardized procedures and formality. When public sector employees enter into the work environments, they are not necessarily expected to provide proactive suggestions or participate in work-related decisions. Under the circumstances, if public sector employees are permitted to make suggestions concerning work-related issues without experiencing any negative consequences to their status or career, and their ideas are listened to and adopted to improve organizational effectiveness, they are likely to feel recognized and valued by their organization. Once public sector employees experience such participation, involvement, and recognition of the internal environment, their stereotypical perception or image of a public sector organization breaks down. In turn, this psychological motivation leads to a feeling of obligation to return the favor by staying with the organization.

Additionally, social identity theorists argue that in some social situations, individuals think of themselves and others in terms of a particular group membership (Tajfel, 1978). When individual is surrounded by the atmosphere of expressing their own opinions and suggestions to improve the environment and feel recognized by other members, they are likely to identify with the group or the organization, and then produce the obligation to stay with the organization. More specifically, public sector employees' psychological voice climate makes them more positively feel committed to and involved with the organization. When surrounded by a positive voice climate, public sector employees will pay back these benefits to the organization through enhanced normative commitment. Based on the above discussion, we propose that:

**Hypothesis 1:** Psychological voice climate will be positively related to normative commitment.

### Mediation of Normative Commitment

Individual change readiness is often viewed as one kind of attitudes affected by the content and process (Armenakis and Bedeian, 1999; Holt et al., 2007; Walker et al., 2007). An individual, who is ready to change, will exhibit a proactive and

positive attitude toward the change, which can be translated into a willingness to support the change and a feeling of confidence in the success of the change. Thus, the root of individual change readiness lies with those employees who accept, embrace, and are willing to carry out a specific plan to change the status quo and do so intentionally (Holt et al., 2007).

It has been widely argued that an organization gives priority to motivating employee change readiness when implementing any change initiatives (Self et al., 2007). Several studies concentrating on the motivations of public sector employees prior to organizational change have assumed that, if employees have positive attitudes and feeling about their jobs, they can accept organizational change (Farndale et al., 2011; van der Voet and Vermeeren, 2017). In responding to the increasing importance of the pre-change internal context in fostering constructive employee responses to organizational changes, Bouckennooghe et al. (2009) have argued that psychological climate for change, which encourages participation in decision making, is a precondition for inducing employee commitment, which in turn contributes to acceptance and support for organizational changes.

The central proposition of the social identity theory is that, through the perception of belongingness to a group, individuals define themselves in terms of their group membership and ascribe the characteristics that are typical of the group to themselves (Van Knippenberg, 2000). In other words, the more an individual identifies with the group, the more likely the individual is to behave complying with the group's beliefs, norms, and values, and generally to behave in the ways expected by the group (Dutton et al., 1994). In general, this identification with the group (or organization) may induce individuals to take the group's perspective and to experience the group's goals and interests as their own. The relationship between identification with the organization and motivation to exert effort for the benefits of the organization may be positive especially when there are contextual factors making the social identity salient (Van Knippenberg, 2000). Encouraging members to speak up concerning work-related issues, for instance, may make public sector employees aware that they belong to the organization and have the duty to achieve the organization's goals and work for the organization's benefits (i.e., organizational change). Meyer and Parfyonova (2010) have further argued that normative commitment induces an individual's desire to do the right thing beneficial for the organization, rather than compelling an individual to do things to avoid negative outcomes. Therefore, normative commitment, resulting from the perception of voice climate, involves a form of motivation to act in a manner that satisfies the norms and expectations of the organization. Even if the proposed change initiatives involve the organizational restructuring or removal of valued personal interests, it is plausible that individuals with higher normative commitment will react positively toward organizational change.

Based on the above discussion, we argue that psychological voice climate makes employees identify with the organization and produce normative commitment to do the right things that may benefit the organization—that is, increase acceptance and support for organizational changes. Several studies have also put emphasis

on the role of the motivational base of public sector employees prior to organizational change (Farndale et al., 2011; van den Heuvel et al., 2017). These studies assume that, if employees have positive attitudes toward their organization, they will hold positive views toward organizational change. Therefore, we hypothesize that normative commitment will mediate the effect of psychological voice climate on individual change readiness.

Hypothesis 2: Normative commitment will mediate the relationship between psychological voice climate and individual change readiness.

## Moderated Mediation of Work Engagement

Work engagement, defined as the degree of vigor, dedication, and absorption that one experiences at work, represents the employee's perceived contribution to the organization and the personal challenge that he or she derives from work (Macey and Schneider, 2008; Alarcon et al., 2010). Highly engaged individuals have more energy and persistence to complete their assigned tasks, such as successfully implementing the needed strategies (Demerouti and Cropanzano, 2010). In essence, work engagement can provide additional energy for employees in demanding situations (Schaufeli and Bakker, 2004). This energy may be viewed by employees as a resource when considering their reactions to organizational change initiatives. Employees with higher work engagement are likely motivated to utilize these resources when under stress (Bakker et al., 2007). One way to utilize work-related resources may be to engage in a change initiative. Thus, it is likely that highly engaged employees will enhance their change readiness.

However, work engagement is likely not enough to ensure success within a changing environment. Hallberg and Schaufeli (2006) have argued that, rather than just the opposite of job burnout, work engagement is a conceptualization of optimal functioning to help employees cope with organizational change. A growing number of studies indicate the possibility that work engagement serves a moderating role by attenuating or enhancing the relationships of job characteristics and work experiences with job outcomes (e.g., Shuck and Reio, 2014; Gordon et al., 2015). Employees with higher work engagement are thought to appraise their ability to meet their work demands positively, believe in good outcomes, and believe that they can satisfy their needs by fully engaging in their roles played in the organization (Knight et al., 2017). This may be particularly true for those engaged employees who feel obligated to do the right thing to repay for the existence of voice climate and exert more energy to support change initiatives in a changing context. Thus, this current study further explores whether work engagement moderates the indirect effects of psychological voice climate on individual change readiness through normative commitment.

Hypothesis 3: The indirect effects of psychological voice climate on individual change readiness will be stronger for employees with higher work engagement.



## MATERIALS AND METHODS

### Organizational Context

The organizational change under investigation occurred in a government-owned institute of research and development in Taiwan. This organization is responsible for the development and design of technological instruments and integration systems. The organization had engaged in organizational restructuring in the pursuit of efficiency and the quality of services. Due to the nature of the organizational restructuring, employees would be directly affected in their almost daily operations. Of particular importance, the issues of job security and implications for status had become some concerns for these employees.

The change management project was sectioned into the design of new structures; the announcement of new working practices, procedures, and systems; and actual implementation time periods. Despite the fact that employees had no influence on the government's decisions to implement the restructuring initiative, they had been encouraged to participate in a range of activities surrounding the work-related issues before the change initiative. After completing the design of new structures, top management officially informed employees that the restructuring would be implemented. Hence, this organization provides a unique opportunity for examining the influence of the pre-change internal context (i.e., psychological voice climate) on individual readiness for the planned organizational change.

### Sampling Procedure and Characteristics

Since the study did not involve animal experiments or human clinical trials, ethical approval was not required for this study but permission to proceed was obtained from the relevant change program managers who were assured that ethical principles would be followed. Before conducting the two-wave survey, employees were informed about the objectives of the study by their supervisors. They were assured that their participation was voluntary. At all times, confidentiality was maintained surrounding the employees involved and the information they disclosed. Being placed under no 'undue pressure' to participate, respondents held the right to not answer all questions. A covering letter was attached to each questionnaire emphasizing these points for all participants. Hence, we state that we conformed to the Helsinki Declaration concerning human rights and informed consent, and that we followed correct procedures concerning treatment of humans in research.

After receiving consent from the organizational change manager for the organizational restructuring initiative, we planned to collect data from employees at two points in time to reduce common method biases (Podsakoff et al., 2003) and improve methodological rigor in testing the causality of our research model (Wright et al., 2005).

The surveys were administered to the employees working in the organization. The data collection process was carried out in two waves. When the organizational change manager was planning for the redesign of organizational structure, we conducted the first wave of the survey. An email from the internal media was sent to 489 employees to complete the online survey

concerning their perceptions of voice climate and demographic information. After 3 weeks, 405 employees had completed the survey, resulting in a response rate of 82.8%.

We conducted the second wave of the survey 6 months after the organizational change manager had announced the start of the organizational restructuring plan. The internal media was again used to connect with the participating employees from the first wave of the survey and collect information on normative commitment, individual change readiness, and work engagement. It is worth noting that the number of potentially participating employees was reduced to 210 (i.e., retention rate = 51.9% at Time 2) due to voluntary or involuntary quit from the institute after the restructuring plan had been implemented. After deleting any incomplete, mismatched, or missing cases, the final sample consisted of 120 male (64.2%) and 67 (35.8%) female employees, making the effective return rate 89.0%. Of the 187 employees, 21.4% were under the age of 35, 59.4% were between 36 and 55 years old, and 19.3% were 56 years old or older. The average organizational tenure was 17.9 years ( $SD = 12.3$ ). The majority of the participating employees had graduated from college (50.3%) or higher (41.1%).

## Measurement

### Psychological Voice Climate

The psychological voice climate was assessed with a six-item scale adapted from Van Dyne and LePine (1998), and the items had been worded such that the organization as a whole was the referent (Frazier and Fainshmidt, 2012; Frazier and Bowler, 2015). At the first-wave survey, employees were asked to respond on a 5-point scale anchored by 1 (*strongly disagree*) to 5 (*strongly agree*). The sample item is "It is worthwhile for employees to speak up with new ideas or changes in procedures." The six-item measure of psychological voice climate used in this study yielded an acceptable internal consistency (Cronbach's  $\alpha = 0.94$ ).

### Normative Commitment

We applied Meyer et al.'s (1993) six-item scale to assess the level of employees' normative commitment, such as "I would not leave my organization right now because I have a sense of obligation to the people in it." At the second-wave survey, employees assessed the level of normative commitment via these items anchoring at 1 (*strongly disagree*) to 5 (*strongly agree*). The reliability coefficient (Cronbach's  $\alpha$ ) of the normative commitment scale was 0.86.

### Individual Change Readiness

We adopted four items from Holt et al.'s (2007) change readiness scale to measure the level of individual readiness for change. At the second-wave survey, we asked employees to evaluate their levels of readiness for the change program via a 5-point Likert scale. The Cronbach's  $\alpha$  value was 0.79.

### Work Engagement

The measures of work engagement were taken from Schaufeli et al.'s (2006) 9-item short Utrecht Work Engagement Scale. It consists of items on vigor, absorption, and dedication (e.g., "At my work, I feel bursting with energy," "I get carried away when I am working," and "I am proud of the work that I do"). At the



second-wave survey, we asked employees to report their level of work engagement via a 5-point Likert scale. The reliability estimate (Cronbach's  $\alpha$ ) was 0.94.

### Control Variables

Gender and organizational tenure are potential predictors of normative commitment (Mathieu and Zajac, 1990; Ang et al., 2003). Gender has also been found to be associated with work engagement, with women more engaged than men (Rees et al., 2013). Prior research has shown that change readiness varies with the level of education (Holt et al., 2007). Thus, we used gender, level of education, and organizational tenure as control variables in our statistical analysis to reduce the possibility of spurious relationships that are based on unmeasured variables.

## RESULTS

### Descriptive Analysis

**Table 1** shows the means, standard deviations, and correlations for all the variables in the study. Psychological voice climate was positively related to normative commitment ( $r = 0.33, p < 0.01$ ), work engagement ( $r = 0.34, p < 0.01$ ) and individual change readiness ( $r = 0.34, p < 0.01$ ). The normative commitment was also positively related to work engagement ( $r = 0.60, p < 0.01$ ), and change readiness ( $r = 0.46, p < 0.01$ ).

### Measurement Model

In the beginning, we used Mplus 8.0 to perform confirmatory factor analysis to verify the discriminant validity of the four constructs in the study. The three facets of work engagement loaded onto a general engagement factor, and all indicators were allowed to load on their respective factors. All factors were allowed to correlate to one another in the confirmatory factor analysis. Results revealed that a four-factor model was well-fitted ( $\chi^2 = 322.57, df = 146, p < 0.01$ ; CFI = 0.91, SRMR = 0.07, RMSEA = 0.07). All factor loadings were statistically significant, with standardized loadings ranging from 0.70 to 0.88. These results confirmed the discriminant validity of the constructs in our model (Kline, 2016).

We also conducted Harman's single-factor test on common method variance (CMV) and found that the fit indices were not adequate for the one-factor model ( $\chi^2 = 1154.29, df = 152, p < 0.01$ ; CFI = 0.51, SRMR = 0.19, RMSEA = 0.19). Additionally, the four-factor model was better than one-factor model ( $\Delta\chi^2 = 831.72, df = 6, p < 0.01$ ), indicating that CMV was not a pervasive problem in this study.

### Hypothesis Testing

As shown in **Table 2**, we conducted a series of linear regression models to test the proposed hypotheses. First, we entered all control variables and psychological voice climate into Model 1. Results showed that psychological voice climate was significantly related to normative commitment ( $\beta = 0.485, p < 0.01$ ), supporting Hypothesis 1. Additionally, psychological voice climate was significantly associated with individual change readiness ( $\beta = 0.255, p < 0.01$ , Model 3). Model 4 further showed

that both of psychological voice climate ( $\beta = 0.150, p < 0.01$ ) and normative commitment ( $\beta = 0.345, p < 0.01$ ) were significantly related to individual change readiness after controlling gender, level of education, and organizational tenure.

Then, we used the bootstrapping method suggested by Preacher and Hayes (2004) to examine the indirect effect of psychological voice climate on individual change readiness through normative commitment. After 5000 times bootstrapping, the results showed that the indirect effect from psychological voice climate to individual change readiness via normative commitment was 0.154 (95% confidence interval = [0.05, 0.26]), supporting Hypothesis 2.

To test Hypothesis 3 that predicted the moderating effect of work engagement on the indirect effect from psychological voice climate to individual change readiness via normative commitment, we adopted the second stage moderation model proposed by Edwards and Lambert (2007). Then, we entered the interaction term of normative commitment and work engagement into Model 6. Results showed that the interaction term was statistically significant ( $\beta = 0.273, p < 0.01$ ). Following the recommendation of prior research, we further tested the conditional indirect effect (Preacher and Hayes, 2004; Hayes, 2013). We controlled conditional effect of work engagement on the relationship between psychological voice climate and individual change readiness. Results from 5000 times bootstrapping showed that conditional effect was 0.04 (95% confidence interval = [0.01, 0.09]). Specifically, when work engagement was high, the indirect effect was significant (indirect effect = 0.09, 95% confidence interval = [0.04, 0.17]); however, when work engagement was low, the indirect effect was not significant (indirect effect =  $-0.01$ , 95% confidence interval = [ $-0.06$ , 0.04]). The findings provided support for Hypothesis 3.

In **Figure 2**, we plotted the conditional indirect effects of psychological voice climate on individual change readiness through normative commitment at various levels of work engagement (mean minus one standard deviation, mean plus one standard deviation). The solid lines were the estimates and the dashed lines represented for the upper and lower 95% confidence intervals. The 95% confidence interval of higher work engagement did not include 0; that is, the indirect effect was significant at the condition of higher work engagement. However, the 95% confidence interval of lower work engagement included 0; thus, the indirect effect was not significant at the condition of lower work engagement. Therefore, the indirect effects of psychological voice climate on individual change readiness was found stronger for employees with higher work engagement.

## DISCUSSION

Why do public sector employees, surrounded by a positive voice climate, accept and support organizational changes? Grounded in the norm of reciprocity and the social identity theory, this research found that normative commitment mediates the relationship between psychological voice climate and individual change readiness; this indirect effect is conditional upon work

**TABLE 1** | Means, standard deviations, and correlations of variables.

	Means ( <i>M</i> )	Standard Deviation ( <i>SD</i> )	1	2	3	4	5	6	7
(1) Gender <sup>a</sup> (T1)	0.65	0.48							
(2) Level of education <sup>b</sup> (T1)	2.34	0.63	0.34**						
(3) Organizational tenure (T1)	17.93	12.25	−0.30**	−0.50**					
(4) Psychological voice climate (T1)	3.29	0.71	−0.13	0.19	−0.14	(0.95)			
(5) Normative commitment (T2)	3.85	0.63	−0.11	−0.15*	0.02	0.33**	(0.86)		
(6) Work engagement (T2)	3.85	0.59	−0.04	−0.24**	0.12	0.34**	0.60**	(0.94)	
(7) Individual change readiness (T2)	3.59	0.54	0.03	−0.05	−0.05	0.34**	0.46**	0.53**	(0.79)

*N* = 187, \**p* < 0.05, \*\**p* < 0.01, Coefficient composite reliabilities are reported in the diagonal. T1 = first-wave employee survey; T2 = second-wave employee survey. <sup>a</sup>0 = female, 1 = male. <sup>b</sup>1 = senior high school (senior vocational school)/2 = bachelor degree /3 = master degree or doctoral degree.

**TABLE 2** | Results of overall model.

Dependent variables	Normative commitment	Individual change readiness	Individual change readiness	Individual change readiness	Individual change readiness	Individual change readiness
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constant	−1.496	3.656	3.788	3.641	3.563	3.494
Gender <sup>a</sup> (T1)	−0.096 (−1.02)	0.081 (1.10)	−0.008 (−0.90)	0.048 (0.60)	0.019 (0.26)	0.103 (0.14)
Level of education <sup>b</sup> (T1)	−0.0139 (−1.75)	−0.032 (−0.47)	−0.068 (−0.95)	−0.024 (−0.37)	0.027 (0.42)	0.026 (0.41)
Organizational tenure (T1)	−0.004 (−1.07)	−0.003 (−0.79)	−0.002 (−0.58)	−0.002 (−0.48)	−0.003 (−0.92)	−0.019 (−0.63)
Psychological voice climate (T1)	0.485** (6.09)		0.255** (4.69)	0.150** (2.83)	0.010 (2.90)	0.132** (2.61)
Normative commitment (T2)		0.402** (7.04)		0.345** (5.79)	0.142* (2.12)	0.135* (2.06)
Work engagement (T2)					0.348** (4.88)	0.355** (5.03)
Normative commitment × Work engagement						0.273** (3.41)
<i>F</i>	11.00**	13.06**	6.10**	12.44**	15.73**	15.94**
Adj <i>R</i> <sup>2</sup>	0.18	0.21	0.09	0.24	0.32	0.36
Δ <i>R</i> <sup>2</sup>				0.14**	0.09**	0.04**

All regression coefficients are unstandardized and the value in the parenthesis is *t*-value. Model 4, 5, and 6 were compared with model 3 separately. T1 = first-wave employee survey; T2 = second-wave employee survey. \**p* < 0.05, \*\**p* < 0.01. <sup>a</sup>0 = female, 1 = male. <sup>b</sup>1 = senior high school (senior vocational school)/2 = bachelor degree/3 = master degree or doctoral degree.

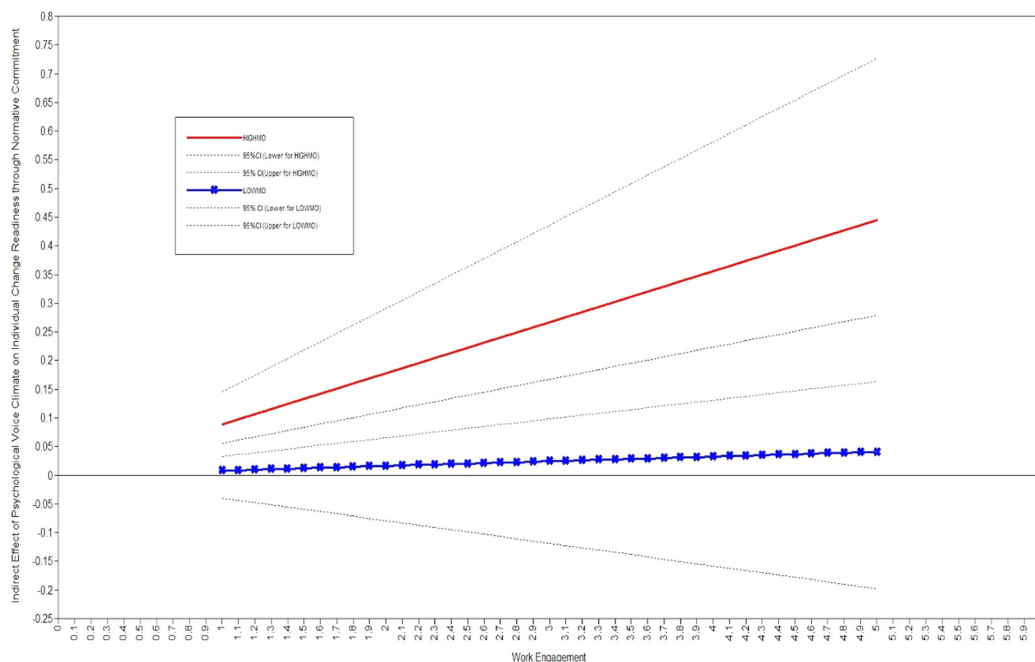
engagement. By developing and examining these meditation and moderated-mediation mechanisms, thereby finding out answers to the above question, this research advances existing theories and practices in the field of public sectors' change issues.

## Theoretical Implications

Since the development of the individual change readiness construct, extensive literature has outlined many factors reflecting beliefs, intentions, and attitudes to predicting an individual's positive reactions toward the planned or unforeseen change initiatives (Choi and Ruona, 2011; Shah et al., 2017). Due to these advances, a strong consensus exists regarding the salient roles of the internal circumstances and the level of change readiness in understanding the processes that contribute to successful change implementation (Mento et al., 2002; Rafferty et al., 2013). Consequently, psychological climate for change was believed to influence employees' attitudes toward organizational change (Bouckennooghe et al., 2009). Although psychological voice climate encourages employees to challenge the status quo to improve the situation, there is relative little known regarding how (i.e., underlying explanatory processes) and when (i.e., boundary conditions of the underlying processes) psychological voice

climate is related to individual change readiness. Furthermore, the traditional perspective emphasizes the necessity of voice climate under which change occurs to foster voice behavior concerning change-related issues (Morrison et al., 2011), but ignores the essence of the conditions that are independent of organizational change and existed prior to the introduction of the change (Oreg and Sverdlik, 2011).

Responding to recent calls to explore whether and how pre-change internal contexts generate effects on employee responses to organizational change (van der Voet and Vermeeren, 2017), our research adopted the social identity theory and conducted a two-wave survey to analyze the relationship between pre-change psychological voice climate and individual change readiness occurring in the change process. The results confirmed the indirect effect of psychological voice climate on individual change readiness through normative commitment, implying that the pre-change internal context as perceived by the change recipients may be a key determinant for employees' responses to organizational change. We suggest that pre-change voice climate could function as a change-conducive internal context and become an even more important success factor for realizing organizational change. Therefore, our research has increased our understanding of the



**FIGURE 2 |** Indirect effects of psychological voice climate on individual change readiness through normative commitment conditional on work engagement.

relationship between psychological voice climate and individual change readiness.

Our research has also added knowledge to the public management literature about the mechanisms underlying the influential process of psychological voice climate on individual change readiness by incorporating the least studied component of organizational commitment (i.e., normative commitment). Although the significant effect of psychological voice climate on affective commitment has been examined in prior research (Farndale et al., 2011; McKay et al., 2013; Ditchburn and Hames, 2014), different mindsets of organizational commitment develop in different ways and have different implications for employee attitudes and behaviors (Powell and Meyer, 2004). In addition, substantial differences in employer-employee relationships and human resource management practices exemplify differences between public and private sector employment in Taiwan, which is likely to have different implications for the nature of commitment. Usually, the starting wage for employees in Taiwan's public sector is higher than for those in the private sector; furthermore, given the security of employment and guaranteed pay increases, the public sector is a highly attractive career choice in Taiwan. As public organizations make large investments in employee compensation and benefits, we expect normative commitment to be a critical factor predicting public sector employees' attitudes and behaviors. Therefore, this study drew on the social identity theory to understand the mediating role of normative commitment between psychological voice climate and individual change readiness.

Consistent with our expectations, the results confirmed the aforementioned hypotheses. Psychological voice climate was

found to have a significant effect on normative commitment, which further mediated the effect of psychological voice climate on individual change readiness. In accordance with the social identity theory, when employees perceive that they have the opportunity to speak up their opinions and have their ideas taken into consideration, they feel and perceive themselves as belonging to this organization and produce greater normative commitment. The sense of moral duty to give back to the organization would foster employees to do the right thing on the behalf of the whole organization. During the organizational change process, the right thing means increasing change readiness. Based on the findings, we suggest that such a mechanism will be a powerful filter through which public sector employees will interpret their whole organizational environment while normative commitment will be a critical factor for transforming a pre-change voice climate into change readiness.

Finally, our research has essentially found that work engagement moderated the indirect effect of normative commitment between psychological voice climate and individual change readiness. Prior research mainly argued that work engagement may be important for countering potential dysfunctional attitudes and behaviors relevant to organizational change (van den Heuvel et al., 2010). The current study found that work engagement strengthened the effect of psychological voice climate on normative commitment as well as the subsequent individual change readiness. This finding is consistent with Schaufeli et al.'s (2002) argument that highly engaged employees have a sense of energetic and effective connection with their work activities, and they believe themselves able to deal with the demands of their job completely. In our

study, when experiencing a high level of moral duty and a strong feeling of belonging to the organization as a result of perceptions of positive voice climate, highly engaged employees would utilize their energy to cope with the job demands accompanied by organizational change. Thus, our research provides new knowledge for the field of organizational change by clarifying the boundary condition in which psychological voice climate and normative commitment can effectively contribute to individual change readiness.

## Practical Implications

Our research has several practical applications for both public employees and public organizations undergoing organizational change. First, prior to the introduction of change initiatives, top management can induce higher levels of normative commitment by creating a sense of perceived influence on the decisions regarding the improvement of efficiency and effectiveness for the public organization. Combined with the symbolic meaning of demonstrating their confidence in the ability and wisdom of employees, managers need to convince employees that their opinions have been heard and taken into consideration. When employees feel confident that they can express their opinions successfully and doing so will not lead to their being punished or ignored, they become more willing to express their opinions and suggestions to do good for their organization.

Second, this study demonstrates the critical role of normative commitment in transforming psychological voice climate into readiness for change. Based on social exchange theory logic, as a result of the enhanced experience of inclusion, development, and personal growth from their organization, employees' normative commitment increases (Yucel et al., 2014). As previously mentioned, more and more governments are facing increased financial deficits. Rather than offering economic and financial rewards, management of public sectors should develop a positive employee attitudinal approach using psychological motivation deriving from the climate that encourages participation in decision making, autonomy, and opportunities for personal growth and development (Edwards and Peccei, 2010).

Finally, our findings show that work engagement enhances the indirect effect of psychological voice positive on individual change readiness, which points to the need to support and cultivate engagement in the workforce. Following Christian et al.'s (2011) suggestion, managers can foster work engagement by designing jobs that include motivating characteristics and highlight the meanings of work in public organizations. In addition, because perceived organizational support is a significant predictor of work engagement (Saks, 2006), public organizations can implement organizational programs that address employees' needs and concerns, express caring, and demonstrate support (e.g., flexible work arrangements), which may induce employees to reciprocate with higher levels of work engagement.

## Limitations and Directions for Further Research

Despite this study's interesting findings and the contributions it makes to the field, it still has several limitations. First,

the collection of data in one government-owned institute of research and development in Taiwan may potentially limit generalizability. Our observations should be interpreted with caution because public sectors *per se* and their employees in general may have different backgrounds and dimensions of cultures from public organizations in other countries. Thus, replicating the current study using data from other settings to see if the results hold in different kinds of public organizations and countries would be useful (Perry and Hondeghem, 2008). We also encourage researchers to explore the possibility of cultural differences occurring in psychological voice climate, normative commitment, work engagement, and individual change readiness.

Second, in the two-wave design using self-reported survey of employees, we had difficulty in contacting the leaving employees who had participated at the first-wave survey. The remaining employees were those who had "survived" from the organizational restructuring. We admit that, in such a sample, the responses potentially had a self-selection bias. Such a restriction of range would mean that the variance of the variables in this study has been underestimated, leading to a conservative estimation of their effect (Kalimo et al., 2003). The data revealed considerable variance in psychological voice climate ( $SD = 0.71$ ), normative commitment ( $SD = 0.63$ ), work engagement ( $SD = 0.59$ ), and individual change readiness ( $SD = 0.54$ ). These findings show that the respondents did not present themselves in a favorable or adverse way when assessing their own levels of these variables, indicating that the self-selection bias would not be serious in this study. Additionally, while the purposes of this study was to explore whether the pre-change internal context influences employees' attitudes toward organizational change, the participants responding to both of the first-wave and second-wave surveys are likely to be the appropriate subjects for studying the experiences during the organizational change. However, we still suggest future studies use a multi-source data or objective indices related to experiences of significant organizational change to eliminate the self-selection bias to the minimum level.

Finally, an implication that arises from our review of the change readiness literature highlights the importance of considering what high and low levels of change readiness mean in an organizational setting (Rafferty et al., 2013). For example, Ford et al. (2008) have argued that low readiness for change may actually be an opportunity for an organization to identify the weaknesses in the execution of its organizational change plans. As such, there is need to examine the influence of individual change readiness on employee attitudes and job performance to fully understand the influence of psychological voice climate on change outcomes as a whole.

## AUTHOR CONTRIBUTIONS

M-LW, C-HL, and M-SL: Contributed to study conception and design. M-LW and M-SL: Contributed to acquisition of data. C-HL and M-LW: Contributed to analysis and interpretation



of data. M-LW, C-HL, and M-SL: Contributed to drafting of manuscript. M-LW and C-HL: Contributed in critical revision. M-LW and C-HL: Contributed to approval of the version of the manuscript to be published (the names of all authors must be listed).

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# Can Leader–Member Exchange Contribute to Safety Performance in An Italian Warehouse?

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**Introduction:** The research considers safety climate in a warehouse and wants to analyze the Leader–Member Exchange (LMX) role in respect to safety performance. Griffin and Neal's safety model was adopted and Leader–Member Exchange was inserted as moderator in the relationships between safety climate and proximal antecedents (motivation and knowledge) of safety performance constructs (compliance and participation).

**Materials and Methods:** Survey data were collected from a sample of 133 full-time employees in an Italian warehouse. The statistical framework of Hayes (2013) was adopted for moderated mediation analysis.

**Results:** Proximal antecedents partially mediated the relationship between Safety climate and safety participation, but not safety compliance. Moreover, the results from the moderation analysis showed that the Leader–Member Exchange moderated the influence of safety climate on proximal antecedents and the mediation exist only at the higher level of LMX.

**Conclusion:** The study shows that the different aspects of leadership processes interact in explaining individual proficiency in safety practices.

**Practical Implications:** Organizations as warehouses should improve the quality of the relationship between a leader and a subordinate based upon the dimensions of respect, trust, and obligation for high level of safety performance.

**Keywords:** safety climate, leader–member exchange, safety performance, safety participation, warehouse

## INTRODUCTION

In 28EU countries, transportation and storage sector got the third rate of Fatal and non-fatal accidents at work (Eurostat, 2015). In US, Occupational Safety and Health Administration [OSHA] (2004) reported that the fatal injury rate for the warehousing industry is higher than the national average for all industries. Warehouse is a workplace that can be hazardous in numerous ways, such as: unsafe use of forklifts; improper stacking of products; failure to use proper personal protective equipment; failure to follow proper lockout/tagout procedures; inadequate fire safety provisions; or repetitive motion injuries. There are rules and procedures that have to be respected for a safe job. In fact, workers have to collaborate and help colleagues to prevent injuries and supervisors have to monitor, instruct and inform subordinates to improve their own safety performance.

A wide range of experts in safety with different educational and professional backgrounds developed theories and practices that aim to reduce the number of injuries and accidents. One of the most widespread framework on this topic is the Griffin and Neal (2000) model that stands in a conceptual analysis of safety performance as individual work behavior for which proximal antecedents are safety motivation and knowledge of safety issues and distal antecedents regard the safety climate. Griffin and Neal (2000) original model doesn't consider the quality of relationship between supervisors and subordinates in safety perspectives, and this could be important in a workplace where the activities of instruction and information are basic for safe behaviors. The Leader–Member Exchange theory (LMX), coined from social exchange theory, contemplates this relationship and analyses its impacts on attitudes and behaviors appraising aspects as respect, trust, and obligation (Graen and Uhl-Bien, 1995). The success of LMX theory stands in having demonstrated influences on various outcomes such as task performance, organizational commitment, employee's satisfaction and turnover intentions (Zacher and Frese, 2011). In addition to this, research in high-risk environments suggests that high quality LMX relationships are associated with increased safety communication, increased subordinate safety commitment, and fewer accidents (Hofmann and Morgeson, 1999). Hofmann et al. (2003), with a more specific focus, found that LMX and safety climate are interrelated to define behaviors as safety citizenship.

Summing it up, the present research wants to integrate Hofmann et al. (2003) suggestions into the Griffin and Neal (2000) model on safety performance and study the role of LMX in a workplace, as a warehouse, where quality of relationships are basic for safety. Indeed, our study tries to improve Hofmann et al. (2003), model including safety motivation and knowledge of safety as mediators.

## THEORETICAL FRAMEWORK

### Griffin and Neal's Model on Safety Performance

Griffin and Neal (2000) presented a study providing a theoretical pathway for individual safety performance and distinguished among the components of safety performance and its proximal (motivation and knowledge) and distal (safety climate) antecedents.

With regard to the components of safety performance, based on theories of individual performance (e.g., Campbell et al., 1993), they showed the distinction between safety compliance and safety participation. The first is about adhering to safe work practices and, in a broader sense, indicates behaviors directly related to work tasks. Safety compliance has been defined as engaging in activities that are part of the formal work procedures (i.e., correct use of equipment) and “applying appropriate work practices to reduce exposure to potential hazards and injury” (Fugas et al., 2011, p. 68). When safety participation was spotlighted, it has become evident that these kind of behaviors can enhance safety within the work environment and, generally toward “the maintenance of overall safety system” (Griffin and

Neal, 2000, p. 356); this class of behavior can predicted micro-accidents, property damage, near-miss events and lost-time injuries (Curcuruto et al., 2015; Saracino et al., 2015).

While those addressed before were some components of safety performance, also safety antecedents are elements of the safety conduct pathway; in this context, the most relevant are safety knowledge and safety motivation (Curcuruto et al., 2016). In their study, Griffin and Neal (2000) showed that both knowledge and motivation mediated the impact of employees' perceptions of safety on individual safety behavior; the model has been recently validated across different national contexts (Barbaranelli et al., 2015).

In this perspective, safety is a process rather than a desired outcome and is only partially due to the experience of the worker. A modern idea of safety stands in an ongoing, multidimensional and multilevel effort from employees. In this context, a motivated worker is willing to put an extra effort for safety and attributes a special value to safety behaviors (Neal and Griffin, 2006). On the other hand, safety knowledge is presented as the extent to which employees have a clear idea of safety processes and correct procedures and behaviors (Braunger et al., 2013). Griffin and Neal (2000) considered safety knowledge and motivation (Mariani et al., 2015) determinants of safety performance and mediators between safety climate and safety performance too.

Safety climate is considered in Griffin and Neal model a distal determinant of safety performance based on theories of psychological climate in organizations (e.g., James and McIntyre, 1996).

According to Zohar, safety climate can be seen as employee perception of the priority an organization (or direct supervisor) placed on safety (Zohar and Luria, 2005; Griffin and Curcuruto, 2016). It is constituted by a unified set of cognitions (held by workers) regarding the safety aspects of their organization. These cognitions, according to Zohar (2002), were related to employee perception of the relative importance management places on safety.

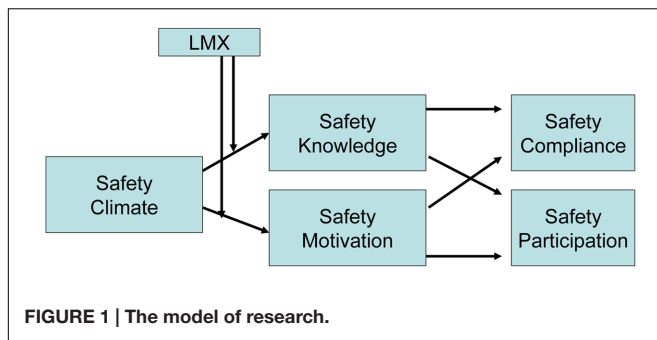
While there was substantial concurrence on the definition of safety climate, the dimensionality of the construct is debatable. Some researchers argued for a mono-dimensional construct as expression of managerial commitment for safety (e.g., Clarke and Ward, 2006), on the other hand, others considered safety climate as multi-dimensional (e.g., Neal et al., 2000; Zohar and Luria, 2005).

Zohar and Luria's (2005) study focused on first-level supervision, considering a three-factor structure consisting of Active Practices (Monitoring–Controlling), Proactive Practices (Instructing–Guiding), and Declarative Practices (Declaring–Informing). Johnson (2007) confirmed this tripartite safety climate model.

In a warehouse, caring practices are about supporting workers, compliance stands for underlying respect of rules; coaching behaviors include the development of competences and knowledge. In the present study, these dimensions were picked to measure supervisory behaviors, as a general dimension.

Therefore, the first main objective of the present research is to verify the model Griffin and Neal (2000) in a warehouse workplace.





So, the hypotheses examine the mediations of motivation and knowledge (as proximal antecedents) between measures of safe and safety compliance and participation (**Figure 1**), following the Griffin and Neal (2000) model above presented.

- H1a: *Safety knowledge has a mediational role in the relationship between safety climate and both safety compliance (i) and participation (ii).*
- H1b: *Safety motivation has a mediational role in the relationship between safety climate and both safety compliance (i) and participation (ii).*

The hypotheses assign key roles to safety knowledge and safety motivation, as individual determinants for performances of safe behaviors; whereas safety climate has been adopted as organizational antecedent of the safety performance. The model therefore adopts, in a combined way, individual and organizational perspectives to explain safety performance.

## The Role of LMX in Safety

The positive role of leadership in safety was considered over the last two decades (e.g., Griffin and Hu, 2013). Leaders are relevant actors in safety as they can establish practices, rules and procedures – i.e., define organizational aspects of safety –, and communicate, motivate employees and give them good feedback for their work. In other words, they are expected to have an impact on safety antecedents and safety components. However, they are often called into question when research focuses on practices aimed to ensure safety on an organizational and formal level, while research on how they strive to achieve it on an informal level is more lacking – and cannot solely be about feedback. More precisely, there is one aspect on which safety research lacks most: the relationship the supervisor and the employee. This is the field of the LMX theory, coined from social exchange theory, which asserts that the unique relationship and exchange between the leader and the follower do impact on attitudes and behaviors of both (Scandura, 1999). LMX is a leadership framework that assesses the quality of the relationship between a leader and a subordinate based upon the dimensions of respect, trust, and obligation (Graen and Uhl-Bien, 1995) and its basis come from social exchange theory that claims how in a high-quality exchange, parties provide valuable assets to each other (Blau, 1964). Graen and Uhl-Bien (1995) explained this relationship in a precise way: “An offer will not be made and accepted without (1) mutual

respect for the capabilities of the other, (2) the anticipation of deepening reciprocal trust with other and (3) the expectation that interacting obligation will grow over time as career-oriented social exchange blossom into a partnership” (p. 237). In fact, development of LMX is not based on a personal or friendship relationship; moreover, it is based upon the characteristics of the working relationship based upon the before mentioned dimensions (Graen and Uhl-Bien, 1995). High satisfaction of the follower from this relationship will have many positive impacts such as the overall satisfaction of the follower with the leader, increased follower performance, and follower positive organizational citizenship behavior (Zacher and Frese, 2011). On the other hand, if there is a low-quality LMX in which the leader only provides to the follower basic information that are necessary for performance and fulfilment of the job the follower performance and organizational citizenship will consequently be lower (Zacher and Frese, 2011). The basic idea behind LMX is that the leader develops two groups, the in-group and the out-group in an organizational context. To the in-group members the leader gives greater responsibility, more rewards and attention and has an elevated communication and a relationship based on trust, respect and mutual sense of obligation. In this case, the “in-group” members experience a higher quality leader–follower relationship and therefore they are prone to see the leader in a more positive way concluding how the leader is making an investment in them (Pierce et al., 2003). They feel like this high-quality relationship is based on the “rules of reciprocity” and they develop an “obligation” to give something back to the leader. Basically, they feel as if the leader invests in them, they should engage in actions and behavior that the leader values. In according to this, we believe that a high-quality relationship will be related to positive behaviors concerning safety performance. In fact, LMX has an impact on subordinates in a way that they will expend their roles beyond what is formally expected by engaging in citizenship behaviors oriented around safety and focus on improving safety performance of other team members and the organization (Hofmann et al., 2003).

In the present study, we want to provide a contribution on how the quality of the relationship between leaders and organizational members influences safe behaviors, as well as evidences on LMX were sought. This investigation was held to provide a theoretical model for our research that is collecting empirical evidences for our questions and hypotheses. Precisely, basing on the model provided by Griffin and Neal (2000), the objective is to provide evidence for the moderating role of LMX on the relationship between safety climate and safety compliance and participation. The *ratio* is that safety climate is related to the employee perception of the relative importance that management places on safety. Obviously, if we want that safety values and suggestions of supervisors are collected by employees it is necessary that the relationships between leader and members have a good quality. **Figure 1** shows the model of the research that follows the results of the Griffin and Neal (2000) research and the suggestions of Scandura (1999), presented above and forms the following hypothesizes:

- H2a: *The LMX has a moderating role on the relationship between Safety climate and Safety knowledge. This last relationship exists where there is a high LMX.*
- H2b: *The LMX has a moderating role on the relationship between Safety climate and Safety motivation. This last relationship exists where there is a high LMX.*
- H3a: *The LMX has a moderating role on the mediational role of safety knowledge on safety compliance (i) and participation (ii) (moderated mediation). The relationships exist where there is a high LMX.*
- H3b: *The LMX has a moderating role on the mediational role of safety motivation on safety compliance (i) and participation (ii) (moderated mediation). The relationships exist where there is a high LMX.*

The second set of hypotheses regards the role of working relationship between the supervisor and the employee. Our research hypothesis explores how the quality of the LMX can change the strength of climate effects on safety knowledge/motivation as well as the strength of indirect effects of safety climate on performing safe behaviors.

## METHODOLOGY

### The Context of the Research and Participants

Our research was set in a warehouse of great-size engineering company based in north Italy, which produces a great variety of industrial objects: from small fasteners to wheels for agricultural machines. The warehouse was structured in two basic functions, inbound (materials that is received) and out bounding (materials that is sent outside). The roles were divided based upon the working location as following: planography/putaway 16%; picking 15%; pedestrian area 11%; loading 8%; working in more than one zone 8%; packing 7%; receiving 5%; internal packaging 3%, quality 3%; maintenance 3%; other 10%; no answer 13%. Hiendrich's pyramid for 3 year (2011–2013) showed the following data: 66 first aids, 6 lost time accidents and zero severe, and fatal injuries. Safety is conceived in function of a prescribed set of behaviors: workers are explicitly advised about norm and sanctions. A particular example of this safety management is offered by the surveillance patrols that supervise the workplace in order to prevent violations.

The sample size consisted of 133 workers (74% of the warehouse population); 53% worked from zero to fifteen years in the organization and 14% had a role in safety practices (e.g., emergency team).

### Procedure

A structured anonymous questionnaire was used to collect the data. Trained research assistant psychologist in a pencil-and-paper format administered the questionnaire.

The study assured to respondents anonymity and confidentiality. The questionnaire included a statement regarding the personal data treatment, in accordance with the Italian privacy law (Law Decree DL-196/2003). The workers

authorized and approved the use of anonymous/collective data for possible future scientific publications.

Because the data was collected anonymously and the research investigated psychosocial variables not adopting a medical perspective, ethical approval was not sought.

In the introduction part of the study it was explained how there is no right or wrong answer and how the answer should be as honest as possible. The participants completed the questionnaires privately and voluntarily in the workplace. The age and gender were not asked in order to guarantee the anonymity of the participants.

### Measures

The ZSCQ (Zohar and Luria, 2005) version of 11 items, validated by Johnson (2007), was used to measure safety climate through the employee perception of the priority that manager places on safety. Respondents expressed an opinion on a five-point Likert scale representing levels of agreement. For construct validity, since that the number of participants didn't permit the adoption of confirmatory factor analysis with an 11-item scale (Bentler and Chou, 1987), the only exploratory factor analysis, with principal axis factoring extraction method, was performed. Results shows a one-factor structure that explains the 53.5% of variance and an alpha coefficient of .91.

The LMX-7 scale for Subordinate (LMX, Scandura and Graen, 1984) was adopted to evaluate the relationship of subordinates with his/her supervisor (dyadic exchange). The scale consists of seven questions, with a five-point Likert scale with a range of responses from "not a bit", "a little", "a fair amount", "quite a bit", "a great deal." Some of the questions were: "How well does supervisor leader understand your job problems and needs?". The exploratory factor analysis, with principal axis factoring extraction method, showed a one-factor structure that explained the 57.4% of variance. Moreover, the confirmatory factor analysis verified the one-factor model (GFI = 0.90, AGFI = 0.95, CFI = 0.97, RMSEA = 0.08). Previous researches, with Italian samples, showed an excellent Cronbach's alpha (i.e., Portoghese et al., 2012). In this research alpha of Cronbach was 0.87.

Toderi et al. (2015) Italian version of Griffin and Neal model scales was adopted to measure Motivation, Knowledge and the components of the safety performance, that are compliance and participation. Every measure consisted in four items that used a five-point Likert scale to record the participant's opinion. Cronbach's alpha was 0.90 for Knowledge, 0.89 for motivation, 0.87 for compliance and 0.72 for participation.

The adaptation of the LMX-7 scale for Subordinate and of ZSCQ, version of Johnson (2007), to Italian language was done taking into account the standards recommended by the International Test Conference when adapting an instrument to a foreign language (Hambleton and Zenisky, 2011). The scales were firstly translated into Italian by two translators who were fluent in Italian and English. The translations were discussed with five experts, and some corrections were made. The back translation was conducted by two bilingual professors with no previous knowledge of the scale. This back-translated version was compared with the original English version.

However, a qualitative pilot study was carried out with six employees from the companies to evaluate the language forms and ensure a proper understanding of the all scales.

The questionnaire added some socio-organizational variables as the working sector and the years that an employee spent in the organization. In addition to this, focus groups with six members from the company were organized in order to check the questionnaire translation and to investigate the clarity and the pertinence of the items respect to workplace. Appendix 1 shows the items of scales which were used in the present research.

## Data Analysis

The statistical analysis plan consisted of the following steps: (1) calculation of the descriptive statistics, explorative factor analysis, confirmatory factor analysis, alpha of Cronbach and correlation indexes of the variables; (2) examination of the common method effect; (3) test of hypothesis 1a and 1b by mediation analysis; (4) test of hypothesis 2a and 2b by moderator analysis; (5) test of hypothesis 3a and 3b by moderated mediation analysis.

The degree to which common-method variance could be a threat to our analyses was analyzed, because a one-wave self-report design was used. Harman's single-factor test by Confirmative Factor Analysis (CFA) was performed on six variables to verify the hypothesis that a single factor can account for all of the variance in our data (Podsakoff et al., 2003). Asymptotically distribution-free method, as implemented in AMOS software, was adopted because the variables could have not-normal distribution (**Table 1**) and CFI and RMSEA indexes were used to analyze the model fit.

PROCESS (2.13 vers.), a macro for SPSS developed by Hayes (2013), was adopted to test simple mediation (Hypothesis 1), simple moderation (Hypothesis 2), and moderated mediation (Hypothesis 3). The variables in the proposed model were mean centered to minimize multi-collinearity. Simple Mediation (model n.4 of PROCESS macro), simple Moderation (model n.1 of PROCESS macro) and moderated mediation (model

n.7 of PROCESS macro) were tested using the contemporary bootstrapping technique described by Hayes (2013), 5000 resampling with replacement. Bootstrapping was adopted because it provides not only a more reliable estimate of indirect effects; moreover, it does not make the often-unrealistic assumption about normality in the sampling distribution (Hayes, 2013). Additionally, this method is appropriate when sample sizes are relatively small (Hayes, 2013) because it produces a distribution using the observed data, from which statistical effects are estimated. This method was considered more reliable than a non-bootstrapping approach in the current sample, owing to the fact that 133 cases were included in the analysis.

In addition to this, bootstrapping method also has higher power and better Type I error control compared to other mediation analyses (Preacher and Hayes, 2008). Significance was determined by examining the 95% confidence interval produced by bootstrapping mediation analyses. In order for the mediation model to attain significance, the confidence interval must not include zero.

The total number mediation models, as the total number of moderated mediation models stressed throughout this research, were four: we had one independent variable (Safety climate), two mediators (safety motivation and knowledge) and two dimensions for safety performance, acting as dependent variables (safety compliance and participation). In moderated mediation model there was one moderator (LMX) too.

## RESULTS

### Preliminary Analysis

**Table 1** shows descriptive statistics, alpha of Cronbach and correlation indexes for research variables. Results show that some skewness and kurtosis indexes have values higher than two standard errors, highlighting a significant difference respect to normal distribution (**Table 1**); substantially good is the internal homogeneity of the scales, as measured by alpha of Cronbach, and all positive are the relationships among the six variables.

Before testing our hypothesis, and considering the one-wave self-report design of the study, the common-method variance bias was analyzed. Harman's single-factor test on common-method variance showed fit indexes not adequate for only one factor model (CFI = 0.74; RMSEA = 0.16). So, the hypothesis that common method variance could explain a substantial amount of covariance among variables was rejected. Therefore, variance is attributable to the constructs of the measures rather than to the measurement method.

### Mediation and Moderation Analysis

**Table 2** shows the main results of four mediation analyses. Bootstrap analysis showed that the indirect effects of Safety climate, via Knowledge, on Performance compliance and on Performance participation were significantly different from zero. Direct effect of Safety climate on Performance participation was significantly different from zero too. Moreover, results showed that the indirect effects of Safety climate, via Motivation, on

**TABLE 1 | Correlations (Pearson's *r*) and descriptive statistics of the scales (*N* = 133).**

	1	2	3	4	5	6
1. Safety climate	(0.90)					
2. LMX	0.65**	(0.87)				
3. Safety Knowledge	0.18*	0.23**	(0.90)			
4. Safety Motivation	0.08	0.06	0.47**	(0.89)		
5. Performance Compliance	0.13*	0.03	0.56**	0.61**	(0.87)	
6. Performance Participation	0.34**	0.28**	0.28**	0.41**	0.39**	(0.72)
Mean	3.56	3.72	4.29	4.05	3.20	3.56
Standard deviation	0.98	0.80	0.69	0.75	0.81	0.98
N. of items	11	7	4	4	4	4

Cronbach's alpha in brackets; \**p* < 0.05, \*\**p* < 0.01, \*\*\**p* < 0.001.

TABLE 2 | Mediation analysis ( $N = 133$ ).

Mediator	Dependent variable	Direct effect					Indirect effect			
		Effect	SE	T	LLCI	ULCI	Effect	Boot SE	Boot LLCI	Boot ULCI
Safety Knowledge	Performance Compliance	0.023	0.059	0.388	−0.094	0.139	0.076	0.041	0.004	0.165
Safety Knowledge	Performance Participation	0.269	0.067	4.012***	0.136	0.4014	0.032	0.028	0.001	0.105
Safety Motivation	Performance Compliance	0.067	0.055	1.234	−0.041	0.176	0.031	0.040	−0.047	0.113
Safety Motivation	Performance Participation	0.282	0.065	4.365***	0.154	0.409	0.019	0.023	−0.018	0.075

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

Performance compliance and on Performance participation were not significantly different from zero. The direct effect of Safety climate on Performance participation was significantly different from zero in this case as well. These results confirmed H1 but not H1b.

To test the H2a hypothesis that the Safety Knowledge problem is a function of Safety climate, moderated by LMX, a hierarchical multiple regression analysis was conducted.

The interaction term between Safety climate and LMX accounted a significant proportion of the variance in Knowledge,  $\Delta R^2 = 0.06$ ,  $\Delta F(1,132) = 7.36$ ,  $p = 0.008$ ,  $b = 0.17$ ,  $t(132) = 2.71$ ,  $p < 0.01$ . Examination of the interaction plot (Figure 2) showed an effect that increases when LMX increases: only at high levels of LMX, Safety climate influences Knowledge (Effect = 0.26; SE = 0.12;  $t = 2.06$ ;  $p < 0.05$ ; LLCI = 0.01; ULCI = 0.50).

The same procedure was adopted to test H2b hypothesis. The interaction term between Safety climate and LMX accounted a significant proportion of the variance in Motivation,  $\Delta R^2 = 0.09$ ,  $\Delta F(1,132) = 11.87$ ,  $p = 0.001$ ,  $b = 0.19$ ,  $t(132) = 3.45$ ,  $p < 0.001$ . Examination of the interaction plot (Figure 2) showed an effect of Safety climate on Motivation that increases when LMX increases: only at high levels of LMX, Safety climate influences Motivation (Effect = 0.30; SE = 0.11;  $t = 2.76$ ;  $p < 0.01$ ; LLCI = 0.09; ULCI = 0.52).

So, these evidences confirmed the H2a and H2b hypothesis.

## Moderated Mediation Analysis

Four moderated mediation analyses were performed to test hypotheses 3a and 3b, results are presented in Table 3.

Bootstrap analysis showed that Safety climate had an indirect effect on performance compliance and on performance participation through Knowledge with a high level of LMX. Whereas the product terms were significantly different from zero at high levels of LMX, they were not significantly different from zero at low and medium levels of LMX (Table 3). These evidences confirm hypothesis 3ai and hypothesis 3aii.

Similar results regard the second block of analysis. Safety climate had an indirect effect on performance compliance and on performance participation through Motivation with a high level of LMX. There were a significant differences from zero of product terms at high levels of LMX, whereas they were not significantly different from zero at low and medium levels of LMX (Table 3). In fact, these evidences confirm hypothesis 3bi and hypothesis 3bii.

## DISCUSSION

### Conclusion and Discussion

The present research aimed to apply a model of Griffin and Neal (2000) to investigate the impact of Safety climate on employee safety performance and to highlight the role of knowledge, motivation and LMX, in particular, on this path. In our study, indeed we wanted to observe the quality of the relationship between leaders and employees and its impact on their resources for safety performance. The first set of Hypotheses considered Safety knowledge and safety motivation as mediators in the relationship between safety climate and both safety compliance and participation.

We found that knowledge mediated the relationship between safety climate and safety performance (compliance and participation) following the model of Griffin and Neal (2000). This result supported Hypothesis 1a. On the other hand, motivation didn't play a mediation role, therefore Hypothesis 1b was not verified. However, the correlation indexes show that the role of knowledge and motivation, in respect to safety performance proved to be important following the suggestions of Campbell et al. (1993).

The second set of Hypotheses regarded the moderator role of LMX between safety climate and both safety knowledge and motivation. Both, hypothesis 2a and 2b were supported by results: LMX played a moderator role between safety climate and knowledge/motivation variables. High levels of LMX permitted to safety climate of influencing knowledge and motivation.

The third set of Hypotheses considered the moderator role of LMX in a model where safety knowledge and motivation are mediators between safety climate and safety compliance/participation behaviours. Moderated mediation analysis confirmed all of that: knowledge and motivation were mediators only when LMX showed high levels. Therefore, hypothesis 3a and 3b were confirmed for both performance indicators, compliance and participation.

All this takes on a stronger meaning if we think that the model of Griffin and Neal was also verified with Italian workers while not operating in warehouses (Barbaranelli et al., 2015).

The results of the study have a number of implications for research. First, the study has demonstrated that LMX has an important role in the safety performance. From a theoretical prospective, the results of LMX are substantially in line with evidences in different fields as well. For example, Ozer (2008)



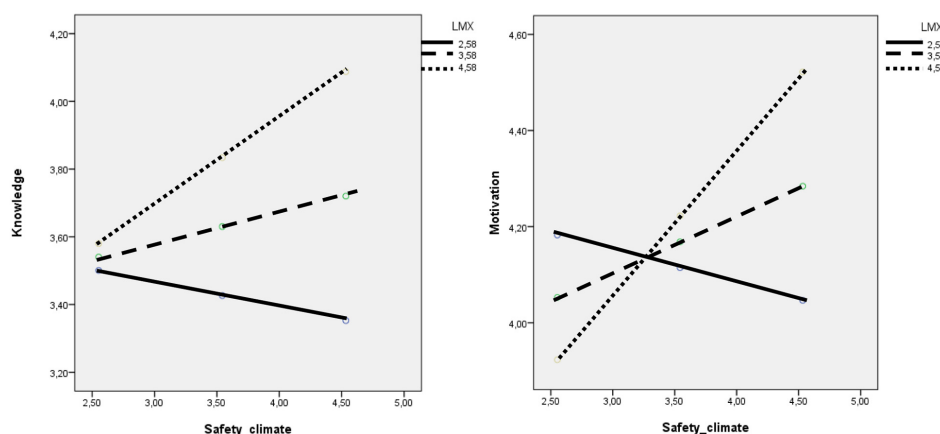


FIGURE 2 | Moderation analysis (N = 133).

TABLE 3 | Moderated mediation analysis: conditional indirect effect(s) of X on Y (N = 133).

Mediator	Dependent variable	LMX low		LMX medium		LMX high		Index of moderated mediation			
		Boot LLCI	Boot ULCI	Boot LLCI	Boot ULCI	Boot LLCI	Boot ULCI	Index	SE (Boot)	Boot LLCI	Boot ULCI
Safety Knowledge	Performance Compliance	−0.145	0.067	−0.039	0.154	0.016	0.289	0.087	0.037	0.022	0.171
Safety Knowledge	Performance Participation	−0.083	0.025	−0.012	0.093	0.003	0.169	0.037	0.023	0.006	0.096
Safety Motivation	Performance Compliance	−0.156	0.063	−0.018	0.185	0.079	0.342	0.125	0.034	0.064	0.197
Safety Motivation	Performance Participation	−0.103	0.028	−0.004	0.113	0.039	0.212	0.064	0.025	0.025	0.125

found a relationship between LMX and job performance. Significant relationships were reported between LMX and Organizational Citizenship Behavior too (Ilies et al., 2007). This evidence provides stronger argumentation toward the benefits associated to high quality LMX. From a more general perspective, the LMX theory appears to be as a comprehensive theoretical tool as it allows focusing not only on required behaviors, but also on discretionary and side behaviors. Last, we would like to consider briefly the impact of the specific content of LMX on behaviors and performance. Previous studies showed that the reciprocation of subordinates is consistent with leaders' values and needs. An exchange aimed at giving value to safety issues is likely to cause further engagement in safety behaviors and performance (Hofmann et al., 2003, in Ilies et al., 2007). The value of correlation index between LMX and safety climate shows that the two constructs are related but separate; moreover, the level of this relationship is in line with correlation indexes between LMX and different type of climate that are presented in literature, as service climate (Auh et al., 2016). Finally, the LMX emerges as important contribution to the model although the climate measure was based on the supervisor's behaviors and the constructs were conceptual similar but separate. In fact, the correlation indexes between the two measures confirmed that.

## Limitations of the Study

The limitations of this study can be found in some research design issues. The number of participants played a constraining role in the research design, as the only one organizational case, limits the generalization of the results. Moreover, for the limited participants, we took a measure of overall Safety climate and not specific dimensions as caring, compliance and coaching. We therefore chose to focus on the first kind and general measure of Safety climate to support the hypotheses. Furthermore, safety climate research has consistently presented a conceptual focus on collective phenomena, including both a focus on group and organizational level analyses (Griffin and Curcuruto, 2016). However, the present research, as the original study of Griffin and Neal (2000) and others that used their approach (i.e., Braunger et al., 2013) adopted an individual level to consider safety climate. In fact, our evidences can be compared with their work and a more-broad literature, focused on social-exchange mechanisms, entailed by LMX, which are typically related on the individual perception of the employees' personal relationships with the organization and supervisors. Furthermore, the present study could not adopt a group-level climate analysis because the number of workgroups/sectors was very low.

Secondly, we adopted a cross sectional design aimed at collecting data from different work areas at a due time because

company didn't permit it. However, we have verified that the effect of common method is contained. We think that is a limited problem because the correlation indexes of variables have a wide range and in addition to this there was a relationship not significantly different from zero. Third, we analyzed the quality of the relationship between leaders and members but we did not examine the style of leadership, as transformational and transactional types. Fourth, this study adopted the performance as alone outcome without considers aspects of wellbeing of employees as job satisfaction (i.e., Guglielmi et al., 2016) moreover the performance was self-evaluated by workers rather than observed externally without considering supervisors' observations. Hayes (2013) shows that the statistical method that our research adopted has limitations that could be overcome by Structural Equation Model (SEM), but the research sample size doesn't permit the use of SEM (Bentler and Chou, 1987).

Finally, among the point of weakness there is the fact that the adopted measures of LMX-7 and ZSCQ were not validated in previous study. However, the psychometric quality (factorial validity and reliability) was found good with the data of the present research.

## Practical Implications

The results of the study shed light on the importance of a positive relationship between managers and workers in industrial context for safety purposes. They asserted that when the LMX is high (i.e., positive and enriching), safety behaviors among employees (thus, their compliance and participation) are rooted by specific safety-oriented motivation and knowledge. Conversely, when LMX is not as strong as previously shown, neither safety motivation nor knowledge do effectively affect safety performance. Thus, the way managers relate with co-workers can enrich their supervisory performance.

About warehousing in particular, according to the American Occupation Safety and Health Administration (OSHA), safety leaders should follow safety checklists that help identify and tap potential hazards. These checklists do particularly insist on materials handling safety, forklift safety and communication. There are many different communication issues about warehousing safety worth to be described. One the other hand, research suggest that employees will reciprocate implied obligation formed by LMX by expanding roles and behaving in accordance with behavioral expectations in regard to group safety climate (Hofmann et al., 2003).

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Finally, LMX appears to assume an interesting role in safety procedures and we hope that LMX will have new space in the scientific safety research. A considerable amount of authors have already carried agreed that safety is not just the outcome of a mere technical and procedural pathway, moreover it is a process that involves people, their relations and their influencing abilities and values. The results of the study support that supervisors should improve their non-technical skill (Burke et al., 2007) and competence (Morone et al., 2016.) in relationships management. Organizational actors need to be given more evidences for the relations between safety performance and LMX, OCB and climate among employees. An intervention, focusing on the promotion of self and relational management as a primary prevention perspective could improve individual resources such as emotional intelligence (Di Fabio and Saklofske, 2014), to increase the level of LMX and safety performance (Di Fabio, 2014; Di Fabio and Kenny, 2016).

## ETHICS STATEMENT

The questionnaire included a statement about personal data treatment, in accordance with the Italian privacy law (Law Decree DL-196/2003). The workers authorized and approved the use of anonymous/collective data for possible future scientific publications. The ethical approval was not sought, for two main reasons: First, the data for this research were collected anonymously and workers authorized and approved the use of anonymous/collective data. Second and most important, the research is based on the study of psychosocial variables that refer to the work environment and its perceptions by workers. For this reason, the study cannot be considered a medical research or an experiment on human subjects that need ethical approval following the Recommendations from WMA Declaration of Helsinki – Ethical Principles for Medical Research – Involving Human Subjects (World Medical Association [WMA], 2013).

## AUTHOR CONTRIBUTIONS

MM, MC, and ST conceptualized the study and chose the theoretical framework. The first version of the introduction was written by PS and MM. ST and MM analyzed the data and wrote the methods and results. MM, MC, and ST wrote the discussion and practical implications. All the authors then revised and improved the manuscript several times.

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# Customer Orientation and Leadership in the Health Service Sector: The Role of Workplace Social Support

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Health care is a critical context due to unpredictable situations, demanding clients, workload, and intrinsic organizational complexity. One key to improve the quality of health services is connected to the shift in organization perspective of viewing patients as active consumers rather than passive users. Therefore, higher levels of customer orientation (CO) are expected to improve organizational service effectiveness. According to a cultural perspective to CO, the aim of the study was to explore how different leaders' behaviors (task-oriented and relationship-oriented) interact with CO of health organizations. Specifically, the aim of the paper was to contribute to this topic, by considering the leaders' point of view. Since leader's experience of CO is influenced by social processes in the work environment, workplace social support (WSS) was inserted as moderator in the relationship between leader behavior and CO. A survey study was conducted among 57 Health Department directors belonging to the National Health Service in the North of Italy in 2016. Findings showed that WSS moderated the influence of leadership concern for relationship on CO. Practical implications of the study are discussed.

**Keywords:** customer orientation, health service, leadership, workplace social support, task-oriented behavior, relationship-oriented behavior, patient-centered care

## INTRODUCTION

Health care is a critical context due to unpredictable situations, demanding clients, workload, and intrinsic organizational complexity. The need for health-care quality improvement in a period of increasing financial and service pressures requires to not separate financial performance and productivity from service quality. The King's Fund (2013) points out that the quality of care provided by health organizations is a corporate responsibility: "Boards should be held to account for ensuring that their organizations achieve high standards of patient care, and that serial failures do not occur" (p. 9). The Institute of Medicine (IOM, 2001) report articulates six critical aims for health-care system. Care must be delivered by systems that are carefully and consciously designed to provide care that is safe, effective, patient-centered, timely, efficient, and equitable.

One key to improve the quality of health services is connected to the shift in organizations' perspective of viewing customers as active co-producers rather than users. Aiming at patient-centered care, hospital business is required to treat patients as customers. By considering customers as the first priority, not only client and staff satisfaction significantly increases as



positive relationships with patients act as protective factors and lessen social stressors (Guglielmetti et al., 2014), but also clinical care outcomes improve (Zablah et al., 2012; Rania et al., 2015), following the double empowerment effect between customers and workers that has been highlighted in previous studies (Converso et al., 2015). Customer orientation (CO) predicts several important customer outcomes, such as customer-perceived service quality and satisfaction (Susskind et al., 2003), indicating that health providers' delivering service on the front lines have an influence on patients' experience with services. Moreover, leadership has a primary role in supporting organizational CO (Liao and Subramony, 2008). In the next sections, we described the concept of CO and the role of leadership in relation to it.

## Customer Orientation

The term CO means the focus on meeting customers' interests, needs, and expectations, and on delivering appropriate and personalized services. In the case of the health-care sector, where patients are the customers, it is defined as the ability of service providers to adjust their service, in a way that reflects patients' reality (Daniel and Darby, 1997).

The concept has been approached in two distinct ways. The first one considers CO as a personal attitude or a surface-level personality trait, which refers to "an employee's tendency or predisposition to meet customer needs in an on-the-job context" (Brown et al., 2002, p. 111) and as an antecedent of job outcomes as job satisfaction and job performance (Donavan et al., 2004; Matthews et al., 2016; Miao and Wang, 2016).

The second one considers CO as a set of organizational behaviors (Saxe and Weitz, 1982) connected to the organizational culture (Narver and Slater, 1990). CO is a service practice that assesses "the degree to which an organization emphasizes, in multiple ways, meeting customer needs and expectations for service quality" (Schneider et al., 1998, p. 153). It is embedded within the marketing concept of the health organization and promotes the dissemination of market-related knowledge, enabling the organization to deliver high quality care in a consistent and immediate manner (Hallums, 2008). Following Normann (1984), this approach permits to recognize the impact on the service quality of the quality of the relationship between customer and provider as well as between provider and leader. Indeed, the two different relationships are strictly interrelated: the quality of relationship is like a cascade flow from the back-office (or the top) to the front-line of the service process. In this way, although being patient-focused is essential, effective CO presupposes also to consider internal customers. "Because internal customers (employees) provide services to external customers (patients), their role is vital for delivering care of high quality and satisfying patients. [...] employees will be willing to do their best in order to satisfy the needs of patients only after effective internal exchanges at their level have taken place. For this reason, unless an organization focuses on internal operational excellence, other than the market, continuous achievement and organizational effectiveness cannot be achieved" (Bellou, 2010, p. 386).

Most of the studies on CO conclude their discussion with managerial implications. All of them recommend formal leaders to implement specific organizational strategies to improve CO. In the next section, we explored the managerial issues related to CO. Following McVicar (2016), we split managerial issues into leadership behaviors (Blake and Mouton, 1964, 1982; Pruitt and Rubin, 1986) and workplace social support (WSS; Hobfoll, 2002).

## Leadership Behaviors and Customer Orientation

Leadership is considered one of the most important determinants on organizational processes: the quality of leadership has been linked to a multitude of outcomes within occupational health psychology. There is ample evidence suggesting that leaders play a key role in influencing employee attitudes toward customers (Liao and Subramony, 2008). "Managerial philosophies and values influence organization's internal business practices, which, in turn, influence employee and customer interactions and behaviors" (Susskind et al., 2003, p. 180). In the medical literature, effective leaders, from executives to front-line managers, have been shown to contribute to the implementation of an organizational culture that values quality of care. Leaders can encourage care quality by promoting CO (Gountas and Gountas, 2016), patient-centered care, rather than provider-centered (Pelzang, 2010; Cliff, 2012; Dell'Aversana and Bruno, 2017) and patient safety (Kaplan et al., 2010; Bruno and Bracco, 2016). As Shaller (2007) pointed out, the most important factor contributing to health-care improvement is the commitment and engagement of senior leadership. Specifically, leadership has a crucial function since it determines the quality of relationship within the team, thus influencing the quality between employees and clients. Sustaining the quality of relationship within the team (internal clients) improves the quality of relationship with the external clients, thus permitting to increase the quality of health services (Corrigan et al., 2000; Kim and Lee, 2016).

Reviews covering decades of leadership research agree on two predominant types of leadership behavior: relations-oriented behavior and task-oriented behavior (Judge et al., 2004). Differences in leaders' performance can be explained by the extent to which the leader is task- or person-oriented (Yukl et al., 2002; Kellett et al., 2006; Gaubatz and Ensminger, 2017). In particular, Stock and Hoyer (2002) found positive relationships between employees' CO and different leadership styles: leaders' emphasis on task achievement, leaders' supportiveness, and initiation of CO. Moreover, there is evidence that leader's CO predicts employee's CO (Strong, 2006).

Although leadership behaviors appear as a crucial factor for promoting a culture that focuses on customer relationships and customer service (Anaza et al., 2016), according to Liaw et al. (2010), "it is somewhat surprising that the ways in which leadership behaviors influence customer orientation have received little attention in the existing literature" (p. 478). Indeed, in previous studies, researchers have attempted to identify the antecedents of CO by examining predominantly the main effects of leadership on CO employees' perceptions. Compared with the

large literature on employees, less attention has been paid on CO for organizational leaders (Schuh et al., 2012).

## Workplace Social Support

Workplace Social Support (WSS) is a key construct implicated with a variety of health and organizational outcomes: it is a resource in the work environment which can be employed in dealing with complex problems (De Jonge et al., 2008).

More specifically, in the cultural perspective of CO expressive emotional network resources are recognized as drivers of CO, as form of social capital that provides direct access to information and emotional support to improve CO (Anaza et al., 2016). WSS may increase performance in two ways: “first, it provides individuals with emotional support. Second, having a network for emotional support among coworkers helps employees maintain the required patience, care, and focus needed to provide high-quality customer service even in the face of challenging interactions. Coworker support provides greater job resources to deal with stressful and difficult customers” (Anaza et al., 2016, p. 1475). In this way, WSS plays a role in creating value for customers. Walsh et al. (2015) claimed that CO is affected by WSS, finding that an empowered work environment enhances employees’ affective responses and these affective responses should spillover to the employee–customer interface, leading to a greater level of CO.

The same process has not yet been explored for leaders. Tepper and Taylor (2003) argued that supervisors who perceived they were treated fairly by the organization could reciprocate by treating subordinates more favorably. Expressive emotional network resources may support leaders in their middle position between customers’ service excellence demands on one hand, and productivity and performance requirements on the other hand (Babakus et al., 2009; Cortini, 2016). Indeed, there is evidence on the different way that managerial and non-managerial employees perceive organizational values (Schneider et al., 1998) and on the different extent to which they focus on customers’ needs (Martin and Fraser, 2002).

According to the cultural perspective to CO, we expect that leader’s experience of external CO is influenced by social processes in the workplace. Therefore, in our study, the focus is on leaders. Focusing on formal leaders does not imply that leadership as social influence is limited to these roles, but means that those in formal leadership roles have a particularly strong potential to affect outcomes relevant to organizations, especially the organizational culture, that in turns influences the quality of care (Kaissi et al., 2004).

## AIMS

In light of the previous theoretical constructs, the aim of this study was to analyze leaders’ perceived CO in relation to leadership behavior and WSS in the health-care service context.

More specifically, we explored (a) the different ways leaders’ behavior (task-oriented and/or relationship-oriented) is related to a wider or lesser CO and (b) if the WSS moderates this relationship.

## METHOD

A survey study was conducted among 62 Health Department directors belonging to the National Health Service in the North of Italy in 2016. All the directors were attending a course of managerial competences revalidation.

Participants were given an anonymous questionnaire, of whom 57 were usable. All subjects gave written informed consent and authorized and approved the use of anonymous/collective data for publications. Given the masculine dominant nature of our sample, we did not consider gender as a control variable.

In line with recent works (Thomas et al., 2001; Anaza et al., 2016), the CO was measured through the SOCO Scale (Saxe and Weitz, 1982). We used the 24-item, 9-point version revisited by Hoffman and Ingram (1992) in order to fit the health-care sample ( $\alpha = 0.89$ ). Examples of items are as follows: “I try to help patients achieve their goal”; “I try to achieve my goal by satisfying patients.”

In relation to leadership, the two dimensions ‘concern for task’ and ‘concern for relationship’ were measured through Blake and Mouton’s (1982) Managerial Grid, on which research and theory on leadership converges and the Dual Concern Theory is based (Pruitt and Rubin, 1986; Kellett et al., 2006; Garg and Jain, 2013). We used eight items of the subscale ‘Concern for task’ ( $\alpha = 0.58$ ) and eight items of the subscale ‘Concern for relationship’ ( $\alpha = 0.69$ ), scored on a 5-point rating scale. Sample items are as follows: “Nothing is more important than accomplishing a goal or task” for ‘Concern for task’; “I encourage my team to participate when it comes decision making time and I try to implement their ideas and suggestions” for ‘Concern for relationship.’

Workplace social support (WSS) was measured through six items of the Demand-Induced Strain Compensation Questionnaire in its 5-point scale, Italian version (Bova et al., 2015) ( $\alpha = 0.74$ ). Sample items include: “Employee X will feel esteemed at work by others.”

## FINDINGS

### Preliminary Analysis

Descriptive statistics (mean and standard deviation) and correlation of research variables are shown in **Table 1**. Significant positive relationships are shown between leadership concern for relationship, CO, and WSS, whereas leadership for task correlates positively with leadership concern for relationship. To address the common method bias, we adopted the Harman’s single-factor test (Conway and Lance, 2010).

### Moderation Analysis

Two moderated regression analyses were used to test the moderating role of the WSS on the relationship between leadership behavior (‘concern for task’ and ‘concern for relationship’) and CO. We used PROCESS macro for SPSS developed by Hayes (2013), using model n. 1. In the first analysis, we had leadership concern for relationship as independent

**TABLE 1 |** Correlations (Pearson's *r*) and descriptive statistics of the scales (*N* = 57).

	1	2	3	4
(1) Leadership 'Concern for relationship'				
(2) Leadership 'Concern for task'	0.447**			
(3) Workplace social support	0.328**	0.185		
(4) Customer orientation	0.242*	0.215	0.290*	
Mean	4.04	3.85	3.3	7.6
Standard deviation	0.41	0.40	0.57	0.80
<i>N</i> item	8	8	6	24

\**p* < 0.05, \*\**p* < 0.01.

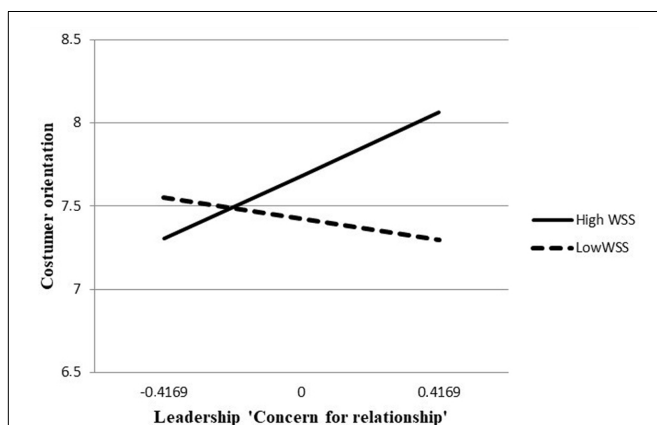
variable, the WSS as moderator, and CO as dependent variable. In the second one, we tested leadership concern for task as independent variable with the same moderator and dependent variables. The variables were mean-centered prior to analysis.

### Leadership 'Concern for Relationship'

Regression analysis found there was no main effect of leadership concern for relationship on CO [ $b = 0.30$ ,  $SE = 0.25$ ,  $t(53) = 1.21$ ,  $p = 0.2294$ ] and of WSS on CO [ $b = 0.22$ ,  $SE = 0.18$ ,  $t(53) = 1.23$ ,  $p = 0.2224$ ]. Most importantly, we obtained the interaction between leadership concern for relationship and WSS on CO [ $b = 1.05$ ,  $SE = 0.37$ ,  $t(53) = 2.83$ ,  $p = 0.0065$ ]. As shown in **Figure 1**, analyses revealed that leadership concern for relationship was positively related with CO for higher levels of WSS,  $b = 90$ ,  $SE = 0.32$ ,  $t(53) = 2.80$ ,  $p = 0.0070$ . Conversely, the relationship between leadership concern for relationship and CO was not significant for lower levels of WSS,  $b = -30$ ,  $SE = 0.33$ ,  $t(53) = -0.92$ ,  $p = 0.3615$  (**Figure 1**).

### Leadership 'Concern for Task'

Analyses revealed that there was no main effect of leadership concern for task on CO,  $b = 0.35$ ,  $SE = 0.26$ ,  $t(53) = 1.37$ ,  $p = 0.1758$  and of WSS on CO,  $b = 0.20$ ,  $SE = 0.20$ ,  $t(53) = 1.02$ ,  $p = 0.3107$ . Moreover, analyses revealed no significant interaction between leadership concern for task and WSS on CO,  $b = 0.96$ ,  $SE = 0.50$ ,  $t(53) = 1.92$ ,  $p = 0.0605$ .

**FIGURE 1 |** Moderation analysis.

## DISCUSSION, CONCLUSION, AND PRACTICAL IMPLICATIONS

Due to the role of the health service culture in the development of service quality and customer perceptions of organizational image (Senge, 2006), there is a need to study the factors that affect the quality of CO, including leaders' behavior and WSS. Our study contributes to the debate analyzing the different ways leaders' behavior is related to a wider or lesser CO and if WSS moderates this relationship.

Findings did not show any direct effect of leadership behaviors on CO. This effect was moderated by the presence of higher level of WSS. Findings showed that the abovementioned resources moderated the relationship between leadership concern for relationship and CO. No moderating effect was found for the relationship between leadership concern for task and CO. However, this finding could be affected by the poor reliability of the leadership 'concern for task' scale.

Findings highlight the important role of WSS in stimulating health-relevant aspects of leadership behavior (Gregersen et al., 2016). In fact, the leadership dimension 'concern for relationship' seems to be related to CO, only if leaders can refer to higher resources in their work environment. Undoubtedly, listening to information from the front-line, sharing information, taking care of the quality of relationship with and among their collaborators, monitoring their identification in organizational values and patients' needs, using feedback is high-demanding. One key point emerging from this study is that providing health-care contexts with higher expressive emotional network resources could facilitate leadership focusing both internal and external clients (Cortini et al., 2016).

A second key point of the study is the different roles of leaders' behaviors. 'Concern for task', i.e., the focus on task and goals achievement, is traditionally considered the primary dimension of leadership in the bureaucratic model, in which standardization of procedures is the answer to the complexity of organizational processes as well as to the need for transparency of Public Administrations.

On the contrary, service organizations need to take into account the variability of the clients and the need for personalization of services. The diversity of each client, inputting variance and risk of fragmentation into the system, requires leaders to protect integrative functions. This study supports the need for health services to interpret leaders' role as not merely oriented to accomplishment of tasks and focus on goal, standards, and performance. In this direction, leadership means maintaining or improving processes that facilitate accomplishment of tasks not only by clarifying role expectations and standards for task performance, but also by caring for their collaborators. "Relations-behaviors largely concern maintaining or improving cooperative interpersonal relationships that build trust and loyalty. Relations-behaviors include listening carefully to others to understand their concerns, providing support and encouragement, helping, and recognizing people as individuals" (Kellett et al., 2006, p. 150).

Our findings offer several implications. First, if the health system wants to increase its patient-centeredness, it must take

care of its leaders, by providing them with resources in their job context, and more specifically social support resources. For instance, leaders have to be accompanied through recruitment and training to make their managerial competencies related to concern for relationship more visible, accessible, and reflective (Bruno and Dell'Aversana, 2017a,b,c). In Italy, this issue is quite relevant, since in health domain directors are primarily chosen on their technical skills. On the contrary, their leadership competencies are generally taken for granted, and not always evaluated or trained before and during their work experience as leaders.

A further implication is based on the acknowledgment that the quality of relationship in the back-office may have an important effect on the quality and degree of CO. Hence, the study extends work that has shown the relationship between internal and external marketing (Kim and Lee, 2016). Organizations need to provide devices to focus on internal marketing in order to sustain CO.

## LIMITATIONS

There are some limitations to the present research. The main limitations are the small sample size, the cross-sectional design of the study, and its reliance on self-report measures. Future longitudinal studies should investigate other causal directions or even reciprocal relations of the variables more profoundly. Second, the study used single-source data. Future research may overcome this limitation by collecting data from multiple sources, for instance, customer assessments of health service and

collaborators' evaluation of leadership behavior. We have not addressed the relationship of CO and traditional performance measures. Future research is necessary to integrate these outcomes.

## ETHICS STATEMENT

The questionnaire included a statement regarding the personal data treatment, in accordance with the Italian privacy law (Law Decree DL-196/2003). The workers authorized and approved the use of anonymous/collective data for scientific publications. Because the data were collected anonymously and the research investigated psychosocial variables not adopting a medical perspective, ethical approval was not sought.

## AUTHOR CONTRIBUTIONS

AB, GDA, and AZ conceptualized the study and the theoretical framework. AB wrote the Section "Introduction." AB and AZ collected data. GDA analyzed the data and wrote the Sections "Method" and "Findings." AB wrote the Section "Discussion, Conclusion, and Practical Implications." All the authors then revised and improved the manuscript several times.

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**Conflict of Interest Statement:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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# Basic Values, Career Orientations, and Career Anchors: Empirical Investigation of Relationships

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In today's dynamic and uncertain career context, values play an important role for career choice and lifelong career self-management. Values are desirable goals that are sought by individuals to satisfy their needs and are important for understanding career orientations in terms of protean and boundaryless career orientations and career anchors. However, how career orientations or career anchors fit into a well-established and supported model and into the structure of basic human values remains an important and under-investigated question. The aim of this study was to use Schwartz's model of structural values to empirically explore the relationships and structural correspondences among basic values, career orientations, and career anchors. A heterogeneous sample of 238 employees from French-speaking Switzerland (Mage = 35.60, SD = 13.03) completed the Portrait Values Questionnaire (PVQ5X), the Protean and Boundaryless Career Attitudes Scales (PCAS, BCAS), and the Career Orientation Inventory (COI) via an anonymous and confidential survey questionnaire. The results showed that it was possible to meaningfully position both career orientations and career anchors in Schwartz's values structure. The protean and boundaryless career orientations were positively related to Schwartz's basic values that emphasized openness to change and career anchors meaningfully followed the motivational continuum of these basic values. Overall, the overlap among the basic values, career orientations, and career anchors appeared relatively important, suggesting that these basic values, orientations, and anchors should be considered simultaneously to understand and address the factors and processes underlying individuals' career choices and paths.

**Keywords:** Schwartz's basic values, protean career orientation, boundaryless career orientation, career anchors, relationships

## INTRODUCTION

Empirical evidences from person-organization fit (e.g., Arthur et al., 2006) suggest that individuals are more likely to choose careers in organizations that match their personal values. Inversely, a person-organization values miss-fit is likely to negatively impact individuals' job satisfaction, commitment to the organization, and intention to remain in the organization (for a review see Verquer et al., 2003). Thus, in time of uncertain career prospects including employment insecurity and economic crisis (e.g., Mucci et al., 2016), personal characteristics such as values have become essential and critical components for career choices and lifelong career self-management and are

significant determinants of individuals' career development, stability, and success as well as well-being at work. However, the relationships and correspondences between personal values and career orientation constructs yet remain unclear and under-investigated.

The present paper aims to empirically explore the relationships, structural correspondences, and shared variance among basic values, career orientations, and career anchors. It is important to evaluate the overlap among these constructs to determine whether it is useful to consider these constructs simultaneously in investigations of factors and processes underlying individuals' career choices and paths. Values are desirable goals that are pursued by individuals to satisfy their needs (Rounds and Jin, 2013); protean and boundaryless career orientations are relatively stable career preferences and attitudes (Briscoe et al., 2006); and career anchors represent individuals' inner definitions and experiences of their career needs, values, and talents (Schein, 1990). Thus, the present study aims to empirically investigate the relationships among Schwartz's basic values, protean and boundaryless career orientations, and career anchors using confirmatory factor, multinational scaling, and canonical correlation analyses techniques. We recruited a heterogeneous sample of employees to provide a more adequate and precise picture of the relationships and correspondences among these constructs to evaluate the extent to which these constructs overlap. Moreover, we advance existing knowledge regarding these constructs by investigating the degree to which these constructs capture the same latent domain (i.e., share variance). Therefore, we contribute to the career literature by providing empirical evidence regarding the strength and structure of the relationships among these constructs to facilitate future research development and applications. Finally, the present study completes meaningfully a recent work, using the same sample in respect of best recommended guidelines (cf. Kirkman and Chen, 2011), by Abessolo et al. (2017) that showed close relation among work values, as defined by Super (1970) and Dawis and Lofquist (1984), and protean and boundaryless career orientations (Briscoe et al., 2006). We herein provide a different insight and perspective by clarifying theoretically and empirically the dynamic structure of relations among Schwartz's (Schwartz et al., 2012) more recent model of basic values, protean and boundaryless career orientations, and Schein's (1990) career anchors.

## Basic Values

Values are overarching and desirable goals sought by individuals to satisfy their needs (Rounds and Jin, 2013). Values serve as "guiding principles" that influence attitudes and behaviors (Schwartz, 1992). Theories of values are rooted in personality and social psychology (for a review, see Rohan, 2000). The most comprehensive theory of values was proposed by Schwartz (1992), who, in collaboration with Blisky (Schwartz and Bilsky, 1987), identified the following five common features of values in the literature: (1) concepts or beliefs (2) regarding desirable end states or behaviors (3) that transcend specific situations, (4) guide the selection or evaluation of behavior and events, and (5) are ordered by relative importance (p. 551). This understanding

of values involves cognitive (e.g., beliefs), affective (e.g., desires), and behavioral (e.g., actions) components. Currently, Schwartz's (1992) theory of values remains the most comprehensive model guiding research studies investigating values (Rounds and Armstrong, 2005). Schwartz (1992) conceptualized 10 universal or basic values that fulfill the three universal biological needs of human existence, i.e., social interactions, functioning groups and the survival of groups, as follows: self-direction, stimulation, hedonism, power, achievement, security, conformity, tradition, universalism, and benevolence. The 10 basic values are organized into a circular structure of motivations (circumplex) along the following two bipolar dimensions: openness to change (including self-directed and stimulation basic values) vs. conservation (including security, tradition, and confirmation basic values) and self-enhancement (including achievement and power basic values) vs. self-transcendence (including benevolence and universalism basic values). The Schwartz Value Survey and the Portrait Values Questionnaire (SVS; PVQ; Schwartz et al., 2006, 2012) have been designed to measure these values.

## Protean and Boundaryless Career Orientations

Protean (Hall, 2002) and boundaryless (Defillippi and Arthur, 1996) career orientations have been posited as alternative models to the traditional career model, which emphasizes long-term employment in one or two organizations, firm specific skills and training programs, and career advancement and success as measured by pay, promotion, and status (Sullivan, 1999). Changes in the global economy and organizational structures have resulted in increased uncertainty in careers (Bauman, 2007), job insecurity (Cappelli, 1999), and part-time and self-employment (Sullivan and Baruch, 2009). Thus, contemporary workers can no longer rely on their organizations to manage their careers. Instead, workers are required to manage their own careers (Fugate et al., 2004), be more flexible (Sullivan, 1999), and acquire resilience and employability (Sullivan, 1999; Baruch, 2001). Thus, protean and boundaryless career orientations emphasize that contemporary workers are more likely to choose lateral and downward organizational moves to fulfill their personal and professional needs and are more prone to follow their own desires and values rather than those of organizations (Sullivan and Baruch, 2009). Being "protean" in one's career involves the pursuit of one's personal values and career priorities and the active management of one's career by continuously learning, training and anticipating opportunities and changes in the labor market (Briscoe and Hall, 2006). Thus, a protean career is operationalized along the two dimensions of (a) value-driven and (b) self-directed career management. Being "boundaryless" involves the willingness to pursue opportunities and relationships across organizations (Briscoe et al., 2006). Thus, a boundaryless career orientation is characterized by the physical (Inkson, 2006) and psychological (Sullivan and Arthur, 2006) willingness to cross organizational boundaries in terms of both (a) organizational mobility preference and (b) boundaryless mindset (Briscoe et al., 2006).

## Career Anchors

According to Schein (1990), career anchors are the significant components of an individual's career self-concept, including concerns, needs, and values, and when confronted with an important and difficult career choice, individuals will not compromise their career anchors (Coetzee and Schreuder, 2009). Career anchors reflect the concept of "internal career," which is defined as a subjective and personal sense and definition of one's career, and contrast with the concept of "external career," which involves the formal and objective career stages and roles defined by organizations and related institutions (Schein, 1990). Over a period of 10–12 years, Schein (1977) identified the following eight career anchors by exploring the reasons a panel of 44 alumni chose to change jobs: autonomy/independence, pure challenge, service/dedication to a cause, security/stability, life style, technical/functional competence, general managerial competence, and entrepreneurial creativity. According to Schein (1978), individuals have one dominant career anchor that expresses their core personal needs, values, and talents. However, other researchers (e.g., Feldman and Bolino, 1996; Martineau et al., 2005) have suggested the existence of multiple dominant career anchors that emerge separately from needs, values, or talents and that new career anchors might emerge from changes in contemporary workers' needs and preferences, such as the internationalism career anchor (Suutari and Taka, 2004; Lazarova et al., 2014).

## Relationships among Basic Values, Career Orientations, and Career Anchors

Theoretical relationships and empirical correspondences among basic values, career orientations, and career anchors have been provided in recent studies. Based on Schwartz's structural model of values and empirical findings of relationships among career anchors (cf. Igbaria et al., 1999; Petroni, 2000), Wils et al. (2010) were the first to theoretically explore the conceptual correspondence between Schein's (1990) career anchors and Schwartz's (1992) circumplex structure of basic values. Their findings showed that Schwartz's self-enhancement values were significantly related to the managerial competence and identity career anchors and that self-transcendence values were significantly related to the service/dedication to a cause and technical functional competence career anchors. In contrast, Schwartz's openness to change values were positively related to pure challenge and entrepreneurial creativity, while conservation values correlated with the security/stability and lifestyle career anchors. However, Wils et al. (2016), who reviewed existing atheoretical and theoretical models of structural relationships among career anchors (Schein, 1990; Feldman and Bolino, 1996; i.e., Bristow, 2004; Chapman, 2009), criticized this theoretical and structural model due to its lack of representativeness of Schein's career anchors. Based on the work by Wils et al. (2010, 2016) subsequently proposed a theoretical structural model that rearranged Schein's career anchors into four quadrants according to Schwartz's circumplex logic of basic values and the attached career meaning (i.e., careerist, protean, social, and bureaucratic). Using a sample of 313 graduates in the

field of management sciences, Wils et al. (2016) observed that their structural model was superior to other models using a representative scale of Schein's career anchors (Schein, 1990) and a robust statistical analysis (Browne, 1992) to empirically valid the circumplex shape of the theoretical structure. Thus, their results suggested that the careerist quadrant was associated with the managerial competences career anchor; the protean quadrant was associated with the technical/functional competence, entrepreneurial creativity, pure challenge, and autonomy/independence career anchors; the social quadrant was associated with the life style and service dedication to cause career anchors; and the bureaucratic quadrant was associated with the security/stability career anchor.

Although the study by Wils et al. (2016) advanced our understanding of the correspondences among basic values, career orientations, and career anchors, limitations existed, and we aim to address these limitations in the present study. One of the limitations is that the four quadrants used by Wils and colleagues to structure the career anchors are based on a theoretical conceptualization rather than on empirical evidence. Moreover, these authors did not empirically assess career meaning (i.e., careerist, protean, social, and bureaucratic) to provide empirical evidence for the four quadrants. Finally, their study was based only on Schein's career anchors scale to test their theoretical structural model.

Considering the structure and relationships suggested by Wils et al. (2010, 2016), the aim of this project is to empirically explore the correspondence among Schwartz's basic values, protean and boundaryless career orientations, and career anchors in a heterogeneous sample of workers. Moreover, we contribute to the career research literature by elucidating theoretical suppositions of relationships among values and career related meaning and anchors. First, Schwartz's values that emphasize openness to change should be positively related to the protean and boundaryless career orientations because theoretical arguments and some empirical findings suggest that protean and boundaryless individuals are driven by the needs of freedom, growth, self-determination (Hall, 2004; Segers et al., 2008), intrinsic work values (Abessolo et al., 2017), and opportunities to learn. According to Wils et al. (2016), these values lead to the development of specific expertise or professionalism that apply to multiple organizations. Therefore, we might expect to also find positive associations with the technical/functional competence, entrepreneurial, creativity, pure challenge, autonomy/independence, and international career anchors. Second, Schwartz's values that emphasize self-enhancement should be positively associated with the managerial competences career anchor, which represents careerist individuals, who value professional success, influence, and power (Wils et al., 2016). Third, Schwartz's values that emphasize conservation should be positively related to the security/stability career anchor because this motivational domain suggests continuity, stability, and bureaucratically based relationships between individuals and organizations. Finally, Schwartz's values that emphasize self-transcendence should be positively associated with the life style and service/dedication to a cause career anchors, which involve social needs and connections. These anchors involve a



greater self-awareness, awareness of others' need, helping others, and finding more meaning in one's life and society (Wils et al., 2016). Therefore, we expect to confirm the following hypotheses:

*Hypothesis 1.* Schwartz's values that emphasize openness to change will be associated with the protean and boundaryless career orientation sub-dimensions and the technical/functional competence, entrepreneurial, creativity, pure challenge, autonomy/independence, and international career anchors.

*Hypothesis 2.* Schwartz's values that emphasize self-enhancement will be associated with the managerial competences career anchor.

*Hypothesis 3.* Schwartz's values that emphasize conservation will be associated with the security/stability career anchor.

*Hypothesis 4.* Schwartz's values that emphasize self-transcendence will be associated with the life style and service/dedication to cause career anchors.

## MATERIALS AND METHODS

### Procedure and Participants

Participants were recruited by email invitations or invitations posted on social media websites (e.g., Facebook). The survey invitation contained a brief description of the study purpose and a link to the on-line survey. A consent form was presented at the beginning of the questionnaire. Participants who provided their written informed consent were assured of their anonymity and confidentiality. Moreover, participants were informed that they would receive personalized feedback on their career profile based on their responses if desired. The response rate cannot be precisely estimated due to the sampling strategy used. However, of the 310 individuals who started the survey, 238 (77%) completed all questionnaires. Only data from participants who completed the entire survey were included in the analyses. As we were more interested in relationships among variables instead of group differences, the sample strategy and size may be sufficient and appropriate. Thus, the sample included 238 employees aged 16 to 65 years ( $M_{\text{age}} = 35.60$ ,  $SD = 13.03$ ) from the French-speaking region of Switzerland. Half of the participants were women ( $n = 121$ , 51%), and the majority were Swiss (86%). In addition, 46% of the participants were employed in the public sector, whereas 44% of the participants worked in the private sector. The remaining 10% of participants were self-employed. Two-thirds of the participants worked full-time (67%).

### Measures

#### Portrait Values Questionnaire

We used a validated French translation (Mrs. Pulfrey personal communication)<sup>1</sup> of Schwartz's portrait values questionnaire (PVQ5X, Schwartz et al., 2012), which consisted of 51 items measuring the ten basic values of self-direction (6 items; e.g., "Being creative is important to him/her"), stimulation (3 items; e.g., "Excitement in life is important to him/her"), hedonism (3 items; e.g., "Having a good time is important to him/her"), achievement (3 items; e.g., "Being very successful is important to

him/her"), power (6 items; e.g., "He/She pursues high status and power"), security (6 items; e.g., "It is important to him/her to live in secure surroundings"), tradition (3 items; e.g., "It is important to him/her to maintain traditional values or beliefs"), conformity (6 items; e.g., "Obeying all the laws is important to him/her"), benevolence (6 items; e.g., "It's very important to him/her to help the people dear to him/her"), and universalism (9 items; e.g., "Protecting society's weak and vulnerable members is important to him/her"). We used a six-point Likert scale ranging from 1 (not like me at all) to 6 (very much like me) (Schwartz et al., 2012).

#### Protean Career Orientation

We used a validated French translation (Stauffer et al., in press) of the protean career attitudes scale (PCAS; Briscoe et al., 2006), which consisted of 14 items that measured the self-directed career management (8 items; e.g., "I am responsible for my success or failure in my career") and value-driven (6 items; e.g., "I navigate my own career based on my personal priorities as opposed to my employer's priorities") dimensions of the PCO. The response format consisted of a five-point Likert scale ranging from 1 (little or no extent) to 5 (to a great extent).

#### Boundaryless Career Orientation

A validated French translation (Stauffer et al., in press) of the boundaryless career attitudes scale (Briscoe et al., 2006) was used, which consisted of 13 items that measured the two dimensions of boundaryless mindset (8 items; e.g., "I seek job assignments that allow me to learn something new") and mobility preference (5 reversed items; e.g., "In my ideal career, I would work for only one organization"). The response format consisted of a five-point Likert scale ranging from 1 (little or no extent) to 5 (to a great extent).

#### Career Orientation Inventory

We used a validated French translation (Cerdin, 2007) of the Career Orientation Inventory (COI; Schein, 1990), which consisted of 45 items that measured the eight career anchors (5 items each; except for creativity, which had 2 items, and entrepreneurial, which had 3 items and was separated from entrepreneurial creativity) of autonomy/independence (e.g., "I will feel successful in my career only if I achieve complete autonomy and freedom"), creativity (e.g., "I am most fulfilled in my career when I have been able to build something that is entirely the result of my own ideas and efforts"), entrepreneurial (e.g., "I am always on the lookout for ideas that would permit me to start my own enterprise"), lifestyle (e.g., "I dream of a career that will permit me to integrate my personal, family, and work needs"), international (e.g., "I feel successful only if I work in an international environment"), managerial competence (e.g., "I am most fulfilled in my work when I have been able to integrate and manage the efforts of others"), pure challenge (e.g., "I will feel successful in my career only if I face and overcome very difficult challenges"), security/Stability (e.g., "I seek jobs in organizations that will give me a sense of security and stability"), service/dedication to a cause (e.g., "I am most fulfilled in my career when I have been able to use my talents in the service of others"), (Bentler and Bonett, 1980) and technical/functional

<sup>1</sup> Personal communication between Abessolo and Mrs. Pulfrey in September 2014.

competence (e.g., “I dream of being so good at what I do that my expert advice will be sought continuously”). The response format consisted of a five-point Likert scale ranging from 1 (totally disagree) to 5 (totally agree).

## Analyses

### Confirmatory Factor Analysis

To evaluate the structural validity of the basic values, we conducted a confirmatory factor analyses using *Mplus7* (Muthén and Muthén, 1998–2012) and the robust maximum likelihood estimator. For the factor identification, we fixed each first item to 1. Several fit-indices were used to evaluate the model fit (Bentler and Bonett, 1980; Bollen, 1989; Bentler, 1990; Hu and Bentler, 1999) as follows: the Satorra-Bentler Scaled Chi-square statistic ( $S-B\chi^2$ ), the root mean square error of approximation (RMSEA), the standardized root mean square residual (SRMR), the comparative fit index (CFI), and the Tucker-Lewis index (TLI). RMSEA and SRMR values  $<0.08$ , CFI and TLI values  $>0.90$ , and a chi-square per degree of freedom value equal to or below 3 are considered acceptable fit indices. We also evaluated the desirability biases using Billiet and McClendon's (2000) procedure, which adds a common factor to the CFA model by fixing all item loadings to 1.

### Multidimensional Scaling

We investigated the content shared by the values, career orientations, and career anchors measures by performing a multidimensional scaling analysis (MDS; Kruskal and Wish, 1978) using the SPSS 22 MDS Proxscal program with ordinal proximity transformations, Euclidian distance measures, and Z-score transformations of values (cf. Schwartz et al., 2012). We created a perceptual map (or a scatterplot) based on the correlation matrix (treated in term of distances), which shows the similarities (i.e., the distances) among the variables (represented by the points on the map). The closer two variables are positioned on the map, the greater the correlation between these variables. In addition, the closer a particular variable is to the center of the map, the greater the correlations among this variable and all other variables. The coefficient of alienation is a stress measure that evaluates the adequacy of the projection of the points on the map. The smaller the stress value, the better the fit between the map and the data. Stress values  $<0.15$  are considered acceptable (Schwartz and Sagiv, 1995). The number of dimensions (i.e., axes of the scatterplot) to retain can be determined according to either a scree test (Cattell, 1966; Kruskal and Wish, 1978) or the interpretability of the map (Borg and Lingoes, 1987). A two-dimensional solution usually appears to be the most interpretable solution when mapping cognitive constructs, such as values (Schwartz, 1992; Schwartz and Sagiv, 1995).

### Canonical Correlation Analysis

To assess the overlap and shared variance among values, career orientations, and career anchors and more precisely determine which values significantly impact career orientations and career anchors, we conducted canonical correlation analyses (CCAs) using the syntax provided by Nimon et al. (2010). These CCAs determine whether two sets of variables share common variance (i.e., related) or are independent (i.e., unrelated). Thus, CCAs

examine the extent to which the variance in one set of variables is predicted by the other set. In the present study, the CCAs provided further information regarding the correspondences between the values and career orientations and the values and career anchors measures. Thus, the results indicate which values are significantly related to career orientations and career anchors.

## RESULTS

### Common Method Bias

Because we used self-reported measures, we assessed the presence of a common method effect by performing the Harman's one-factor test, followed by a confirmatory factor analysis as a *post-hoc* test. Substantial common method bias is present when (a) one general factor accounts for the majority of the variance among the variables or (b) one general CFA model fit the data well. The results showed that none of these criteria were met in our data, rejecting the notion that a common method bias is an issue in our distinct measures of basic values, career orientations, and career anchors. Thus, one general factor did not account for a substantial amount of variance (i.e., 22.54% of the total variance), and one FCA model did not fit the data as suggested by the fit indices as follows:  $S-B\chi^2_{(230)} = 1183.79$ ,  $p < 0.001$ ,  $\chi^2/df = 5.14$ , CFI = 0.42, RMSEA = 0.132, 90% IC (0.125, 0.139), SRMR = 0.132.

### Correlations

The means, standard deviations, bivariate correlations, and Cronbach's alpha coefficients of all measures are reported in **Table 1**. We found positive and significant relationships between the *self-direction value* and the protean self-directed, protean values-driven, boundaryless mindset, autonomy/independence, pure challenge, creativity, entrepreneurial, and technical/functional career anchors. The *stimulation values* were positively and significantly correlated to the protean self-directed, protean values-driven, boundaryless mindset, boundaryless mobility preference, autonomy/independence, pure challenge, creativity, entrepreneurial, internationalism, management, service/dedication to cause, and technical/functional career anchors. The *hedonism values* were positively and significantly correlated to the protean self-directed, boundaryless mindset, autonomy/independence, pure challenge, creativity, entrepreneurial, internationalism, management, and technical/functional career anchors. The *achievement values* were positively and significantly correlated to the protean self-directed, protean values-driven, boundaryless mindset, autonomy/independence, pure challenge, internationalism, and life style career anchors. The *power values* were positively and significantly correlated to the boundaryless mindset, autonomy/independence, pure challenge, creativity, entrepreneurial, internationalism, management, security/stability, and technical/functional career anchors. The *security values* were positively and significantly correlated only to the security/stability career anchor. The *tradition values* were positively and significantly correlated only to the security/stability career anchor. The *conformity values* were positively and significantly correlated to both the security/stability and service/dedication to cause career anchors. The *benevolence values* were positively and significantly correlated to the protean

**TABLE 1 |** Mean, standard deviation, bivariate correlations, and Cronbach's alpha (in parenthesis).

Variable	M	SD	1	2	3	4	5	6	7	8	9	10		
BASIC VALUES														
1. Self-direction	5.06	0.65	(0.78)											
2. Stimulation	4.08	1.12	0.49***	(0.78)										
3. Hedonism	4.26	0.89	0.35***	0.48***	(0.76)									
4. Achievement	4.88	0.87	0.34***	0.51***	0.32***	(0.52)								
5. Power	2.81	1.01	0.09	0.26***	0.51***	0.16*	(84)							
6. Security	4.46	0.85	0.08	−0.13	0.24***	0.06	0.25***	(0.79)						
7. Tradition	3.33	1.27	−0.18	0.07	0.28***	0.04	0.24***	0.37***	(0.82)					
8. Conformity	3.77	1.03	−0.11	−0.13*	0.05	0.03	0.02	0.46***	0.41***	(83)				
9. Benevolence	5.23	0.63	0.34***	0.25***	0.33***	0.35***	0.01	0.25***	0.26***	0.27***	(0.80)			
10. Universalism	4.41	0.85	0.27***	0.21**	0.00	0.25**	−0.29***	0.08	0.01	0.29***	0.36***	(0.85)		
PROTEAN AND BOUNDARYLESS CAREER ORIENTATIONS														
11. Self-directed	3.86	.00	0.47***	0.40***	0.30***	0.22**	0.11	−0.09	−0.06	−0.11	0.24***	0.04		
12. Values-Driven	3.83	0.65	0.34***	0.23***	0.13	0.22**	−0.06	−0.11	−0.17*	−0.14*	0.16*	0.14*		
13. Boundaryless mindset	3.58	0.80	0.38***	0.50***	0.33***	0.29***	0.15*	−0.10	−0.10	−0.10	0.16*	0.15*		
14. Mobility preference	3.26	1.05	0.12	0.18**	−0.02	0.06	−0.15*	−0.36***	−0.27***	−0.26***	−0.13	0.06		
CAREER ANCHORS														
15. Autonomy/Independence	3.44	0.78	0.43***	0.41***	0.27***	0.16*	0.20**	−0.11	−0.12	−0.25***	0.02	0.03		
16. Challenge	3.18	0.80	0.32***	0.42***	0.30***	0.17**	0.26***	−0.09	0.01	−0.13*	0.11	−0.05		
17. Creativity	3.08	0.91	0.28**	0.39***	0.21**	0.12	0.20**	−0.14*	0.02	−0.14*	0.05	0.01		
18. Entrepreneurial	2.65	1.13	0.14*	0.32**	0.20**	0.05	0.23***	−0.04	0.01	−0.08	−0.02	−0.01		
19. International	2.38	0.99	0.10	0.38***	0.26*	0.21**	0.19**	−0.14*	−0.07	−0.14*	−0.11	0.06		
20. Lifestyle	3.88	0.55	0.10	0.06	−0.03	0.20**	−0.10	0.01	0.11	0.12	0.21**	0.19**		
21. Management	2.43	0.77	0.12	0.31***	0.38***	0.07	0.49***	0.01	0.04	−0.04	−0.04	−0.16*		
22. Security	3.38	0.77	−0.20**	−0.20**	0.12	0.02	0.22**	0.46***	0.30***	0.28***	0.08	−0.09		
23. Service to a cause	3.42	0.76	0.10	0.19**	0.04	0.10	−0.17**	−0.03	0.08	0.17**	0.26***	0.44***		
24. Technical/functional	3.19	0.64	0.21**	0.22**	0.27***	0.02	0.34***	0.08	0.08	0.02	−0.02	−0.07		
Variable	11	12	13	14	15	16	17	18	19	20	21	22	23	24
11. Self-directed	(0.76)													
12. Values-Driven	0.54***	(0.70)												
13. Boundaryless mindset	0.36***	0.22**	(0.90)											
14. Mobility preference	0.15*	0.12	0.24**	(0.87)										
15. Autonomy/Independence	0.42***	0.33***	0.28***	0.13*	(0.79)									
16. Challenge	0.35***	0.13*	0.41***	0.06	0.36***	(0.80)								
17. Creativity	0.33***	0.15*	0.25***	0.05	0.51***	0.47***	(0.70)							
18. Entrepreneurial	0.27***	0.15*	0.20**	0.10	0.51***	0.27***	0.55***	(0.88)						
19. International	0.13*	0.07	0.43***	0.15*	0.32***	0.33***	0.34***	0.31***	(0.87)					
20. Lifestyle	0.08	0.15*	0.03	−0.02	0.08	0.02	0.06	−0.02	−0.08	(0.58)				
21. Management	0.15*	−0.03	0.32***	−0.08	0.34**	0.46***	0.41***	0.46***	0.53***	−0.14*	(0.79)			
22. Security	−0.12	−0.15*	−0.17**	−0.51***	−0.27*	−0.05	−0.05	−0.11	−0.11	0.24***	0.04	(0.79)		
23. Service to a cause	0.18**	0.18**	0.21**	0.04	0.09	0.14*	0.32***	0.21**	0.18***	0.34***	0.05	0.06	(0.78)	
24. Technical/functional	0.31***	0.08	0.25***	−0.04	0.31***	0.53***	0.43***	0.33***	0.28***	0.16*	0.42***	0.12	0.13*	(0.59)

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

self-directed, protean values-drive, boundaryless mindset, life style, and service/dedication to cause career anchor. Finally, the *universalism values* were positively and significantly correlated to the protean values-driven, boundaryless mindset, life style, and service/dedication to cause career anchors. These results support H1, H2, H3, and H4.

We found negative and significant correlations between the *protean values-driven* and security and tradition values, between the *boundaryless mobility preference* and power, security, tradition, and conformity values, between the *autonomy career anchor* and conformity values, between the *pure challenge career anchor* and conformity values,

between the *creativity career anchor* and security and conformity values, between the *internationalism career anchor* and security and conformity values, between the *management career anchor* and universalism value, and finally between the *security career anchor* and self-direction and stimulation values. These results are consistent with the circumplex structure of values showing oppositions between openness to change and conservation-related variables and between self-enhancement and self-transcendence related variables.

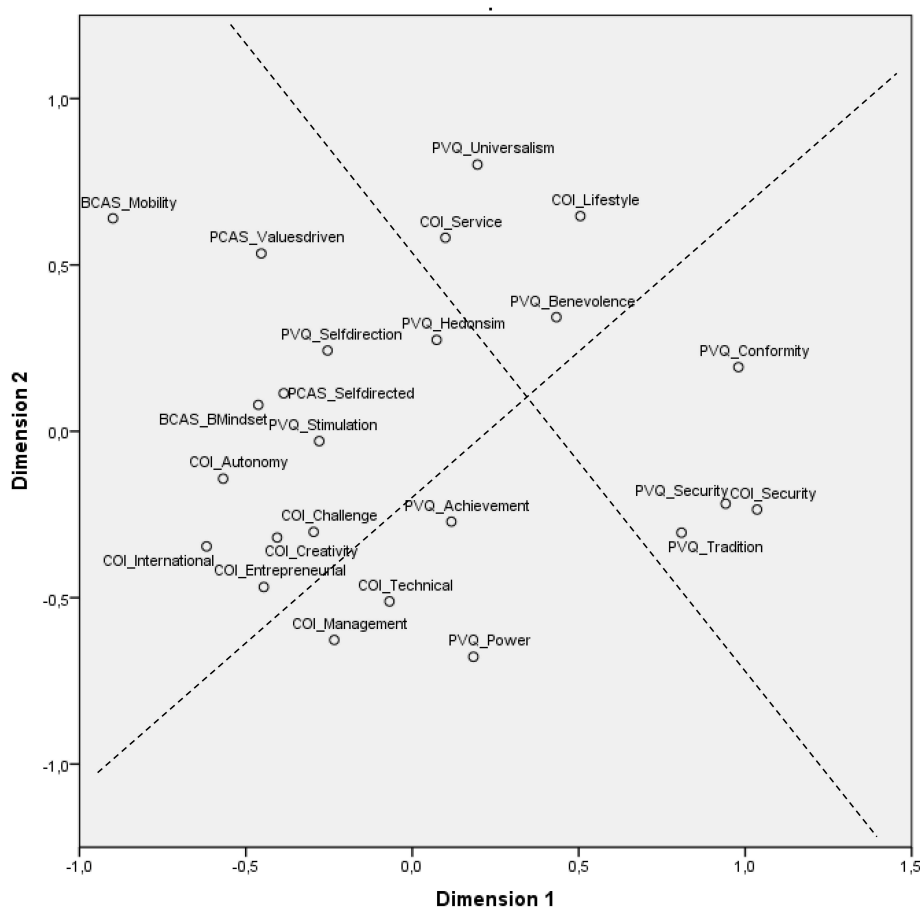
## Confirmatory Factor Analyses

First, we assessed whether the 10 basic values and items in Schwartz's model fitted the data by controlling for social desirability bias using the common factor method (Billiet and McClendon, 2000) a robust-maximum likelihood method of estimation. The fit indices of this model confirm the structure validity and distinctness of the 10 basic values as follows: S-B $\chi^2_{(1, 168)} = 2142.11$   $p < 0.001$ ,  $\chi^2/df = 1.83$ , CFI = 0.83, RMSEA = 0.055, 90% IC (0.051, 0.059), SRMR = 0.071.

Second, we assessed the measurement model by investigating a second-order model of Schwartz' basic values, protean career orientation, boundaryless career orientation, and career anchors as distinct but related factors with their respective sub-scales and items. The results show fit indices of S-B $\chi^2_{(7, 102)} = 12491.81$ ,  $p < 0.001$ ,  $\chi^2/df = 1.76$ , CFI = 0.66, RMSEA = 0.056, 90% IC (0.055, 0.058), and SRMR = 0.077. Thus, the confirmatory factor analyses confirmed the factorial structure of the 10 basic values and the distinctiveness of Schwartz's basic values, protean and boundaryless career dimensions, and career anchors. However, the CFI fit index was below the acceptable threshold of 0.90, suggesting that the models were not robust to misspecification.

## Multidimensional Scaling Analysis

We assessed the structure of the relationships among Schwartz's basic values, protean and boundaryless career orientations, and career anchors and evaluated whether these constructs were organized in a circumplex structure with two bipolar dimensions of openness to change, self-enhancement, conservation, and self-transcendence. As shown in **Figure 1**, the first MDS



**FIGURE 1** | Bi-dimensional plot of basic values (PVQ), Protean (PCAS), and Boundaryless (BCAS) career orientations, and Career anchors (COI). Stress 1 = 0.15, Dispersion accounted for = 0.97, Tucker's coefficient of congruence = 0.98. The left region of the map corresponded to the *openness to chance* broad values, the lower region corresponds to the *self-enhancement* broad values, the right region corresponds to the *conservation* broad values, and finally, the upper region corresponds to *self-transcendence* broad values.



resulted in an acceptable coefficient of alienation of 0.15, suggesting that the projection of the constructs on the map is adequate, accurate, and interpretable. Moreover, this map appeared interesting because the four regions (subjectively drawn) showed the same compatibilities and oppositions of basic values that are found in Schwartz's theory of values. Thus, self-direction and stimulation were located in the openness to chance broad value; achievement and power were located in the self-enhancement broad value; security, tradition, and conformity were located in the conservation broad value; and benevolence and universalism were located in the self-transcendence broad value. However, hedonism differed from the theoretical order (moved between the openness to chance and self-transcendence broad values). Regarding the protean and boundaryless career dimensions and career anchors, the results showed that the four protean and boundaryless career sub-dimensions as well as autonomy/independence, international, creativity, entrepreneurial, and pure challenge career anchors were located in the openness to chance broad value. The managerial competence and technical/functional competence career anchors were located in the self-enhancement broad value. The security/stability career anchor was located in the conservation broad value. Finally, the lifestyle and service/dedication to a cause career anchors were located in the self-transcendence broad value. These results support H1, H2, H3, and H4. However, surprisingly, the technical/functional competence career anchor was clearly a part of self-enhancement broad value rather than a part of the openness to chance broad value.

## Canonical Correlation Analyses

We examined the shared variance between two set of variables as follows: a set of Schwartz's basic value variables and a set of protean and boundaryless career dimensions and career anchor variables. Levine (1997) suggested to examine the canonical loadings (with absolute values of 0.30 and higher) to identify the variables that are strongly related to their canonical variate when the canonical correlation is significant. Thus, the canonical correlation analyses (CCAs, **Table 2**) revealed four significant canonical variates. The first variate ( $R_c = 0.74$ ,  $R_c^2 = 0.55$ ) reflected strong positive relationships between pairs of variables of self-direction, stimulation, hedonism, and achievement basic values and protean self-directed and value-driven, boundaryless mindset and mobility preference, and autonomy, pure challenge, creativity, entrepreneurial, international, management, and technical career anchors. In contrast, this first variate showed strong positive relationships between the pairs of variables of security and conformity basic values and security career anchor. Thus, these two pairs of variables were opposed, suggesting that they represent opposite sets of variables. The second variate ( $R_c = 0.67$ ,  $R_c^2 = 0.45$ ) showed strong relationships between the pairs of variables of achievement, power, and security basic values and management and security career anchors. In contrast, the second variate reflected strong positive relationships between the pairs of variables of universalism basic value and boundaryless mobility preference and life style and service/dedication to a cause career anchors. Thus, when used

**TABLE 2 |** Canonical correlations and loadings between a set of Schwartz's basic value variables and a set of protean and boundaryless career dimensions and career anchor variables.

	Variate 1	Variate 2	Variate 3	Variate 4
Canonical correlation	0.74	0.67	0.49	0.42
Wilks's $\lambda$	0.10	0.23	0.43	0.56
$\chi^2$ (df)	507.85 (140)***	327.85 (117)***	191.88 (96)***	130.79 (77)***
<b>CANONICAL LOADINGS (STRUCTURE COEFFICIENTS)</b>				
Basic values				
Self-direction	<b>-0.73</b>	0.04	<b>-0.43</b>	0.25
Stimulation	<b>-0.81</b>	-0.02	-0.20	<b>-0.39</b>
Hedonism	<b>-0.38</b>	0.09	-0.26	-0.23
Achievement	<b>-0.44</b>	<b>-0.47</b>	<b>-0.33</b>	<b>-0.37</b>
Power	-0.22	<b>-0.84</b>	-0.09	-0.19
Security	<b>0.39</b>	<b>-0.44</b>	<b>-0.63</b>	-0.12
Tradition	0.28	-0.20	<b>-0.46</b>	-0.16
Conformity	<b>0.42</b>	-0.03	<b>-0.54</b>	<b>-0.31</b>
Benevolence	-0.15	0.21	<b>-0.85</b>	0.02
Universalism	-0.01	<b>0.61</b>	<b>-0.37</b>	<b>-0.53</b>
<b>PROTEAN AND BOUNDARYLESS CAREER DIMENSIONS AND CAREER ANCHORS</b>				
Self-directed	<b>-0.46</b>	0.21	-0.17	0.12
Values-driven	<b>-0.65</b>	-0.06	<b>-0.44</b>	0.14
Boundaryless mindset	<b>-0.69</b>	-0.02	-0.21	<b>-0.39</b>
Mobility preference	<b>-0.41</b>	<b>0.30</b>	<b>0.52</b>	-0.05
Autonomy	<b>-0.70</b>	-0.16	-0.01	0.01
Challenge	<b>-0.61</b>	-0.23	-0.15	-0.05
Creativity	<b>-0.55</b>	-0.11	-0.05	-0.10
Entrepreneurial	<b>-0.38</b>	-0.24	0.03	<b>-0.33</b>
International	<b>-0.45</b>	-0.13	<b>0.31</b>	<b>-0.68</b>
Lifestyle	-0.02	<b>0.30</b>	<b>-0.39</b>	-0.01
Management	<b>-0.40</b>	<b>-0.63</b>	0.05	<b>-0.38</b>
Security	<b>0.49</b>	<b>-0.46</b>	<b>-0.47</b>	-0.19
Service to a cause	-0.10	<b>0.48</b>	<b>-0.45</b>	<b>-0.58</b>
Technical/functional	<b>-0.31</b>	<b>-0.45</b>	-0.14	-0.14

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

*In bold canonical loadings with positive and negative values of 0.30 and higher. This indicates the salience of the loadings to the variates.*

simultaneously, both pairs of variables would be contradictory. The third variate ( $R_c = 0.49$ ,  $R_c^2 = 0.24$ ) suggested that the variables of self-direction, achievement, security, tradition, conformity, benevolence, and universalism broad values were positively associated with the variables protean values-driven, life style, security, and service/dedication to a cause career anchors and negatively associated with the variables of boundaryless mobility preference and international career anchor. Finally, the fourth significant variate ( $R_c = 0.42$ ,  $R_c^2 = 0.18$ ) showed strong positive relationships when used simultaneously between the pairs of variables of stimulation, achievement, conformity, and universalism basic values and boundaryless

mindset and entrepreneurial, international, management, and service/dedication to cause career anchors.

In summary, first, the present study shows evidence of significant bivariate associations among basic values, protean and boundaryless career orientations, and career anchors. Second, a confirmatory factor analysis provided evidence of the validity and distinctiveness of these constructs. Third, a multidimensional scaling analysis showed the structural relationships and correspondences in reference to the circumplex logic of Schwartz's basic values. Fourth, canonical correlation analyses showed the degree to which these constructs captured the same latent domain. Therefore, the combined results provided evidence regarding the degree of shared variance among basic values, protean and boundaryless career orientations, and career anchors.

## DISCUSSION

The aim of the present study was to empirically explore the similarities, correspondences, and shared variance among basic values, career orientations, and career anchors. More precisely, we sought to evaluate the overlap among these constructs to better understand individuals' career motivations and paths. Overall, our results, using a heterogeneous sample of employees, confirmed our hypotheses, suggesting significant overlaps and structural correspondences among these constructs. Thus, the protean and boundaryless career orientations were positively and significantly related to Schwartz's values that emphasize openness to change. The career anchors followed meaningfully the motivational continuum of basic values according to previous research studies. We, therefore, suggest integrating these constructs to build a common understanding and framework to explore and address more precisely the relationships, factors, and processes underlying individuals' career motivations and paths.

### An Integrative Understanding of Basic Values, Career Orientations, and Career Anchors

Our research suggests that it is possible to use Schwartz's broad values to situate, organize, and structure career orientations and career anchors. Consistently with other recent studies (Wils et al., 2010, 2016), our findings show that Schwartz's values emphasizing openness to change share similarities and a common variance with the autonomy/independence, international, entrepreneurial, creativity, and pure challenge career anchors as well as the protean and boundaryless career sub-dimensions. These findings suggest a need to consider these career attitudes and anchors simultaneously as components of career-related motivations to capture individuals' feeling and readiness for change (Schwartz et al., 2006). Thus, according to Schwartz et al.'s (2006) values and principles that organize the structure of values, individuals who portray these attitudes and anchors are likely to value and pursue autonomy, stimulation, and hedonism in their careers and are likely to reject security, conformity, and tradition values. Moreover, these individuals are likely to be regulated primarily by their self-interest rather

than those of others, to cope more easily with anxiety, and to focus on promotions, gains, and growth. In contrast, our findings show similarities between Schwartz's values that emphasize conservation (i.e., security, conformity, and tradition) and the stability/security career anchor. Unlike the opposed to openness and change motivational values, individuals anchored in security would be more focused on and affected by others, experience more anxiety when confronted with uncertainty, and be more likely to prevent professional loss and threats by complying with rules and norms.

Another opposition exists between Schwartz's values that emphasize self-enhancement and those that emphasize self-transcendence. Our results show that the former shared similarities and variance with managerial competence and technical/functional competence career anchors, suggesting that individuals who are preferably anchored in the management career anchor and technical functional career anchor are more likely to express their personal interest and pursue values of power and achievement and would rather prefer to work in well-structured and organized environments that leave little room for uncertainty. However, our results show that those who endorse the self-transcendent motivational values of universalism and benevolence expressed the lifestyle and service/dedication to cause career anchors. Thus, these individuals are more likely to be opposed to the expression of selfish interests and pursue goals to grow (Schwartz et al., 2006).

Altogether, our findings contribute to the career research literature and provide a better understanding of the motivations underlying individuals' career choices and paths. Moreover, the relationships among basic values, career orientations, and career anchors were highly significant in the direction of the two bipolar dimensions and motivational continuum proposed in Schwartz' structural values model. We may conceptualize that career anchors are driven by personal values that develop in terms of career goals and reflect career orientations. However, further investigations are needed to confirm these findings and the structural correspondences. Moreover, future research studies should investigate and clarify the relationships between work values and career anchors using the well-established taxonomies of work values proposed by Super (1970) and Dawis and Lofquist (1984) and the COI Schein (1990). These studies will provide stronger empirical evidence to build a comprehensive and integrative framework of work values, career orientations, and career anchors.

The present research findings may have important practical implications for individuals. Knowledge regarding the structure of basic values, career orientations, and career anchors and their relationships may help individuals better evaluate whether their personal life values and goals correspond to the traditional/organizational (linear career) or contemporary (non-linear or protean and boundaryless careers) career paths. For instance, an individual anchored in security/stability needs may consider work environments that preferably attach importance to preserving social and professional arrangements to ensure continuity and stability. Consequently, this individual would be more satisfied with organizational career arrangements and rewards.

## Limitations and Future Research

The present research has some limitations. First, we used self-reported measures, which are not free of bias, such as social desirability or the common method effect. The use of different methods and approaches may provide more robust and unbiased correspondences. Second, we used a cross-sectional design, which does not provide information regarding stability and change in the relationships over time. Finally, we used a sample that is specific to a particular culture, which may limit the generalizability of these relationships and correspondences to other cultures.

Despite these limitations, the present study advances existing knowledge on the correspondences among basic values, career orientations, and career anchors. Our results show an important overlap and shared variance among these constructs, which opens avenues for future research to build a common framework and further investigate the common underlying dimensions.

## Implications for Managers

According to Hall and Yip (2014) “when climate and careers are aligned, organizations and individual members perform more effectively” (p. 230). Our results provide valuable knowledge for managers to better address and align adequately employees’ values to career development and success. First, we suggest managers pay attention to both employees’ working climate (Hall and Yip, 2014) and perceived organizational support (Rhoades and Eisenberger, 2002). Hence, managers should provide employees with clear performance standards and reward system as well as adequate and continuous support (i.e., social or material) in line with their career needs and values. Second, we suggest managers to treat and use basic values in an integrative way in relation to career orientations and career anchors. As our results show that basic values are motivationally associated with career orientations, or career anchors, it is important to enable employees to clarify their own career value preferences and to increase their knowledge about available career options and situations. Moreover, interventions (e.g., workshops) and tools (e.g., online job platforms) could be derived that help

align employees’ basic values to appropriate career development opportunities.

## CONCLUSION

When choosing a career, taking into account personal basic values is a critical component for a satisfying and congruent career choice. We herein contribute to the career and organizational literatures by providing an integrative understanding and new empirical knowledge of the relations among basic values, career orientations, and career anchors. On the basis of the present study, we suggest to consider these constructs simultaneously to better understand and promote individuals’ career choices and lifelong career self-management.

## ETHICS STATEMENT

This study was carried out in accordance to the APA ethical guidelines, that is, all participants were informed of their right to leave the survey at any time without any prejudice and guaranteed anonymity and confidentiality. All participant gave their informed consent in accordance with the Declaration of Helsinki.

## AUTHOR CONTRIBUTIONS

The order of authorship corresponds to the authors’ relative contributions to the substantial, direct and intellectual effort reported in the paper, and all the authors approved it for publication.

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# Work-Related Stress in the Banking Sector: A Review of Incidence, Correlated Factors, and Major Consequences

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For a number of years now, banks have been going through enormous changes in organization and structure. New technology and new ways of structuring the operation have left their mark on the working conditions and daily lives of employees. Deregulation of labor markets, emerging technologies and new types of jobs have significantly reshaping working lives by continuous changes on employment and working conditions. Such a scenario has a relevant impact not only on companies' organization but also on working population's health. The banking sector is particularly well-deserved of a specific and thorough analysis, in view of the recent increase in psycho-social disorders of employees. This may be related to the major organizational changes affecting this sector and, in particular, to the restructuring processes resulting from the global economic crisis. Our aim is to assess the scale of the phenomenon and how far it relates specifically to the processes of bank organization. With this in mind, through a review of the literature, we selected the main studies dealing with work-related stress in banking, so that we could reach a better understanding of the phenomenon as it relates specifically to this set of workers. The search took place on the MEDLINE<sup>®</sup> database; in total 20 articles were chosen. There was uniform agreement among the studies that stress in the banking workplace is now at critical levels, and that it can have deleterious psychological effects on workers, and on their physical health, and that organizations, too, are affected. Most studies showed that mental health problems had increased in the banking sector, and that they were stress-related. Examples began with anxiety and depression, carried on through maladaptive behaviors, and ended in job burnout. The reviewed studies' limitations were then discussed, and possible ways forward considered.

**Keywords:** work-related stress, organizational stress, mental health, banking, occupational health, occupational medicine

## INTRODUCTION

In recent decades, moves to a global economy and deregulated markets have led to a series of large changes in the way financial services work and are sold, and this is particularly true of the organization and execution of work in the sector (Hassard et al., 2017; Kaur et al., 2017). There was enormous change in the way banks were organized and the effect on the working lives of employees of new technology and new structures was severe.

The credit industry is experiencing a particularly important moment due to major changes in organizations and the global economic crisis. In Italy, the main cause of reorganization of this sector lies in the large number of internal mergers and acquisitions (M&A), mainly due to strategic reasons rather than to financial failures (Pohl and Tortella, 2017). Therefore, these M&A processes not only helped to redraw the landscape of banks but also the scenario of the banking groups themselves: on the one hand the growing integration of the Italian banking system with the European one has pushed the creation of companies of such size to compete with the large groups in the rest of Europe, on the other, the reorganization has led to a remodeling through banking groups alliances, with the resulting acquisition of a dominant market position by only three large groups.

The explosion in 2008 of the economic crisis in Europe was determined by external factors that triggered a structural crisis that was undermining the economy of some countries (e.g., Italy, Greece and Portugal) already from the beginning 2000 and prevented a proper response to economic shocks, both from the effects of the 2007 international financial crisis and the sovereign debt crisis of 2011 (Dom et al., 2016). No economic sector has been immune from the effects of the crisis, especially in the most affected countries. The repercussions in the credit sector were of two types: on the one hand, the progressive reduction in saving and investment capacity of the customers, and, on the other hand, the increasingly frequent unforeseen of the global economic market. Therefore, it is reasonable to expect consequences on the psycho-physical well-being of employees (Van Hal, 2015; Frasquilho et al., 2016).

The International Labor Organization reported a number of worrying issues for workers in financial services; these included greater pressure on time, problems with ergonomics, conflicting roles, work demands that were considered excessive, difficult relationships with customers, and a rising number of cases of stress and violence (Giga and Hoel, 2003).

Such changes have had relevant effects on bank employees, not just in the workplace but also in their daily lives. In fact, banking work, in which for at least a century there have been no major changes, has been completely redesigned. This process is inserted in a context of increased competition between national and international banks, institutional changes, implementation of economic plans, and reduced inflationary rates (Silva and Navarro, 2012; Bozdo and Kripa, 2015). The basis of the new requirements and qualifications is based on three characteristic social phenomena: unemployment, precariousness of work, and intensification of the labor rhythm (Hantzaroula, 2015).

It is possible to affirm that the substantial changes that took place with the productive restructuring were in the sense of implementing strategies such as charging clients for a greater diversity of services and products, intensification of outsourcing, flexibility of work, redefinition of tasks and traditional banking activities, and transferring more and more services to the clients themselves (i.e., through home-banking) (Silva and Navarro, 2012; Blazy et al., 2014). In this new management model, bank employees have experienced a full redefinition of their tasks, becoming bank sellers (rather than bank employees), working with clients to meet the bank's targets in areas such as the sale of investment funds, bonds, and insurance policies (Jinkings, 2004; Adrian and Ashcraft, 2016). Moreover, a considerable reduction in job positions intensified the volume of work for those who remained, as well as for new employees (Silva and Navarro, 2012).

In addition to those changes that have occurred since the process of productive restructuring have affected the way of being of bank employees, they also affected the health of workers, as a result of increasing pressure, tension and stress in the bank environment (Silva and Navarro, 2012). For some authors, both the informatization processes and the profile redefinitions can endanger the well-being and health of workers (Ganesh Kumar and Deivanai Sundaram, 2014; De Cuyper and Isaksson, 2017; Manjunatha and Renukamurthy, 2017).

The National Institute for Occupational Safety and Health (NIOSH) ranked occupations for stress levels, with some of the 130 occupations found to be more stressful. What these stressful occupations had in common was that the employee had insufficient control over the work, with employees feeling that they were trapped in jobs where they were regarded as quasi-machines rather than as people. The dozen most stressful positions were managerial, administrative and supervisory roles; if we extend the 12 most stressful occupations to 28, bank tellers feature in the list (Michailidis and Georgiou, 2005).

There is much literature to support the idea of occupational stress as a disease promoter, placing workers' social and psychological health at risk and damaging their social, professional and affective lives. Poor performance at work, a high level of absenteeism and staff turnover, and violence in the workplace all follow (Godin et al., 2005; Stansfeld and Candy, 2006; Bhagat et al., 2010; Burke, 2010; Dalgaard et al., 2017).

In light of what we have discussed, we believe that there is a strong need for a thorough analysis of the increasing spread of negative health outcomes that work-related stress may assume in a very changing organizational context as the banking one. Despite the existence of a plentiful Literature on work-related stress, the study of this phenomenon in the banking sector is still limited, although it falls into the field of collective health. This review can support stakeholders and institutions agencies responsible for monitoring workplaces to framing the issue as well as to develop prevention and protection strategies. In this manuscript, our intention is to assess the scale of the phenomenon and how far it relates specifically to the processes of bank organization. In particular, through a review of the literature, we selected the main studies dealing with work-related stress in banking, so that we could reach a better understanding of the phenomenon (epidemiology of work-related stress, health

problems related to work-related stress, risk factors, health outcomes as an effect of work-related stress, consequences for the organization) as it relates specifically to this set of workers.

## MATERIALS AND METHODS

To find recent date scientific literature on the subject of work-related stress in the banking sector, we conducted a review following the MOOSE Group's guidelines (MOOSE is the acronym for Meta-analyses Of Observational Studies in Epidemiology) (Stroup et al., 2000). The platform chosen for the literature search was MEDLINE®.

Keywords used in the search were: "bank," "banking," "work-related stress," "job stress," "organizational stress," and "stress," and we searched for them in the title and in the abstract of manuscripts. In order to be included, papers had to describe the results of original studies (primary studies), they had to be published in English and their full-text had to be available online (based on both the subscriptions of the University of Florence and of the European University of Rome). No temporal filter has been adopted. MEDLINE® was last accessed on 31 July 2017.

First, the articles were selected on the basis of title and abstract, then on the basis of the full-text. The references of the selected articles were then examined to identify other suitable studies.

The quality of the selected studies, included in the final synthesis, was assessed according to the study design: **Table 1** lists three quality grades, reflecting that, while some studies will meet the quality criteria in full, some will be deficient in some way and some will fail to meet the criteria in any way. Since there is not a universal agreement on the criteria to be included in quality assessment, the criteria listed in **Table 1** were chosen by the research group, according to the expertise of each component of the team. Specifically, the type of study, the type of parameters used to investigate work-related stress, and the type of data collection were considered to assess the quality of the selected study.

Longitudinal studies are those that follow a cohort of workers for an extended period, permitting changes in the incidence of pathological facets of banking sector work-related stress to be assessed while taking into account observed changes in both physical and psychological working conditions. There is no doubt that such longitudinal studies, as opposed to cross-sectional, studies, would produce more accurate results. Subjective (self-perceived) parameters could lead to social desirability bias, which could result in misclassification or in bias in the interpretation of objective parameters. Moreover, studies with data collected three or more times were considered more accurate and so with higher quality.

## RESULTS

About 600 citations (565 articles) were identified through the search strategy. The selection by title and abstract led to the exclusion of 530 studies not related specifically to the topic or not in agreement with the inclusion criteria (not primary studies, published in any language different from English, full text not

available). The selection by full text led to the exclusion of 20 papers. By consulting the reference lists of the selected articles, five papers were identified. So, the procedure set out above, led to the selection of 20 articles, of which five were European (Spain, Cyprus, the Netherlands, Italy, and Iceland), nine were Asian (India, Pakistan, China and Malaysia), four came from Brazil, and two were African (South Africa, Nigeria).

**Table 2** summarizes results drawn from the studies concerning work-related stress and its effects, with particular reference to the banking sector.

Considering the study design, no studies are classified in the first, completely satisfactory, quality category (**Table 1**), because not one of the examined studies met every quality criterion. The most obvious reasons for this are that there are no longitudinal studies into how banking sector work-related stress affects employees, and that the studies all rely on respondents self-assessing and self-reporting, so that there is a risk of social desirability bias. In fact, all publications were assigned in the low quality category.

The oldest study included in this review was published in 1996; the other researches are quite recent, and 17 (85%) were published in the last 10 years.

Five of the articles examined ways in which stress at work might give rise to various negative mental health and physical results. These included anxiety and depression, together with such maladaptive behaviors such as smoking and drinking (Silva and Barreto, 2010, 2012; Snorraddóttir et al., 2013; Petarli et al., 2015; Valente et al., 2015). Another five investigated how stress at work can give rise to such specific conditions as workplace discrimination, work-family conflict, (lack of) job satisfaction and employee motivation, high staff turnover and work-life imbalance in employees (Seegers and van Elderen, 1996; Mughal et al., 2010; Oginni et al., 2013; Imam et al., 2014; Kan and Yu, 2016). A further three looked for an occupational stress/job burnout nexus (Mutsunguma and Gwandure, 2011; Amigo et al., 2014; Li et al., 2015). In two cases, the focus was those factors in the banking sector that could make or increase stress levels in particular roles (Fernandes et al., 2012; Devi and Sharma, 2013). Two more were concerned with the role played in development of specific physical symptoms by organizational stress in the development of specific physical symptoms (Mocci et al., 2001; Makhbul et al., 2011); two others looked at factors contributing to work-related stress in banking sector employees (Michailidis and Georgiou, 2005; Ahmad and Singh, 2011); and the last looked for differences between male and female respondents and between those employed by private and by public sector banks in the kind of stress and the degree of intensity (Preshita and Pramod, 2014).

The majority of papers analyzed for our review dealt with the effects of work-related stress in the banking sector.

Seegers and van Elderen (1996) investigated how stressors related to work affected the physical and psychological well-being in a large Dutch banking organization, and what levels of absenteeism they gave rise to. Invitations to complete a questionnaire were sent to five hundred bank directors, of whom 376 (75.2%) responded by completing the forms. The basis of the questionnaire was a Dutch version of a questionnaire

**TABLE 1** | Description of the quality criteria used to assess the quality of the studies.

Quality categories	High quality	Moderate quality	Low quality
Type of study	Longitudinal	Longitudinal	Cross-sectional
Type of parameters used	Only objective parameters with standard definition	Objective parameters with standard definition and self-perceived symptoms	Only self-perceived symptoms or no parameter assessed
Type of data collection	Data collected 3 or more times over the period taken into account	Data collected just two times over the period taken into account	Data collected in a single interview or questionnaire or not collected at all

developed by the Institute for Social Research at the University of Michigan (Vragenlijst voor Organizatie Stress (VOS-D) for the measurement of organizational stress (Bergers et al., 1986) with the addition of objective stressors (age, years of directorship, staff size). Also added were two subscales drawn from the Self-Expression and Self-Control Questionnaire (Zelfexpressie en Controle Vragenlijst, ZECV) (Maes et al., 1987) in order to measure the degree to which anger was internalized or externalized, and questions intended to assess the degree of social support. Stressor variables included:

- Workload;
- Role ambiguity, role conflict and lack of responsibility; *and*
- Lack of knowledge.

Work-related stressors included two scales:

- Meaninglessness of work; *and*
- Uncertainty as to job future.

There was a division of work-related psychological strains into job dissatisfaction and cognitive anxiety, in addition to which were also considered:

- Psychological and health complaints; *and*
- Absenteeism (measured by self-reporting of days' absence in the past year).

The conclusion was that subjective stressors did contribute to work-related stress, while lack of knowledge and lack of responsibility expressed themselves in increased feelings that work was meaningless and the future uncertain. Meaninglessness of work and job dissatisfaction were connected with each other; so were psychological complaints to cognitive anxiety and health complaints; while a person's perceived psychological well-being was related to work-related strains.

Social support was confirmed as compensating for stress in that it tended to lessen negative effects caused by stressors and so led to reduced stress reactions. The study's limitations centered on the fact that the data came from a cross-sectional study and were for the most part self-reported and retrospective.

Mocci et al. (2001) set out to examine how far psychological stressors contribute to asthenopic complaints (asthenopia is visual discomfort) as well as the extent to which social support could mitigate the effect of job stressors. To this end, it looked at the influence of such stressors as task, individual characteristics and social environment on asthenopia in computer users. Ophthalmological examination allowed the selection from a total of 385 Italian bank workers of 212 who did not have organic

visual weaknesses, and who shared both work environment and job duties to create the study group. This group was given three questionnaires:

- the NIOSH job stress questionnaire (Hurrell and McLaney, 1988; Mocci, 1994);
- a questionnaire designed to identify subjective discomfort springing from or caused by the workplace's environment and lighting conditions; *and*
- a questionnaire on whether oculo-visual disturbances were experienced.

Results showed the following (or their lack) predictors of visual complaints:

- Social support;
- Self-esteem;
- Work satisfaction;
- Group conflict; *and*
- The underuse of skills

Social support could also act to mitigate the stress and strain model which was responsible for 30% of the variance. Although they could have a significant correlation with asthenopia, subjective environmental factors did not show up strongly as predictors of the symptoms. The authors' conclusion was that complaints about visual health by VDT workers probably reflect in part a psychological discomfort attributable to conditions of work. Discussing the limitations of their work, the researchers observed that they had evaluated environmental discomfort on the basis of self-reporting only, that the same caveat applied to occupational stressors and visual discomfort, and that using self-reports of both job stressors and strains made for a greater likelihood of conceptual overlap.

Michailidis and Georgiou (2005) studied occupational stress as it affects Cyprus's banking sector. The study improved understanding of factors contributing to occupational stress as employees in this industry feel it. The authors evaluated the extent of any correlation between employees' educational levels, relaxation patterns, and smoking and drinking habits with their perceptions of their level of occupational stress. Subjects, drawn from both genders and a variety of educational backgrounds, completed the Occupational Stress Indicator (OSI) (Cooper et al., 1988) with a view to establishing the degree to which occupational stress affects varying groups. 80 full-time employees of different banks in Nicosia, the Cypriot capital, were chosen at random to receive the questionnaires were distributed to 80 randomly selected. There were significant differences in the



**TABLE 2 |** Summary of the studies included in the review.

Authors	Year	Journal	Results
Seegers and van Elderen	1996	European Journal of Psychological Assessment	Subjective stressors contributed to work-related stress; lack of knowledge and lack of responsibility were related to an increased perception of meaninglessness of work and job future uncertainty; meaninglessness of work was related to job dissatisfaction; cognitive anxiety was related to psychological complaints and psychological complaints to health complaints. Social support had a compensating effect, tending to reduce the negative effect of stressors.
Mocci, Serra and Corrias	2001	Occup Environ Med	Social support, group conflict, self-esteem, work satisfaction and underuse of skills were found to be predictors of visual complaints; social support played a part also as a moderating factor in the stress and strain model; this model accounted for 30% of the variance.
Michailidis and Georgiou	2005	Work	Employees' educational levels affected the degree of stress they experienced in various ways; the degree to which some employees tended to bring work-related problems home depended on their educational background, the strength of the employees' family support, and the amount of time available for them to relax. The drinking habits were found to play a significant role in determining the levels of occupational stress.
Silva and Barreto	2010	BMC Public Health	Adverse working conditions assessed using demand control (Karasek, 1979) and effort-reward imbalance (ERI) model (Siegrist, 1996) were statistically associated with the presence of minor psychiatric disorders. Compared to workers exposed to low-demand and high-control activities, the prevalence of MPD more than doubled among those in maximum demand and minimum control conditions.
Mughal et al.	2010	J For Global Business Advancement	Importance of stress factor toward work-life balance. Stressors are directly proportional to work-life balance. The organizational source of stress (task demands, role demands, organizational structure, organizational leadership, interpersonal demand and job security) has a valid impact on work-life balance.
Ahmad and Singh	2011	International Journal of Management and Strategy	A few stressors of occupational stress scale have been found to have a causative influence on banking sector employees' perceived reactions toward Organizational Change: responsibility for persons, intrinsic impoverishment, low status and unprofitability. Among biographical variables, only "experience in the present position" was a predictor of banking sector employees' reactions.
Makhbul et al.	2011	Australian Journal of Basic and Applied Sciences	A large percentage of the changes in stress outcomes in the workplace were due to its relationship with body postures and health factors. The body posture had a noticeable effect and was significantly related to stress outcomes at the workplace.
Mutsunguma and Gwandure	2011	Psychology, Health and Medicine	Significant differences between the psychological well-being of bank employees who handled cash and those who did not handle cash. They differed in terms of work stress, emotional exhaustion, depersonalization and overall burnout.
Silva and Barreto	2012	Journal of Occupational Health	Relationship between exposure to adverse psychosocial work environment and poor self-rated health. This effect was seen in both demand-control and ERI models.
Fernandes et al.	2012	International Journal of Behavioural and Healthcare Research	Authors extracted specific dimensions that could promote the reduction of stress. Human support was the factor that most reduced total stress, followed by relaxed health practices and by vigorous health practices.
Snorraddóttir et al.	2013	American Journal of Industrial Medicine	The risk of psychological distress depends on the extent of change experienced and the level of entanglement in the process. Environment factors such as high job demand and low job control played a part in perceived psychological distress, but only to a limited degree. The negative effects of the psychological distress could be partly attenuated by the empowering leadership.
Devi and Sharma	2013	IIMB Management Review	Frontline bank employees differed significantly on the basis of their experience of role stressors and merited categorization into distinct segments: "overloaded employees," "unclear employees" and "underutilized employees." The profiles of the frontline bank employees falling in the above distinct segments were also found to be significantly different.

(Continued)

TABLE 2 | Continued

Authors	Year	Journal	Results
Oginni et al.	2013	International Journal of Business and Management Invention	Job security is the greatest source of job stress to Nigerian bankers, followed by work materials made available by the management of the institutions; next came organizational policies that guided the activities and decisions of employees. After this was work pressure, which can be said to be a follow-up to the organizational policies.
Amigo et al.	2014	Psicothema	High degree of Burnout Syndrome amongst employees of Spanish Savings Banks. The factor for which the greatest number of workers showed a high risk of BS was emotional exhaustion. Working in branch offices implied a higher risk of suffering from burnout than working in central services.
Preshita and Pramod	2014	International Journal of Applied Business and Economic Research	Both private and public sectors experienced moderate to high levels of stress: role stagnation emerged as the most potent role stressor in both sectors, followed by inter-role distance and role erosion. Employees of private sector banks had higher total ORS scores compared to public sector banks.
Imam et al.	2014	Middle-East Journal of Scientific Research	Stress played a vital part of partial mediator in intensifying and strengthening the impact of gender discrimination-glass ceiling on job satisfaction and employee motivation.
Petarli et al.	2015	Ciência and Saúde Coletiva	The important role of social support, considered the most well-known situational variable against occupational stress (Bakker and Demerouti, 2007), was evident in the study. Low social support increased the likelihood of belonging to the "high distress" quadrant.
Valente et al.	2015	Occupational Medicine	Having a job characterized as high strain, low social support, high effort/low reward and high over-commitment was strongly associated with both major and other depressive symptoms. Strong association between low social support and depressive symptoms.
Li et al.	2015	International Journal of Environmental Research and Public Health	The average scores of the three dimensions of job burnout in this sample were higher than in five occupational groups from three nations (Finland, Sweden and the Netherlands) (Schutte et al., 2000). The main contribution of the study is to highlight that occupational stress may affect the risk of job burnout in bank employees via a mediating mechanism of PsyCap.
Kan and Yu	2016	International Journal of Environmental Research and Public Health	Chinese bank employees suffer from high levels of depressive symptoms. A significantly negative association of PsyCap with depressive symptoms among Chinese bank employees. Occupational stressors from ERI (extrinsic effort and reward) were significantly associated with PsyCap. PsyCap partially mediated the associations of extrinsic effort and reward with depressive symptoms.

results between employees educated to higher degree level and those without formal qualifications. It was those educated to higher degree level who were most affected by the impact of the home/work interface; they showed a tendency to take work problems and demands home with them, and to appear to be following career objectives to the detriment of their home life. They were also the ones most likely to feel the brunt of such factors as: variety of work; delegation; favoritism; and conflicting tasks. The study also showed that, faced with high levels of these issues, these were the employees most likely to reduce the amount of time they had for themselves, thus losing relaxation time. Finally, employees in the habit of drinking alcohol were shown to have difficulty seeking advice from their supervisors and to be reluctant to look for social support. This research suggests that an employee with more educational qualifications will be more likely to act in a more detached and unemotional way and be more objective in order to reduce the impact of stress.

Silva and Barreto (2010) took as their study's starting point Nakao's work (2010) on work-related stress and how it connects to a variety of negative outcomes in both physical and mental

health, including depression and anxiety, together with such maladaptive behaviors as smoking and drinking. The aim of the study was to estimate how prevalent minor psychiatric disorders (MPD) were in the employees of a large bank in Brazil, and to investigate how far these could be related to adverse psychosocial working conditions. Their methodology embraced demand control (Karasek, 1979) and the effort-reward imbalance (ERI) model (Siegrist, 1996). Authors also examined the degree to which social support or the presence of over-commitment could modify these associations, as suggested by, respectively, the JCQ and ERI models, respectively. A version of the General Health Questionnaire containing 12 questions (GHQ-12) adapted by Mari and Williams, tested for the presence of MPD (Mari and Williams, 1985), while two tools were used to assess psychosocial factors at work: the JCQ reduced version that Araújo had adapted to Portuguese (2003), and the version of the ERI scale that Silva and Barreto had adapted to Portuguese by (2010). On the basis of assumptions in Karasek's model, the median value was used to dichotomize variables, which were combined in four distinct categories. The highest exposure

group contained those workers faced with a combination of low control and high demand. Intermediate groups were those for active job (high control and high demand) and passive job (low demand and low control). Eighty-eight percent of the 2,337 eligible workers took part in the study, and results suggested a statistical association with MPD for adverse working conditions in both scales. MPD prevalence more than doubled among those facing maximum demand while exercising minimum control. ERI produced similar results, with MPD prevalence varying from 33% (low-effort and high-reward employees) to 70% for high effort/low reward staff. Absence of social support at work and over-commitment both also showed a statistical association with MPD. Limitations of the population and design, the healthy worker effect and data collection through self-response were present in the study and the study's cross-sectional nature prevents inferences from being drawn on the causal nature of associations thrown up between common mental disorders and stress at work. Finally, as MPD is a major cause of temporary leave and invalidity pensions among bank workers in the country (Silva et al., 2007), the authors commented on the possibility that there was no participation in this work by individuals with severe mental disorders, so that the prevalence of MPD in the study population would be underestimated. The authors went on to suggest that new studies of bank workers be developed, and especially those of a longitudinal design, in an attempt to understand the mechanism of these associations. Ahmad and Singh (2011) investigated how occupational stress and a number of biographical variables in a sample of 350 bank employees randomly drawn from various Indian banks (age, experience in present position, total experience, salary and number of dependents) affected employee reactions to organizational change (OC). A scale developed by Rahman (1993) was used to measure organizational change, while the Occupational Stress Index—46 items covering 12 aspects of occupational stress (role ambiguity, role overload, role conflict, powerlessness, under-participation, unreasonable group and political pressures, responsibility for persons, poor peer-relations, low status, intrinsic impoverishment, strenuous working conditions, and unprofitability) was used to gauge occupational stress. The authors found a causative influence on employees' perceived reactions to OC in certain stressors from the occupational stress scale; these were: responsibility for persons, intrinsic impoverishment, low status and unprofitability. The only biographical variable to predict banking sector employees' reactions to organizational change was "experience in the present position."

Silva and Barreto (2012) examined how far poor self-rated health of Brazilian employees in financial services could be connected to adverse psychosocial working conditions. In a cross-sectional study, a random sample of 2,054 bank employees (49.7% male and 50.3% female) answered a questionnaire containing questions about five areas of interest: socio-demographic, health, psychosocial, behavioral and work-related factors. Among the latter were: length of service in the company; current job; and psychosocial nature of the job. The demand-control model (Karasek, 1979) and effort reward imbalance (ERI) model were used to assess independent associations with the

outcome (Siegrist, 1996). Employees with a high demand/low control work combination appeared in the group that had most exposure to stressful conditions. High demand/high control employees were placed in the intermediate exposure group, together with low control/ low demand employees, while employees working under low demand and high control provided the reference category for statistical analysis, since they were seen as having no exposure to stress. For the ERI model, a work-related stress index was constructed using cutoffs derived from the distribution's tertiles (Jonge et al., 2000). Of these, the highest was the most exposed group; the intermediate exposure group was second, and in the first tertile were the unstressed reference category. To find the dependent variable for the analysis, a single question was used: "In general, compared to people of your age, would you say your health is (...)" Five responses were possible: very poor; poor; good, very good; or excellent). A statistical association with poor self-rated health was found with advancing years; lack of physical activity; chronic diseases; problems sleeping; regular medication use; and having been employed by the company for between 6 and 14 years. Exposure to high strain work and lack of social support at work also showed a statistical association with poor self-rated health. These results added further support to the idea of a relationship between poor self-rated health and exposure to an adverse psychosocial work environment, an effect seen in both demand-control and ERI models. In the first of those models, the association was stronger both among high strain/low control workers and employees lacking social support at work, while in the ERI model, the likelihood of poor self-rated health increased for high effort-reward imbalance and a high level of commitment at work.

The subject of study for Snorraddóttir et al. (2013) was psychological distress caused to employees by rapid and unpredictable changes when the organizations they worked for underwent financial collapse. What they examined was the level of psychological distress among those employees who survived the crash, and the impact on them of involvement in the twin processes of downsizing and restructuring. The study was cross-sectional in design; data were collected from all the headquarters and branch employees in all of the three Icelandic banks that collapsed during the first week of October 2008. The basis of the questionnaire used was the General Nordic Questionnaire for psychological and social factors at work (short version) (QPS-Nordic 34þ), with some questions from the long version added (Dallner et al., 2000), together with questions culled from the Copenhagen Psychosocial Questionnaire (COPSOQ) (Kristensen et al., 2005) and from questionnaires that had previously been administered by the Icelandic Public Health Institute (Jónsson and Gudlaugsson, 2010) and the Administration of Occupational Safety and Health (AOSH) (Rafnsdóttir and Gudmundsdóttir, 2004; Sveinsdóttir and Gunnarsdóttir, 2008). Completed questionnaires were returned by a total of 1,880 employees. The scale used to measure psychological distress was one previously used by AOSH (Sveinsdóttir and Gunnarsdóttir, 2008) including five items indicating symptoms of depression, anxiety, being overly concerned, sleep disturbances, and feeling exhausted. What was

demonstrated is that workers who were more entangled in the downsizing or restructuring processes were more distressed than those who were not. Higher distress levels were seen in bank employees working in downsized departments, transferred to a different department, or having taken a salary reduction and the likelihood of psychological distress varied according to how much change had been experienced and how deeply involved in the process the person was. The researchers' conclusion was that factors relating to psychosocial work environment played a part, but only a limited part, in perceived psychological distress for those involved in the organizational change processes in the early aftermath of the collapse of the banks. Also, results indicated that psychological distress in employees could be reduced during difficult economic times if management prioritized employee well-being, informing and encouraging employee participation in decision-making (Arnetz, 2005; Svensen et al., 2007), and that distress was reduced in such employees when friends and family provided social support. Coworker support or support from supervisors, however, was not so effective. This study gains strength from having been, uniquely, nationwide with every employee of a collapsed major bank in one country being involved. As with the other studies, the central weakness was its cross-sectional nature and use of self-reported data (Kompier, 2002).

In the first large-scale study carried out in the Spanish banking sector, Amigo et al. (2014) investigated how prevalent employee burnout syndrome (BS) is. One aim of the study was to differentiate between commercial branch office staff who dealt with the general public, and central services employees. Participants in the study came from all the Spanish Savings Banks and totaled 1,341, of whom 883 were men and 458 women. 1,130 worked in branch offices and had direct contact with the clients; the number of central services workers was 211. The Maslach Burnout Inventory-General Survey (MBI-GS) (Schaufeli et al., 1996), adapted for the Spanish environment by Salanova et al. (2000), was used. While the study showed high BS rates among employees of Spanish savings banks, and 63.16% of participants showed high levels of risk, significant differences emerged between the two groups in all three dimensions of BS: emotional exhaustion ( $p < 0.001$ ); cynicism ( $p < 0.001$ ); and professional efficacy ( $p < 0.001$ ). Branch office workers returned higher scores for emotional exhaustion and cynicism and lower scores for professional efficacy. This high incidence of BS was higher even than that shown by other studies where the professions involved are associated with BS (Hernández et al., 2006; Longas et al., 2012) and the high rate of BS shown becomes even more relevant when one takes into account that the criteria used to establish risk was very restrictive; only workers who posted high scores in a minimum of two factors of the MBI-GS were counted. Emotional exhaustion was the factor involving the greatest number of workers showing high BS risk of BS. The difference between groups may be interpreted as arising from the likelihood that branch office workers will have daily contact with people whose economic problems are severe, and that they had to deal with these problems. What's more, branch workers were required to sell financial products with a problematic past illustrating the very competitive practices

among financial institutions. All these things led to a certain loss of control for branch office employees and might be seen as explaining their feelings of less professional efficacy, greater emotional exhaustion and greater cynicism (Alarcon, 2011; Lee et al., 2011). A branch office job carries more risk of burnout than one in central services. The significant difference was contact with the public, which branch office staff have and central services personnel do not. The suggestion from these results is that burnout has more to do with daily interpersonal stress at work, exacerbated by the sector's commercial strategies of recent years, than to the possibility of being let go or asked to take a cut in salary.

The incidence of occupational stress in Brazilian bank employees, and its association with socioeconomic, demographic, and labor characteristics, was studied by Petarli et al. (2015). This was a cross-sectional study of 521 people aged between 20 and 64 and drawn from both sexes who worked for a banking network in the state of Espírito Santo. Data collection took place between August 2008 and August 2009. The short version of the Job Stress Scale (Alves et al., 2004), adapted for the Brazilian market and developed according to the demand-control model, was used (Karasek et al., 1998). The demand-control model has four quadrants: high distress (high-demand/low-control jobs), passive job (low-demand/low-control jobs), active job (high-demand/high-control jobs), and low distress (low-demand/high-control jobs). The study placed the biggest number of bank employees ( $n = 179$ , 34.5%) in the "passive" quadrant; the drawback to passive jobs lies in their combination of low psychological distress and low control, possibly leading to a gradual decrease in learning and skill development. The greatest risk of occupational stress lay with the quadrant that had the lowest number of employees. These results were not those expected, given the factors in today's banking activities—demanding targets, fierce competition, fewer available jobs, a constant demand to increase qualifications, intensified and overloaded tasks, and increased control and pressure on workers—that could increase the occupational stress risk. The control-demand model concentrates on processes of workforce organization to assess the risk of stress (Alves et al., 2004) and takes no account of other important facets of development and perception of occupational stress, so that a broader evaluation of stress levels in the employees studied might have been possible. Social support, regarded as the most well-known situational variable for occupational stress analysis (Bakker and Demerouti, 2007), was shown in the study to play an important role: Where there was low social support, there was a greater likelihood of being in the "high distress" quadrant. This variable's efficacy in reducing predicted occupational stress was borne out by results from other studies (Leong et al., 1996; Urbanetto et al., 2011). Finally, those variables making up quadrants associated with increased occupational stress risks were:

- Low education levels;
- Working in bank agencies;
- More than 5 years' employment at the bank;
- Six hour daily work shifts; and *especially*
- Low levels of social support.



Conversely, the following correlated with a lower risk of occupational stress than being single:

- Being married;
- Living with a partner; *and*
- Being separated, divorced, or widowed.

A sample of 1,046 employees in financial services in northern Brazil allowed Valente et al. (2015) to look for correlations between:

- Psychosocial conditions in banking work, as assessed by the Job Demand-Control-Support model (Karasek et al., 1998) and Effort-Reward Imbalance (ERI) at work model (Siegrist et al., 2004); *and*
- Major depressive symptoms and other forms of depressive symptoms.

This cross-sectional study was conducted between 2012 and 2013, with data obtained through a self-administered questionnaire that combined the Patient Health Questionnaire-9 (PHQ-9) (Fraguas et al., 2006), the Demand-Control-Support Questionnaire (DCSQ), adapted to Brazilian Portuguese (Alves et al., 2004), and the Brazilian version of the ERI-Questionnaire (ERI-Q) (Chor et al., 2008) to assess:

- Work, social and demographic issues;
- Depressive symptoms; and
- Psychosocial aspects of the working environment.

Thirty-two percent of bank employees were found to have depressive symptoms which would justify a diagnosis of clinical depression. There was a strong correlation between, on the one hand, depressive symptoms both major and otherwise to be characterized and, on the other, being in work that could be seen as high in strain, low in social support, combining high effort with low reward, and a high level of over-commitment. The authors also saw a strong correlation between low social support levels and symptoms of depression, which confirmed previous findings (Wang et al., 2011; Yu et al., 2013); in sum, employees whose working environment combined high strain with low social support levels were more likely to have health problems than were those whose social support levels were high. The conclusion was that banking sector work demanded constant skill updating to stay abreast of new work organization forms. Employees, and especially older employees, could find this threatening and experience additional stress as a result (Giga and Hoel, 2003). A private banking sector job might also bring with it the possibility of instability of employment, with downsizing resulting in pressure overload and stress a major employee concern.

According to Li et al. (2015), there had been no examination of the role of Psychological Capital (PsyCap) in mediating between occupational stress and job burnout in bank employees. Their study of a Chinese population filled this gap by examining potential mediation of PsyCap on occupational stress leading to job burnout. Their aims were:

- To determine what association, if any, existed between occupational stress and job burnout;

- To appraise the association between PsyCap and job burnout; and
- To explore whatever efficacy PsyCap might have in mediating the occupational stress/job burnout connection in the case of Chinese bank employees.
- This study was to be carried out separately for male and female employees

The study was cross-sectional survey by nature and carried out in northeast China from June to August 2013. Self-administered questionnaires were returned by 1,239 employees. The Chinese version of the ERI questionnaire was used to assess occupational stress, with a claim to examine failed reciprocity in cases where substantial efforts are met with low rewards (Yang and Li, 2004). PsyCap was measured using the Chinese version of the 24-item Psychological Capital Questionnaire (PCQ) (Luthans et al., 2007), while the Chinese version of the Maslach Burnout Inventory-General Survey (MBI-GS) was used to measure job burnout. Average scores of all three job burnout dimensions exceeded those in five other occupational groups (managers, clerks, foremen, technical professionals, and blue-collar workers) in Finland, Sweden and the Netherlands (Schutte et al., 2000). There was no difference in correlation of occupational stress with the three occupational stress dimensions between male and female bank employees. A positive relationship was found between extrinsic effort and over-commitment with, respectively, emotional exhaustion and depersonalization. It follows that tiredness is less likely in bank employees whose PsyCap is adequate and that their burnout symptoms were likely to show improvement. The implication was that PsyCap might have a strong effect on job burnout and that it could prove an effective resource in combating job burnout among Chinese bank employees. There was, though, a gender difference in how PsyCap mediates the association between occupational stress and job burnout: male bank employees found that PsyCap mediated the effects of extrinsic effort and reward on emotional exhaustion and depersonalization, while female bank employees found that PsyCap partially mediated effects of extrinsic effort, reward and over-commitment on the same two job burnout dimensions. The authors said that the study's main contribution was highlighting occupational stress's possible role in affecting bank employees' job burnout risk through PsyCap as mediator. So that, as well as reducing the amount of excessive effort and over-commitment and increasing rewards, bank administrators could use PsyCap more to reduce job burnout among their employees, and especially their female employees.

Makhbul et al. (2011) investigated which factor in the ergonomic workstation variables in the Banking Supervision Department in ABC Bank in Malaysia had the most influence on stress levels. Thirty-one employees of department took part in this study. Several questionnaires having to do with ergonomic workstation factors and resulting stress at work inherited from past research contributed to developing questionnaires; questions included:

- Human and environment variables in the matter of ergonomic workstations; and

- Lists of:

- physiological (somatic complaints),
- psychological (job dissatisfaction complaints),
- behavioral (intention to quit) elements.

47.2% of changes in workplace stress levels were shown to be due to alterations in posture and other health matters. Factors relating to ergonomic workstations included the effect of posture which correlated significantly with workplace stress levels. Health was shown on analysis to have a stronger relationship than any other factor with workplace stress due to the hours of input work demanded in the department. Dissatisfaction with the job, somatic illnesses and a decision to leave were all fueled by postural weaknesses due to ergonomic considerations related to the workstation and health factors.

Fernandes et al. (2012) conducted a study to measure how organizational, environmental and health matters affected organizational role stress (ORS). Data was collected in a survey of 483 respondents in both public and private banking sectors in Goa, India. ORS was measured using a technique of Pareek (1983), which indexed the stress individuals perceived in their role, split across 10 categories: The extent to which the role is ambiguous; what is expected of the role; inadequacy of available resource; stress arising from the content of the role; erosion of the role; isolation of the role; perceived distance between self and role; stress due to the magnitude of the role; stagnation of the role; perceived distance between roles; role overload; and a sense that the personal assigned to the role is inadequate to perform it. In looking for the categories that could best encourage stress reduction, the study selected human support as the most effective. Second came health regimens that encouraged relaxation like meditation and yoga, together with more vigorous health pursuits like jogging and playing games. The study found a negative correlation between role definition stress and a combination of meditation, human and physical support, and yoga. When it came to reducing stress due to the magnitude of the role, human support again scored the highest correlation, followed by the more vigorous activities. The authors defined the study's limitations as difficulty in generalizing the findings to fit a wider range of bankers, which would require responses from a more diverse sample.

Preshita and Pramod (2014) set out to understand what contributed to occupational stress in Indian private and public sector banks. With 230 respondents collected by convenience and random sampling through the ORS scale (Pareek, 1983), they looked for differences in the kinds of stress felt and the strength with which it was experienced, looking also for male/female and public/private sector differences. The study found that stress was experienced, at levels ranging from moderate to high, in both sectors, with stagnating roles being the most powerful stressor across either sector; distance between roles and erosion of roles came next. ORS scores were higher in private sector employees. According to the authors, stagnation of roles is inherent in the job-banking contains many monotonous jobs and employees who have repeated the same task again and again over a long period without career growth opportunities and with no likelihood of future change are likely to feel that their

capacities are not used to the full, that there are no learning opportunities, and to be stressed by the perception that their role is stagnating.

The study by Imam et al. (2014) looked at ways in which job stress can mediate between discrimination in the workplace and such outcomes as motivation and job satisfaction in banking in Pakistan. Types of discrimination considered were mainly to do with gender distinctions. From a random sample of three banks, the study found that in corporate banking the dependent variable had a marked predictive validity, with job stress acting in partial mediation between the two conditions, showing the role played by stress in increasing the extent to which discrimination against one gender affects motivation and job satisfaction.

The study by Mughal et al. (2010) also looked at Pakistani banks and their current issues regarding stress related to work. In this study, the subject was how stress affects work-life balance. It follows Robbins (2003) in seeing the environment, the organization and the individual as sources of stress and the results thereof (Gunkel et al., 2007). For this research only organization was used as a source of stress; job security or insecurity was added, together with others related to environment. 200 employees in middle and lower executive posts in banks responded. Six elements, or stressors, subordinate to organization, were chosen as independent variables and questions focused on each of these, an additional goal being to establish how important each was. The research uncovered the contribution to employee work/life balance of each aspect of the stressor and the scale of that relationship. Six factors (demands of the task, demands of the role, interpersonal demands, the structure of the organization, quality of leadership and security in the job) brought about a change of 63.2% change in work-life balance. The relationship between work/life balance and employee performance was also clarified. Work/life balance was strongly impacted by issues around security in the job. The conclusion was that those factors listed earlier in this paragraph caused stress and interfered with both the working and the personal lives of employees.

Occupational stress, conflicting demands of family and work, and their effect on symptoms of depression were studied by Kan and Yu (2016), who also examined what effect PsyCap had on those same symptoms and whether PsyCap could mediate the impact on symptoms of depression of occupational stress and conflicting demands of family and work. The sample was drawn from employees of Chinese banks for a cross-sectional survey from May to June 2013. With informed consent confirmed in writing, self-administered questionnaires were distributed directly and 1,239 sets of complete responses were returned. The levels of symptoms of depression and stress at work were measured by, respectively, a Chinese version of CES-D, the Depression Scale of the Center for Epidemiologic (Radloff, 1977) and the ERI scale, Chinese version (Li et al., 2006). To measure levels of conflict between family and work, the study used a Chinese version of the WIF scale (which assesses how far demands of work interfere with obligations to family) (Netemeyer et al., 1996) and PsyCap levels were measured using a Chinese version of the Psychological Capital Questionnaire (PCQ) (Luthans et al., 2007). Overall, the results may be said

to have shown high levels of symptoms of depression among Chinese bank employees and the study called for urgent efforts to tackle these symptoms. The correlation between PsyCap and symptoms of depression was shown to be substantially negative. Also, extrinsic effort and reward as ERI occupational stressors showed significant association with PsyCap, leading researchers to examine the possible use of PsyCap to predict symptoms of depression. PsyCap may, in fact, be seen as partially mediating these associations, and PsyCap could act as a resource for alleviating symptoms of depression in employees of Chinese banks, reducing negative effects on mental health of occupational stress. Bank employees experiencing greater extrinsic effort or lower reward levels would be likely to have lower PsyCap levels, raising the risk and seriousness of symptoms of depression.

In South African banks, Mutsunguma and Gwandure (2011) compared the psychological well-being of employees who handle cash with those who don't in a cross-sectional study of 50 respondents. Levels of work stress, burnout and satisfaction with life were measured using, respectively, the Job Stress Survey Scale, the Maslach Burnout Inventory and the Congruity Life Satisfaction Scale. There were significant differences between the two groups in the areas of depersonalization, emotional exhaustion, work stress, and overall burnout. Inner-city Johannesburg employees handling cash experienced work-related stress, possibly connected with the very common Johannesburg incidence of unpredictable violence to which bank employees in Johannesburg are subject (Carter, 2010; Harrison and Kinner, 2010). This was a limited study, involving a small sample and not being generalizable to different settings.

Devi and Sharma (2013) used a random sample of 501 workers to examine how stressors affected frontline bank employees in India, role stressors being events demands and constraints creating role stress by affecting an individual's role fulfillment (Beehr and Glazer, 2005). Role stress was measured using indicators from a 50-item five-point Likert type "organizational role stress" scale developed by Pareek (1993) and assessed by 15 experts identifying scale items that did not truly measure role stress in the frontline bank employee context. The experts' suggestions were incorporated to produce a final role stress scale of 22 items. Frontline bank employees were shown to differ enough in their experience of role stressors to be categorized into segments: "overloaded employees," "unclear employees," and "underutilized employees." The profiles of the employees who fell into these segments were also significantly different. Overloaded employees experienced workloads heavier than they expected (high role excess). The works could also be monotonous and routine (high role fortification), leading to a compromise between work quality and time for family, friends and other personal interests (high role invasiveness). Unclear employees lacked enough knowledge to meet the responsibilities of the role (high role divergence) and/or experienced ambiguous work situations (high role indistinctness). Underutilized employees saw few growth opportunities for themselves (high role augmentation), and/or were unsure they had the necessary skills and knowledge (high self-diminution) which led to isolation at work (high resource shortage). The study made clear the need for customized approaches to role stress management. Present

in the study were the following limitations: cross-sectional data; self-reported measures; and a context-specific scale that could not be generalized for other contexts without validity and reliability testing.

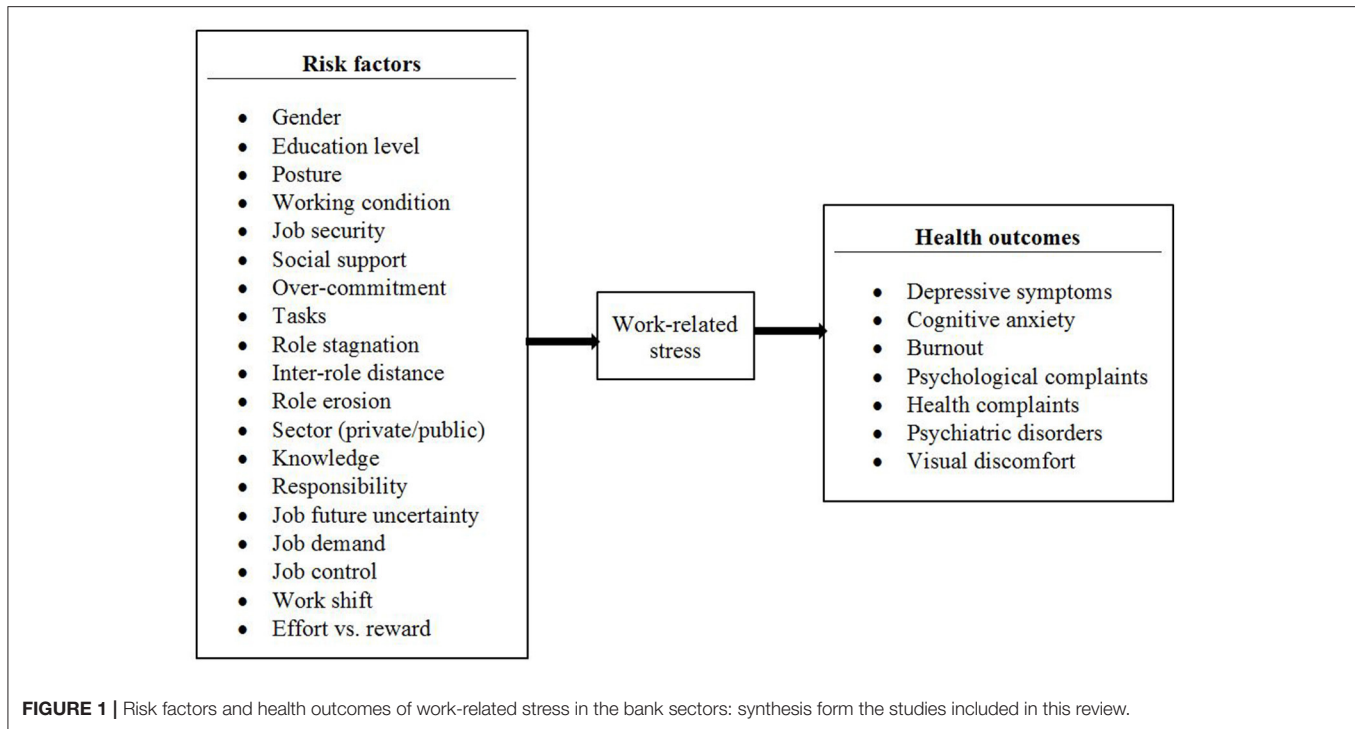
Oginni et al. (2013) investigated how job stress affected staff turnover in the Nigerian banking sector. This study identified job stress variables including personal problems, organizational and institutional policies, work materials, work pressure and environment, and job security. 533 respondents took part and job security was revealed as the biggest source of job stress to Nigerian bankers, with work materials second and organizational policies guiding employee activities and decisions third. Then came work pressure, which may be regarded as a follow-up the organizational policies. Work environment, institutional policies and personal problems were also important sources of stress for bankers. Job stress variables already listed had a significant effect on staff turnover. The conclusion was that job stress variables were important indicators and should be connected to staff turnover for better workforce productivity and stability (Abang et al., 2009).

## DISCUSSION

Most of the selected studies were published in the last 10 years: the work-related stress in the banking sector is a rather recent issue, and this could be the result of the enormous changes in organization and structure that have been occurred in the last decade.

Five studies were conducted in Europe, nine in Asia, four in America and two in Africa. Many differences occurred between countries and ethnicities as regards to cultural characteristics and the approach to work-related stress, that result in different risk perception and evaluation (Zoni and Lucchini, 2012; Capasso et al., 2016) and could limit the generalizability of the results across countries. Despite that, this review provides an overview on risk factors and health outcomes related to work-related stress in the banking sector, as described in **Figure 1**.

All studies in this review show that workplace stress is a critical banking sector issue with potentially negative effects on workers' and organizations' psychological and physical health. Most of the studies showed increases in mental health problems in the sector which were closely related to stress at work. Authors have used a number of different parameters to investigate banking sector job stress: some (Silva and Barreto, 2010, 2012; Snorráðóttir et al., 2013; Petarli et al., 2015; Valente et al., 2015) used the Demand Control (Karasek, 1979) and Effort-Reward Imbalance (ERI) (Siegrist, 1996) theoretical models. These studies showed a link between several undesirable mental and physical health outcomes and stress related to work. Silva and Barreto (Silva and Barreto, 2010, 2012) found a statistical association between adverse working conditions and minor psychiatric disorders (MPD) and a more than doubling of MPD where staff found themselves in conditions of maximum demand and minimum control. Snorráðóttir et al.'s (2013) examination of psychological trauma among surviving bank employees in restructuring and downsizing processes showed that such environment factors



as high job demand and low job control were fingered to a limited degree in perceptions of psychological distress, and that empowering leadership and family/friend support could at least partly mitigate the effect.

Petarli et al. (2015) saw social support as important and this is seen as best-known situational variable in occupational stress (Bakker and Demerouti, 2007): low social support made it more likely that a worker would be in the “high distress” quadrant (high-demand and low-control jobs). Where a quadrant intimated higher risk of occupational stress, variables associated with that quadrant were low levels of education, working in bank agencies, having worked more than 5 years at the bank, daily 6-h work shifts of, and—in particular—low social support. Valente et al. (2015) showed that working roles seen as high strain, low social support, high effort/low reward and high over-commitment correlated strongly with depressive symptoms both major and lesser.

Michailidis and Georgiou (2005) looked for factors contributing to occupational stress for employees in this sector, and identified the degree of occupational stress experienced by people in different groups. Evidence was presented educational levels, family support and drinking habits had an effect on the degree of stress experienced, while Ahmad and Singh (2011) assessed how far occupational stress and certain biographical variables in a sample of Indian bank employees influenced employees’ perceived reactions to organizational change (OC). Organizational stressors such as responsibility for people, intrinsic impoverishment, low status and unprofitability were all shown to have causative influence on banking sector employees’ perceived reactions toward OC. The only biographical variable found to be predictive of banking sector employees’ reactions

toward organizational change was “experience in the present position.”

Preshita and Pramod (2014) researched differences between male and female respondents and between those employed in private and in public sector banks in the nature of stress. Moderate to high stress levels were felt in both sectors, and the most powerful role stressor in either sector was shown to be role stagnation, with inter-role distance second and role erosion third.

Associations between occupational stress and job burnout were investigated (Mutsvunguma and Gwandure, 2011; Amigo et al., 2014; Li et al., 2015). Li et al. (2015) showed that occupational stress may play a part in job burnout but that it can be mediated by Psychological Capital, which Luthans et al. (2005) defined as “a positive psychological state that an individual performs in the process of growth and development.” It comprises four holders of psychological resource; self-efficacy; hope; optimism; and resilience. Banking employers could decrease burnout by increasing PsyCap. Amigo et al. (2014) showed that Spanish bank staff had high levels of burnout syndrome (BS) and that emotional exhaustion was the chief factor. There was a greater risk of burnout for those working in branch offices than for those in central services and a close correlation between burnout and interpersonal stress at work on a daily basis because of the commercial strategies the sector has used in recent years. A comparison by Mutsvunguma and Gwandure (2011) of levels of work stress, burnout and life satisfaction showed that bank employees who handled cash had higher levels of stress, depersonalization, emotional exhaustion and burnout than those who did not. Exposure of cash-handlers to unpredictable violence was shown to be a powerful factor in this differentiation (Harrison and Kinner, 2010).



There was analysis from some authors of how work-related stress impacted specific conditions (Seegers and van Elderen, 1996; Mughal et al., 2010; Oginni et al., 2013; Imam et al., 2014; Kan and Yu, 2016). Kan and Yu (2016) researched how occupational stress and work-family conflict affected depressive symptoms, and whether PsyCap could mediate those effects. A number of occupational stressors associated strongly with PsyCap, which mediated at least in part the associations of symptoms of depression with extrinsic effort and reward, suggesting that in PsyCap the banks may have a resource to mitigate their employees' symptoms of depression. Imam et al. (2014) investigated job stress as a mediator between gender discrimination in the workplace and levels of job satisfaction and employee motivation, finding that stress was a partial but vital mediator not in reducing but in strengthening gender discrimination in Pakistani banks. Oginni et al. (2013) examined how job stress affected staff turnover in Nigeria's banking sector. Job security was shown to be the Number One source of Nigerian bankers' job stress, with work materials second, organizational policies third and work pressure (which is in some ways a follow-up to the organizational policies) coming after those. Mughal et al. (2010) measured how far job stress affected work-life balance and found that organizational sources of stress did have an impact on work-life balance, so that stressors can be said to be directly proportional to work-life balance. Seegers and van Elderen's (1996) research into work-related stressors and their impact on psychological and physical well-being and absenteeism used the Michigan model as a theoretical framework (Caplan et al., 1975), and this threw up an interesting relationship between the investigated variables. Subjective stressors and stressors related to work did well as predictors of psychological strains and complaints, which may become health problems for the affected employee, but the model is inadequate as a way to research absenteeism which remained largely unexplained.

Other researchers looked closely at role stressors in the banking sector (Fernandes et al., 2012; Devi and Sharma, 2013). Devi and Sharma's (2013) research into the role stressors of frontline Indian bank employees showed significant differences among frontline bank employees, who could be divided into three categories: "overloaded employees," "unclear employees," and "underutilized employees." Employees in each of these categories had profiles different from those in the other categories and the results reinforced the need to customize approaches to role stress management. Fernandes et al. (2012) questioned what impact health, environmental, and organizational factors had on organizational role stress (ORS), which was measured using the scale developed by Pareek (1983), from which can be derived indices of individuals' perceived role stress. The authors were able to find specific factors for stress reduction, with human support chief among them; relaxed health practices and vigorous health practices came next. This study increased the available evidence for the idea permanent cures for workplace stress may be found using environmental, health, and demographics in the workplace as explanatory variables. Human relations were said to have overwhelming significance in relieving stress, which may be symptomatic of a culture—like India's—in which community plays the major role in everything.

Some authors concentrated on organizational stress's role in development of specific symptoms. Makhbul et al. (2011) sought to identify the most significant among the ergonomic workstation variables influencing stress levels in Malaysia's Banking Supervision Department. 47.2% of changes in workplace stress were shown to be due to posture and health factors. Posture was significantly related to workplace stress outcomes. Mocci et al. (2001) looked at how different stressors such as social environment, task, and individual characteristics influenced asthenopia (visual discomfort) in computer users, to study how far psychological stressors might be at the root of asthenopic complaints. Social support was found to be a predictor of visual complaints, as were self-esteem, work satisfaction, group conflict, and the underuse of skills. At least some complaints about visual health made by workers were probably indirect expressions of psychological discomfort related to working conditions.

Most studies agreed that social support could provide protection against occupational stress thus be important in reducing perceived stress levels. Social support was shown to tend to mitigate negative effect of stressors and to reduce the volume of stress reactions, and could be considered the best-established anti-occupational situational variable (Seegers and van Elderen, 1996; Fernandes et al., 2012; Petarli et al., 2015). It could also act as a visual complaint predictor of (Mocci et al., 2001). A lack of social support in the work environment had a statistically association with minor psychiatric disorders (Silva and Barreto, 2010, 2012; Valente et al., 2015). This variable's predictive ability in reducing occupational stress confirmed results seen in other studies (Leong et al., 1996; Urbanetto et al., 2011). Social integration, confidence in peers and the support of colleagues and superiors when performing tasks, could protect workers' health against work-related stress and its effects, and it is interesting that cortisol, the hormone released during stress, was found in increased amounts in women whose social support was low (Evolanti et al., 2006). This result strengthened the evidence for the protective effect of social support. Snorraddóttir et al. (2013) presented contradictory findings, in that it found social support from friends and family to be a stress reducer for employees involved in organizational change, but found no such effect when the support was provided by coworkers or supervisors. This study did show, though, a correlation between coworker and supervisor support and empowering leadership. Other studies have also found effects of work-related support to be limited following downsizing (Lavoie-Tremblay et al., 2010). One reason could be that organizational change disrupts social bonds, especially soon afterwards when new social bonds have not had time to form (Shah, 2000); this study does offer support for that view, since employees going through organizational change were less likely than others to say they felt they had received good support from supervisors or coworkers. Support from friends and family, on the other hand, continued to be important for mental health when rapid and unpredicted organizational change loomed (House, 1980; LaRocco et al., 1980; Snorraddóttir et al., 2013).

Several studies investigated what effect demographic characteristics had on workplace stress. Looking at age, Silva and Barreto (2012) found that being over 40 had a significant association with poor self-rated health; Kan and Yu (2016)

measured a significantly higher level of depressive symptoms in bank employees over 40 than in those aged 30; Amigo et al. (2014) saw age's effect in Burnout Syndrome scores, with those over 55 showing less "emotional exhaustion" and less "cynicism" than those between 46 and 54, while under-35s saw themselves as more professionally efficient than any older group on the "efficacy" scale. Other authors, however, found no significant differences related to the age variable (Snorraddóttir et al., 2013; Valente et al., 2015).

On years of service, Petarli et al. (2015) found that those who had worked in the bank for more than 5 years were more likely to fall in the "passive" (intermediate risk of stress) quadrant than those employed for <5 years; in Ahmad and Singh (2011) the only biographical variable to act as a predictor of employees' perceived reactions toward Organizational Change was "experience in the present position"; Amigo et al. (2014) reported that those with more than 30 years of service scored significantly lower on the burnout's cynicism scale than any of the shorter-service groups, whereas workers with <10 years of service had a higher efficacy score than any other group. Valente et al. (2015) found an association between total years worked and MDS (major depressive symptoms), resulting from the continuous updating of skills required in banking to keep up with new organization formats; researchers wondered whether this added extra stress, especially for older workers, who might feel threatened by such pressures (Giga and Hoel, 2003). On the other hand, Silva and Barreto (2010) found that the prevalence of minor psychiatric disorders showed little variation linked to duration of employment or job position.

Results with regard to the level of education variable conflicted with each other. Michailidis and Georgiou (2005) showed marked differences between bank employees with higher degree level qualifications, and those without formal qualifications. The former seemed most affected by home/work interaction and tended to take work problems and demands home, appearing to pursue a career to the detriment of home life. They were also most affected by the work variety, favoritism, delegation and conflicting task variables. The study also showed that, when those issues reached a high level, they tended to reduce the time employees had for themselves. On the other hand, Petarli et al. (2015) evaluated occupational stress on the demand-control model (Karasek et al., 1998) and showed that low education increased an employee's probability of being in the "passive" (intermediate risk of stress) quadrant. And, last, Kan and Yu (2016) detected no significant difference in bankers' symptoms of depression stemming from the education variable.

Several authors looked for gender differences. Snorraddóttir et al. (2013) reported higher levels of psychological distress among women; Li et al. (2015) saw gender differences in mediation by Psychological Capital of the occupational stress/job burnout association, with PsyCap mediating the effects of two dimensions of occupational stress (extrinsic effort and reward) on two dimensions of job burnout (emotional exhaustion and depersonalization) for male staff while, for female bank employees, PsyCap partially mediated the effects of three dimensions of occupational stress (extrinsic effort, reward and over-commitment) on two dimensions of job burnout. Amigo

et al. (2014) also found significant differences in emotional exhaustion and professional efficacy, with women scoring higher for emotional exhaustion and men scoring lower for professional efficacy. Fernandes et al. (2012) reported that females experienced more stress than males and attributed this to domestic pressures and increasing demands in the workplace. Other authors, however, reported no significant gender difference (Silva and Barreto, 2010, 2012; Preshita and Pramod, 2014; Valente et al., 2015; Kan and Yu, 2016).

Finally, some researchers researched which work characteristics were most associated with stress. Petarli et al. (2015) said that bank agency workers were more likely to belong to the "high distress" quadrant than workers in the administrative unit. A study by Valente et al. (2015) suggested that private bank or branch office work were most associated with ODS (other depressive symptoms). There was also a higher risk of employment instability and downsizing for those in the private bank sector which led to greater pressure at work, more stress and a higher rate of overload (Giga and Hoel, 2003). Preshita and Pramod (2014) also found higher total organizational role stress scores in private sector employees. Possible causes lie in the strict deadlines and lack of job security in private sector banking. Mutsyunguma and Gwandure (2011) examined how the psychological functioning of bank employees who handled cash and those who did not differed and found significant differences in work stress, emotional exhaustion, depersonalization and overall burnout. This study's findings corroborated existing research evidence to the effect that exposing employees to unpredictable and violent work environments could raise psychological distress levels and impair employee effectiveness (Harrison and Kinner, 2010). Amigo et al. (2014) split the study population into two groups: workers not working with the general public; branch office workers. There were significant differences between the two groups in all three burnout dimensions: emotional exhaustion, cynicism and professional efficacy. Branch office workers returned higher scores for emotional exhaustion and cynicism and lower scores for professional efficacy. Branch office workers were in daily contact with people with serious economic problems and were also required to sell their customers complicated financial products, and all of these things took away their control over aspects of their working lives and might explain their feelings of lower professional efficacy and greater emotional exhaustion and cynicism (Alarcon, 2011; Lee et al., 2011).

The relationship between work-related stress and mental disorders were confirmed also in other sectors, as described in a recent systematic meta-review of work-related risk factors for common mental health problems (Harvey et al., 2017). The Authors observed as certain types of work may increase the risk of some mental disorders, but the nature of the relationship is far from clear and is still a subject of debate. Nevertheless, the results of our review confirm, on the one hand, the initial assumption that psycho-social disorders of bank employees are increasing and, on the other hand, that—even though we could not identify specific clinical frameworks—banks are nowadays an occupational sector particularly at risk for work-related stress.

This review was conducted according to scientific criteria and explored the main stress-related aspects in a changing productive sector such as credit industry. This is a strength, but there are also some limitations, which may affect the results. First, this is not a systematic review, so it has not been designed to provide a complete and exhaustive summary of current literature relevant to the research question. Second, studies overviewed in this paper are all cross-sectional, none used objective parameters, and all were self-reporting. One may add to that the fact that only studies in which the keywords appeared in the abstract or title were included. Moreover, only MEDLINE® was explored to give this first description of work-related stress in the banking sector. All these aspects may have led to not including all the articles related to the investigated topic, so limiting the extent of knowledge of the effects and features of work-related stress in the banking sector. Future systematic reviews, including other databases as well, will be performed to deeply describe the state of the art of this phenomenon according to specific issues, such as risk factors or health outcomes.

Finally, the overview was restricted to studies published in the English language, so limiting the extent of knowledge of the effects and features of work-related stress in the banking sector.

In conclusion, occupational stress has clearly become a significant cause of ill health and is a serious risk factor for bank workers' psychological and social well-being. This literature review has demonstrated an increasing diffusion of adverse health outcomes from work-related stress in this sector.

There is a need for further studies to provide a better analysis of the relationship between work-related stress and health in the banking sector. It would be particularly interesting to carry out longitudinal studies to identify changes in the level and incidence of health problems and to map variations in economic, organizational, and social conditions. Future research should couple longitudinal designs with both objective and subjective measurements of stressors from a number of sources to increase understanding of organizational stress. Future research should also evaluate changes in the different groups of bank employees resulting from actions taken in organizations.

## AUTHOR CONTRIBUTIONS

GG, GA, AD, and NM conceived and designed the review; MP, CL, and JF-P performed the literature research; GG, NM, and AA-M analyzed the data; GG and NM wrote the paper.

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# The Effects of Organizational Justice on Positive Organizational Behavior: Evidence from a Large-Sample Survey and a Situational Experiment

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Employees' positive organizational behavior (POB) is not only to promote organizational function but also improve individual and organizational performance. As an important concept in organizational research, organizational justice is thought to be a universal predictor of employee and organizational outcomes. The current set of two studies examined the effects of organizational justice (OJ) on POB of employees with two different studies, a large-sample survey and a situational experiment. In study 1, a total of 2,566 employees from 45 manufacturing enterprises completed paper-and-pencil questionnaires assessing organizational justice (OJ) and positive organizational behavior (POB) of employees. In study 2, 747 employees were randomly sampled to participate in the situational experiment with 2 × 2 between-subjects design. They were asked to read one of the four situational stories and to image that this situation happen to the person in the story or them, and then they were asked to imagine how the person in the story or they would have felt and what the person or they subsequently would have done. The results of study 1 suggested that OJ was correlated with POB of employees and OJ is a positive predictor of POB. The results of study 2 suggested that OJ had significant effects on POB and negative organizational behavior (NOB). Procedural justice accounted for significantly more variance than distributive justice in POB of employees. Distributive justice and procedural justice have different influences on POB and NOB in terms of effectiveness and direction. The effect of OJ on POB was greater than that of NOB. In addition, path analysis indicated that the direct effect of OJ on POB was smaller than its indirect effect. Thus, many intermediary effects could possibly be between them.

**Keywords:** organizational justice, positive organizational behavior, procedural justice, distributive justice, organizational performance

## INTRODUCTION

Employee motivation and organizational effectiveness are the eternal topics of enterprise human resource management. The human resource management in an enterprise is finding ways to achieve the ultimate goal of inspiring employee motivation. Therefore, the study of employees' positive organizational behavior (POB) is attracting more and more attention. Luthans (2002a,b)

introduced the theory of positive psychology to the field of organizational behavior, and defined POB as “the study and application of positively oriented human resource strengths and psychological capacities that can be measured, developed, and effectively managed for performance improvement in today’s workplace” (2003, p. 179). Based on the Chinese cultural background, (Pan, 2008), and Pan and Qin (2009) defined POB as organizational behavior of employees which are beneficial to organizations. It can promote organizational function as well as improve individual and organizational performance. They also identified six dimensions of POB: devoted, responsible, active, innovative, helping, and harmonious behaviors.

Several studies have been conducted in order to find the reasons behind the employees’ willingness to show their POB. There are several factors including personal traits (Youssef and Luthans, 2007; Uymaz, 2014; Leephaijaroen, 2016), job characteristic (Bakker and Schaufeli, 2008), work stressors (Munir, 2013), and economic situation (Giorgi et al., 2015; Mucci et al., 2016; Lopez-Valcarcel and Barber, 2017). Giorgi et al. (2015) suggested that during the economic crisis, employees are more likely to have an ambiguous view of their role in organizations or a perception that hard work is more stressful as they would not get fruitful benefits. These thoughts may negatively affect their emotional and behavioral outcomes for organizations, such as less cooperative. However, what worth mentioning are these aspects described above should not be viewed as a comprehensive, exhaustive explanation of what influences POB of employees. The study of POB needs further discussion as there may have better explanatory factors affecting POB of employees.

According to Organ’s view (Organ, 1990), an organizational member’s decision to behave may be a function of the degree to which an employee believes that he or she has been treated fairly by the organization. Previous researches showed that organizational justice is associated with different positive organizational outcomes. For example, Wang et al. (2010) suggested that organizational justice can help improve the employees’ work performance. Demirkiran et al. (2016) showed that if employees perceive that actions and practices in the organization are fair and honest, they will show more extra-role behavior, which is beneficial to the development of organizations. Saifi and Shahzad (2017) found that positive perception of employees in relation to organizational justice is an important antecedent to employees’ job satisfaction, which in turn promotes positive behavior of employees. On the other hand, researches suggested that employees may respond to perception of unfair treatment with a range of negative behavioral responses (e.g., theft, withdrawal, resistance, vandalism, sabotage, and reduction of positive behavior; Fox et al., 2001; Lilly, 2017).

Therefore, the purpose of this study was to examine the relationship between organizational justice and POB of employees, and whether different dimensions of organizational justice can have different impacts on POB and NOB of employees.

## THE THEORETICAL BACKGROUND AND HYPOTHESIS

### Organizational Justice

Justice is recognized as an action or decision that is understood to be morally right on the basis of ethics, religious, fairness, equity, or law (Pekurinen et al., 2017). It is a major area of concern for both organizations and employees (Swalhi et al., 2017). Organizational justice refers to employee’s perception of fairness within an organization (Greenberg, 1990; Asadullah et al., 2017).

The earliest idea of organizational justice was derived from equity theory (Adams, 1963, 1965). It suggested that people compare the ratios of their own perceived work outcomes to their own perceived work inputs with the corresponding ratios of their counterparts. So, their organizational participation can be changed (Colquitt et al., 2001). Input here refers to time and effort and output refers to rewards, such as promotion, pay, recognition, equipment, or any other job-related resources that assist employees in job tasks or maintain overall well-being (Ghosh et al., 2017). If the ratios are equal, people in the organizational contexts are expected to have equitable and satisfied feelings. However, if the ratios are unequal, employees may have the feeling of injustice, they would try to change the situation to create new balance. For example, they may choose to reduce their input-output comparison (Shkoler and Tziner, 2017). Furthermore, organizational justice is also rooted in social exchange theory, which treats social life as a series of sequential transactions between two or more parties (Blau, 1964). In these transactions, resources are exchanged through a process of reciprocity. Therefore, one party tends to repay the good (or sometimes bad) deeds of another party (Cropanzano et al., 2017). Work relationship can be seen as a form of transaction. For example, someone exchanges work for income (Cropanzano et al., 2002). Employee’s perception of justice determines the quality of exchanging relationship with organization (Swalhi et al., 2017). When employees perceive fair treatment from the organization and its authorities, they may feel a sense of obligation to create a good act in return (Ghosh et al., 2017).

A number of studies suggested that organizational justice is a key cause of many factors which affect employees’ attitudes (e.g., job satisfaction, turnover intentions, and organizational commitment) and behaviors, such as innovative work behavior, organizational citizenship behavior as well as work performance. For example, Usmani and Jamal (2013) examined the relationship between organizational justice and job satisfaction and found that distributive justice, interactional justice and personal time are positively related to job satisfaction. Employees are willing to do more work and exhibit higher levels of performance when they believe they are treated fairly (Köse, 2014). Akram et al. (2016b) suggested that organizational justice has a strong and positive impact on the innovative work behavior of the Chinese employees. Swalhi et al. (2017) demonstrate that organizational justice affects the behavior and performance of employees in the some small-and medium-sized enterprises (SMEs). Studies also showed that justice perceptions have a robust link with organizational citizenship behavior (Karriker and Williams, 2009; Tziner and Sharoni, 2014; Gurbuz et al., 2016). When perception

of organizational justice is high, it can enhance employees' positive attitudes toward their organizations and OCB (Özbek et al., 2016). Nevertheless, low level of organizational justice would lead to dissatisfaction and negative feelings of employees, which, in turns, lead to some negative consequences. For example, Pekurinen et al. (2017) stated that low organizational justice may has an adverse effect on nurses' behavior toward colleagues (e.g., collaboration) and may lead to poor employee-patient interactions and change nurses' behavior toward patients. Shkoler and Tziner (2017) shown that the perception of injustice can pose a threat to employees' resources and give them a feeling of inappropriate resources. It makes them feel frustrated and even wear them out, which, in turn, evolve into burnout and destructive organizational behaviors, such as theft, sabotage, withdrawal, harassment.

In developing the theory of organizational justice, researchers have identified three main models including (a) two-factor model, namely distributive and procedural justice; (b) three-factor model, namely distributive, procedural and interaction justice; (c) four-factor model, namely distributive, procedural, interpersonal, and informational justice. Although many existing researches studied organizational justice by using the three-factor or four-factor model (Cohen-Charash and Spector, 2001; Colquitt et al., 2001; Tessema et al., 2014; Akram et al., 2016a,b), there is less agreement about the distinction between the interactional justice and procedural justice, informational justice and interactional justice due to the high inter-correlation (Colquitt et al., 2001). Hence, it is currently unclear that whether organizational justice should be divided by the three or four factors. Nevertheless, it must be noted that researchers have reached an agreement regarding the distinction between the procedural and distributive justice (Tessema et al., 2014). The two-factor model is the most common model used to analyze organizational justice (Alexander and Ruderman, 1987; Moorman, 1991; McFarlin and Sweeney, 1992; Karriker and Williams, 2009; Strom et al., 2014; Ghosh et al., 2017) and also serves as a baseline for the following three-, four-factor models. Each of the justice factors is briefly discussed as below.

## Distributive Justice

Distributive justice denotes the perceived fairness of the outcomes received by an employee (Moorman, 1991). Lawler suggested that these outcomes, such as pay, promotion, status, performance evaluations, and job tenure would have great influences on job satisfaction, quality of work life, and organizational effectiveness (Alexander and Ruderman, 1987). It is the equity theory that guides the outcome-oriented viewpoint. Adams conceptualized distributive justice (Tessema et al., 2014) and claimed that people are concerned about whether the outcomes are fair instead of the absolute level of the outcomes (Colquitt et al., 2001). When an outcome is perceived to be unfair, it can affect individual's emotion (e.g., anger, happiness, pride, or guilt) and cognitions (e.g., cognitively distort inputs and outcomes of himself/herself or of the other) as well as their behavior (e.g., performance and withdrawal; Cohen-Charash and Spector, 2001). Campbell et al. (2013) suggest that the perception of distributive justice is associated with the allocating

resources. In other words, the feeling of fairness depends on such a way that employees perceived that resources have been shared equitably and replenished adequately. A number of studies suggested that distributive justice and procedural justice have different impacts on organizational outcomes. For example, McFarlin and Sweeney (1992) utilized a main effect approach to examine the predictive roles of distributive and procedural justice and found that distributive justice tends to be a stronger predictor of personal outcomes (e.g., pay level satisfaction, and job satisfaction). Fields et al. (2000) found that distributive justice has larger effects on Hong Kong employees' intent to stay and job satisfaction, but procedural justice plays a more important role in determining Hong Kong employees' evaluation of supervision. Cropanzano et al. (2002) suggested that distributive justice tends to strongly correlate with reactions to specific outcomes and less strongly correlate with reactions to the organization or to one's supervisor. Ghosh et al. (2017) found that distributive justice is a stronger predictor of the sacrifice dimension of organizational embeddedness than procedural justice.

## Procedural Justice

Procedural justice refers to "the individual's perception of fairness of procedural elements within a social system regulates allocation of resources" (Leventhal, 1980). It fits with the final outcomes that are equitably deal with methods, mechanisms, and processes (Swalhi et al., 2017). It is considered to exist when procedures embody certain types of normatively accepted principles. Specifically, the fairness of the procedures shall meet the following criteria: the extent to which they suppress bias, create consistent allocations, rely on accurate information, are correctable, represent the concerns of all the recipients, and are based on the prevailing moral and ethical standards (Leventhal, 1980).

In the setting of organizations, procedural justice is considered as the root of social exchange (Swalhi et al., 2017). It has a significant impact on employees' cognitive, affective, and behavioral reactions toward the organization (Cohen-Charash and Spector, 2001). For example, Cropanzano et al. (2002) suggested that procedural justice is more likely associated with trust in upper management and organizational commitment. Kim and Park (2017) stated that procedural justice positively influences employee's work engagement, knowledge sharing and innovative work behavior. Lee et al. (2017) showed that procedural justice can facilitates employees to accept the change of values and objectives of organization and also adapt themselves to pressures of external change. Furthermore, certain findings suggested that the process of allocating rewards is more important than the result (Lind and Tyler, 1988; Cohen-Charash and Spector, 2001).

## Positive Organizational Behavior

POB stems from positive psychology which was led primarily by Seligman and other well-known positive psychologists (Wright, 2003). Seligman and Csikszentmihalyi (2014) suggested that the purpose of positive psychology is "to begin to catalyze a change in the focus of psychology from repairing the worst things in life to building positive qualities." Therefore, positive psychology



primarily studies individuals' strengths and virtues that are beneficial to the development of individuals and communities (Bakker and Schaufeli, 2008). Following the lead of positive psychology, Luthans (2002a) perceived the need for a new theoretical and research-driven perspective and approach to the organizational research, which he termed POB, that is "the study and application of positively oriented human resource strengths and psychological capacities that can be measured, developed, and effectively managed for performance improvement in today's workplace" (Youssef and Luthans, 2007). Specifically, a positive psychological capacity which can be included into the POB framework must be positive and must have theory and research back-up as well as valid measures. Furthermore, this capacity should make it open to any change and development (i.e., state-like) and have relation to performance improvement in the workplace (Luthans, 2002b). The six positive psychological capacities, namely confidence (or self-efficacy), hope, optimism, resilience, subjective well-being (or happiness), and emotional intelligence specifically meet the definition of POB and inclusion criteria, and are viewed as a contribution to understand POB and have considerable impacts on organization performance (Luthans, 2002b; Youssef and Luthans, 2007). However, Wright (2003) counterbalanced this utilitarian and management-driven view as well as the focus on organization instead of individuals, and argued that the objective of POB should also include the pursuit of employee happiness and health as viable goals in themselves. He introduced Fredrickson's broaden-and-build model which suggests the potentially adaptive and interactive nature of positive emotions (Wright, 2003). According to Fredrickson (2002), the adaptive or moderating nature of such positive emotions as happiness and joy is potentially more robust for those who are more joyous than for those who are less joyous. He suggested that such positive impetus can enable people to be more creative, resilient, socially connected, and physically and mentally healthy (Wright, 2003). Bakker and Schaufeli (2008) proposed that the organization-based perspective of Luthans and the employee-based perspective should be integrated; POB should emphasize on individual positive psychological conditions and human resource strengths that are relevant to both performance improvement and employees' well-being.

But it should be noted that these researches related to POB are normally concentrated on the implicit and psychological constructs of POB, has not yet attached with importance to the explicit form of positively oriented human resource strengths and psychological capacities. Accordingly, Pan (2008), based on the Chinese cultural background, proposed a new perspective of employees' POB, which could be defined as employees' positive behavior in organization. They proposed that employees' POB is mainly composed of devoted, responsible, active, innovative, helping, and harmonious behavior (Pan and Qin, 2009). Employees' POB can not only to promote organizational function but also improve individual and organizational performance. In this study, employees' POB consisting of devoted, responsible, active, innovative, helping, and harmonious behavior was considered as the dependent variable, while organizational justice was regarded as the independent variable.

## Relationship between OJ and POB

Organizational justice is found to be a key factor of many organizational outcome variables, such as trust, commitment, job satisfaction, organizational citizen behavior, job performance, and POB (Alexander and Ruderman, 1987; Moorman, 1991; McFarlin and Sweeney, 1992; Cohen-Charash and Spector, 2001; Colquitt et al., 2001; Wong et al., 2006; Karriker and Williams, 2009; Zainalipour et al., 2010; Keyvanar et al., 2014; Khan et al., 2016; Nastiezaie and Jenaabadi, 2016). For instance, Alexander and Ruderman (1987) suggested that all fairness variables, as a group, are significantly associated with employees' work-related attitudes and behaviors and procedural fairness and distributive fairness have distinct effects on the organizational outcomes. Keyvanar et al. (2014) studied organizational justice and POB in the context of hospital and found that organizational justice is related to POB (hope, optimism, self-efficacy, and resiliency) and work engagement through the attainment of personal career goals. Nastiezaie and Jenaabadi (2016) showed that organizational justice has a significant and positive correlation with POB. A small number of researches explored how perceptions of fair treatment influence the employee's beneficial behavior. For example, Joseph et al. (2015) found that organizational justice had a significant effect on interpersonal helping behavior. Walumbwa et al. (2009) examined the relationship between organizational justice and voluntary learning behavior, and found that perceptions of employee distributive and procedural justice had an indirect impact on learning behavior. These studies all suggested that organizational justice and positive behavior in organization have certain correlation, and organizational justice would have a significant impact on employees' positive behavior. By contrast, employees treated with organizational injustice might perform negative behavior. For example, DeMore et al. (1988) found that low perceived equity (lack of fairness in one's social or environmental arrangements) can predict vandalism. Ambrose et al. (2002) examined the relationship between injustice and workplace sabotage, and found that injustice is the most common cause of sabotage. Min et al. (2014) suggested that perceived injustice during work is significantly associated with an increased risk of occupational disease and absenteeism for Korean employees. Mingzheng et al. (2014) suggested that organizational justice is negatively correlated with counterproductive work behavior among Chinese public servants. Finding from Michel and Hargis (2017) showed that procedural injustice motivates deviant behavior in the workplace.

Based on these considerations, we expect that organizational justice and POB of employees will have a significant relationship, and different dimensions of organizational justice will lead to different behavioral outcomes. Thus, we want to investigate the relationship between POB and OJ and how distributive justice and procedural justice will affect the POB of employee and negative organizational behavior (NOB).

## Hypotheses

In view of the above, four hypotheses are proposed as the following:

H1: If OJ is positively related to POB, then employees with a high level of OJ will perform more POB.

H2: If OJ is a positive predictor of POB, then higher level of OJ will predict higher level of POB.

H3: OJ was expected to have a significant main effect on employees' POB.

H4: If procedural justice differs from distributive justice in terms of influence effectiveness and direction, then procedural justice and distributive justice will have different influences on employees' POB and NOB.

## OVERVIEW OF STUDIES

Justice theory states that the perception of the employees about fairness leads to certain reactions (positive or negative), and in turns leads to certain behavior (positive or negative; Akram et al., 2016b). Specifically, the perceived justice can motivate employees to perform more beneficial and positive behavior for organizations, while, when experiencing injustice they might react negatively (Graso and Grover, 2017). A substantial body of empirical work demonstrates that organizational justice have significant impact on employees' behavior, and distributive justice and procedural justice can distinctly influence employees' work-related attitudes and behavioral outcomes (Cohen-Charash and Spector, 2001). Therefore, we employed a large-sample survey and a situational experiment to examine the effect of OJ in the form of distributive justice and procedural justice on POB and NOB among enterprise employees. In study 1, we attempted to analyze the relationship between OJ and POB among enterprise employees through a survey study in which participants were then asked to report their level of organizational justice (OJ) and positive organizational behavior (POB) with self-made valid scales. In study 2, we attempted to further findings from Study 1 through a situational experiment with  $2 \times 2$  between-subjects design in which participants were asked to read one of the four situations stories and to imagine that this situation happen to either the person in the story (Evaluate by the situation) or them (Evaluated by self-experience), and then they were asked to imagine how the person in the story or they would have felt and what the person or they subsequently would have done. Specifically, in situational experiment organizational justice including distributive justice and procedural justice would be reflected in two aspects (justice and injustice), and the outcome variables include POB and NOB of employees. We examined whether procedural justice differs from distributive justice in terms of effectiveness and direction of effect on POB and NOB of employees.

## STUDY 1

### Methods

#### Participants and Procedure

From 13 cities in China, a total of 2,566 employees were randomly selected from 45 manufacturing-type enterprises. Male employees accounted for 44.7% and females accounted for 55.3%. Respondents aged under 25 accounted for 30.7%, 25–34 years old accounted for 35.9%, 35–44 years old accounted for 22.8%,

45–54 years old occupied 8.7%, and 55 years old and above took up for 1.9%. Respondents graduating from high school and below accounted for 62.4%, with junior college degree accounted for 24.9%, with bachelor degree accounted for 11.3%, and with master's and Ph.D. degree occupied 1.4%. In addition, ordinary employees accounted for 60.5%, first-line managers accounted for 24.2%, middle managers accounted for 10.4%, and senior managers occupied 4.8%. Respondents with <1 year work experience accounted for 14.2%, with 1–2 years work experience took up for 32.8%, with 3–5 years work experience accounted for 22.6%, with 6–10 years work experience occupied 11.7%, and with over 10 years work experience accounted for 14.6%. Respondents who received a monthly salary of ¥2,000 accounted for 25.4%, received a monthly salary of ¥2,001 to ¥3,500 accounted for 51.1%, received a monthly salary of ¥3,501 to ¥5,000 accounted for 13.7%, and those who received ¥5,000 and above accounted for 9.8%. This study received ethics approval from the University of Southwest's Human Research Ethics Committee'. All participants were informed that participation was purely voluntary. No payments were offered in exchange for participation. After providing the written informed consent, participants completed two self-made questionnaires. In order to minimize common method bias, we firstly assured the anonymity and confidentiality of all survey responses by tracking data with site coding rather than respondents names and having surveys returned directly to the researchers. Secondly, we designed the response questionnaire with A and B columns (column A—for any one company; column B—for your company), reflecting the combination of self-evaluation and other-rated method, to reduce potential social desirability. Subsequent analyses suggested that the difference between A and B was not significant ( $t = 1.826, P > 0.05$ ), the social desirability effects were deemed small. Thirdly, we utilized the pre-survey with a small sample of 368 employees from 12 companies, and 3 months later in the formal investigation these participants were again asked to complete the same questionnaire. Subsequent analysis suggested that there is no significant difference between these two survey outcomes ( $t = 1.912, P > 0.05$ ). Additionally, we adopted other ways to minimize the effect of non-related variables on the survey outcomes such as training investigators, using the unified instruction and trying to control the effect of the situational factors.

### Measures

#### Organizational justice

According to Joy and Witt's (1992) theory that organizational justice can be divided into distributive and procedural justice, we developed a 12-item scale as an instrument for measuring organizational justice. Because the set of 12 items tapped different aspects of organizational justice, we carried out EFA to identify any underlying dimensions. The exploratory factor analysis (EFA) yielded two factors that explained 72.11% of the common variance. For the distributive justice factor, a measure consisting of 5 items (factor loading range from 0.672 to 0.836) was constructed. For the procedural justice factor, a measure consisting of three items (factor loading range from 0.818 to 0.843) was constructed.

Further, to take into consideration organizational justice in its entirety, we conducted confirmatory factor analysis (CFA) in which all the organizational justice items were loaded onto their respective factors. The results showed a good fit ( $\chi^2/\text{df} = 7.68$ ,  $\text{GFI} = 0.97$ ,  $\text{NFI} = 0.99$ ,  $\text{RFI} = 0.98$ ,  $\text{IFI} = 0.99$ ,  $\text{CFI} = 0.99$ ,  $\text{RMSEA} = 0.075$  and  $\text{SRMR} = 0.024$ ) and the coefficient alpha was 0.913.

### Positive organizational behavior (POB)

Employees' POB was measured by using the scale developed and validated by Pan (2008), Pan and Qin (2009). This scale consists of 33 items loading on six distinct factors, which include devoted behavior (employees devote their time and energy to their work), responsible behavior (employees complete their work voluntarily), active behavior (employees can adapt to the external environment willingly), innovative behavior (employees are willing to embrace new technologies and apply or create new technology at work), helping behavior (employees help colleagues complete work willingly), and harmonious behavior (employees cooperate with others in a friend way). The EFA yielded six factors that explained  $\sim 70\%$  of the common variance. The results of CFA showed a good fit ( $\chi^2/\text{df} = 3.96$ ,  $\text{RMSEA} = 0.065$ ,  $\text{GFI} = 0.86$ ;  $\text{NFI}$ ,  $\text{NNFI}$ ,  $\text{CFI}$ ,  $\text{IFI}$ ,  $\text{RFI}$ , and  $\text{TLI}$  were above 0.95). The coefficient alpha was 0.97 and the retest reliability was 0.88 ( $r = 0.88$ ).

## Result

To verify the validity of the hypotheses proposed in the current study, we used SPSS 20.0 and LISREL8.7 to analyze the obtained data.

### Correlation Analysis

Table 1 reports the means, standard deviations and correlation coefficients between all the variables in the current study.

These tests are based on the scores from the scales previously mentioned. Overall POB and OJ were calculated according to the scores of its own dimensions. The results show that there are numerous significant positive correlations between all the variables. H1 was therefore accepted.

### Multiple Regression Analysis

For testing the casual effect of distributive justice, procedural justice and overall OJ on employee devoted, responsible, active, innovative, helping, harmonious behavior, and overall POB, a number of models were developed by multiple linear regression analysis.

As shown in the Table 2, the results revealed that the regression equation established by the two factors of OJ and all factors of staff POB had significant statistical significance (each  $F$ -value's  $p < 0.001$ ). Moreover, the procedural justice and distributive fairness had very significant positive effect on various factors of employees' POB. Procedural justice and distributive justice commonly explained investment, responsible, initiative, innovation behavior, helping, and harmonious behaviors by 14, 11, 17, and 18, 22, and 18% of variation, respectively. Moreover, the results show that overall OJ is a positive predictor ( $\beta = 0.51$ ,  $p < 0.001$ ,  $R^2 = 0.26$ ) of overall POB. H2 could be proved.

### Path Analysis

In Table 3 and Figure 1, path analysis can allow us to examine the direct, indirect, and total effect between the analysis variables. The results show that the total effects of distributive justice and procedural justice on all dimensions of POB of employee were significant. Specifically, the total effects of distributive justice on devoted behavior and responsible behavior were strongest ( $\beta = 0.55$ ,  $t = 37.35$ ,  $p < 0.001$  and  $\beta = 0.50$ ,  $t = 31.99$ ,  $p < 0.001$ , respectively), and procedural justice was the strongest predictor of active behavior of employee ( $\beta = 0.36$ ,  $t = 21.72$ ,  $p < 0.001$ ). By contrast, the overall effects of distributive justice and procedural justice on helping behavior of employee were relatively low ( $\beta = 0.17$ ,  $t = 8.59$ ,  $p < 0.001$  and  $\beta = 0.25$ ,  $t = 12.53$ ,  $p < 0.001$ , respectively).

Furthermore, the direct effects of distributive justice and procedural justice on all dimensions of POB of employee were quite low. Particularly, distributive justice failed to directly affect innovative behavior, and procedural justice failed to directly affect active, helping behavior. However, it should be noted that distributive justice and procedural justice have significant and positive indirect effects on all dimensions of POB of employee.

TABLE 1 | Correlation analysis ( $n = 2566$ ).

	M $\pm$ SD	1	2	3	4	5	6	7	8	9	10
1. DB	3.25 $\pm$ 0.74	1									
2. RB	5.07 $\pm$ 0.59	0.36**	1								
3. AB	3.79 $\pm$ 0.63	0.51**	0.66**	1							
4. IB	3.74 $\pm$ 0.66	0.48**	0.61**	0.79**	1						
5. Help-B	3.63 $\pm$ 0.70	0.50**	0.51**	0.69**	0.77**	1					
6. Harm-B	3.81 $\pm$ 0.67	0.42**	0.55**	0.67**	0.74**	0.78**	1				
7. PJ	3.18 $\pm$ 1.15	0.31**	0.26**	0.34**	0.36**	0.39**	0.36**	1			
8. DJ	3.40 $\pm$ 0.95	0.35**	0.32**	0.38**	0.41**	0.43**	0.39**	0.75**	1		
9. OJ	5.58 $\pm$ 1.97	0.35**	0.31**	0.38**	0.41**	0.45**	0.40**	0.95**	0.92**	1	
10. POB	3.71 $\pm$ 0.54	0.68**	0.74**	0.87**	0.89**	0.87**	0.85**	0.41**	0.47**	0.47**	1

$n = 2566$ . \*\* $p < 0.01$ . Two tailed test; DB, Devoted behavior; RB, Responsible behavior; AB, Active behavior; IB, Innovative behavior; Help-B, Helping behavior; Harm-B, Harmonious behavior; PJ, Procedural justice; DJ, Distributive justice.

**TABLE 2 |** Regression analysis of OJ on POB ( $n = 2566$ ).

Dependent variable	Argument	Beta	T	R	R <sup>2</sup>	R <sup>2</sup> <sub>adj</sub>	F
Devoted behavior	Procedural justice	0.11	3.74**	0.37	0.14	0.13	187.31**
	Distributive justice	0.28	9.67**				
Responsible behavior	Procedural justice	0.06	2.799*	0.33	0.11	0.10	149.57**
	Distributive justice	0.29	9.90**				
Active behavior	Procedural justice	0.15	5.97**	0.41	0.17	0.14	228.52**
	Distributive justice	0.28	9.92**				
Innovative behavior	Procedural justice	0.13	5.539**	0.43	0.18	0.17	281.79**
	Distributive justice	0.33	11.96**				
Helping behavior	Procedural justice	0.17	5.82**	0.47	0.22	0.19	321.55**
	Distributive justice	0.34	11.87**				
Harmonious behavior	Procedural justice	0.18	5.77**	0.42	0.18	0.15	249.81**
	Distributive justice	0.29	9.81**				
POB	Procedural justice	0.16	5.72**	0.49	0.24	0.22	381.93**
	Distributive justice	0.37	13.47**				
	OJ	0.51	25.74**				

\*  $p < 0.05$ ; \*\* $p < 0.01$ , two tailed test.

**TABLE 3 |** Path analysis.

Variable relations	Direct effect beta (t)	Indirect effect beta (t)	Total effect beta (t)
$\xi 1 \rightarrow \eta 1$	0.31 (21.35)**	—	0.31 (21.35)**
$\xi 1 \rightarrow \eta 2$	0.10 (7.26)**	0.20 (18.56)**	0.30 (19.05)**
$\xi 1 \rightarrow \eta 3$	0.14 (9.91)**	0.22 (18.43)**	0.36 (21.72)**
$\xi 1 \rightarrow \eta 4$	-0.02 (-1.64)	0.28 (20.96)**	0.26 (15.05)**
$\xi 1 \rightarrow \eta 5$	0.13 (5.21)**	0.12 (10.64)**	0.25 (12.53)**
$\xi 1 \rightarrow \eta 6$	0.07 (5.27)*	0.20 (13.20)**	0.27 (13.95)**
$\xi 2 \rightarrow \eta 1$	0.55 (37.35)**	—	0.55 (37.35)**
$\xi 2 \rightarrow \eta 2$	0.15 (9.76)**	0.35 (25.49)**	0.50 (31.99)**
$\xi 2 \rightarrow \eta 3$	0 (0.10)	0.38 (25.86)**	0.38 (22.65)**
$\xi 2 \rightarrow \eta 4$	0.11 (5.85)**	0.35 (23.35)**	0.46 (27.03)**
$\xi 2 \rightarrow \eta 5$	0.01 (0.56)	0.16 (9.76)**	0.17 (8.59)**
$\xi 2 \rightarrow \eta 6$	0.06 (3.57)*	0.16 (9.21)**	0.22 (11.53)**

$\xi 1$ , Procedural justice;  $\xi 2$ , Distributive justice;  $\eta 1$ , Devoted behavior;  $\eta 2$ , Responsible behavior;  $\eta 3$ , Active behavior;  $\eta 4$ , Innovative behavior;  $\eta 5$ , Helping behavior;  $\eta 6$ , Harmonious behavior; \* $P < 0.05$ , \*\* $P < 0.001$ , beta: Standardized regression coefficient t: t-test value.

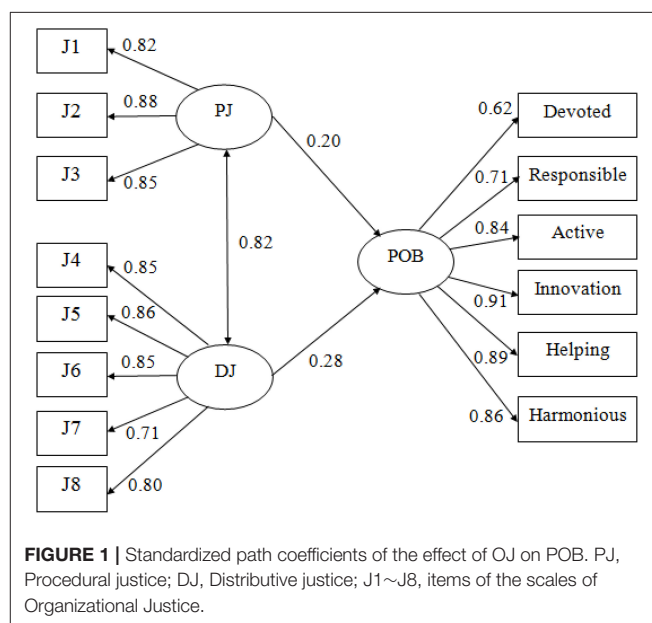
Hence, we can conclude that the relationships among distributive justice and innovative, procedural justice and active behavior, and procedural justice and helping behavior were mediated by other variables. Thus, these results provide support for H3.

## STUDY 2

### Materials and Methods

#### Participants

In the pre-test, we randomly selected 96 employees from three manufacturing-type enterprises located in Chenzhou, China. These subjects were equally divided into four groups with 24 subjects in each group. Each group was randomly assigned



to a situation. The pool of subjects included 51 male and 45 female employees, and their average age was 36.31 years old. Thirty one were managers and 65 were ordinary employees. The number of people with the degree above junior college was 63.

In the formal experiment, a total of 800 employees were randomly selected from 16 manufacturing-type enterprises located in six cities of Hunan, Guangdong, and Zhejiang province, China. Similarly, these were equally divided into four groups with 200 subjects in each group. Each group was randomly assigned to a situation. Finally, a total of 747 effective samples were obtained. Among them, 191 were effective samples for situation 1 (A1B1), 177 for situation 2 (A1B2), 189 for



situation 3 (A2B1), and 190 for situation 4 (A2B2). The pool of subjects included 418 men (56%) and 329 women (44%). In this sample, 25 years old and below accounted for 30.1%, 25–34 years old 37.7%, 35–44 years old 22.9%, 45–54 years old 6.9% and 55 years old and above 2.3%. In terms of level of education, 52.7% of respondents graduated from high schools and below, 26.8% of respondents held a junior college degree, 17.7% of respondents held a bachelor degree and 2.7% of respondents held a master's and Ph.D. degree. In addition, ordinary employees accounted for 64.4%, first-line managers 22.3%, middle managers 10.8% and senior managers 2.5%.

This study was carried out in accordance with the recommendations of “the University of Southwest's Human Research Ethics Committee” with written informed consent from all subjects. All subjects were purely voluntary, and gave the written informed consent. No payments were offered in exchange for participation.

## Experimental Materials

Before the experiment, the research interviewed the participants about the bonus issues, and gathered the typical cases of distributive justice and injustice and procedural justice and injustice in the process of bonus distribution. After refining these typical cases, four situational stories on bonus distribution were designed as experimental materials. These four situational stories respectively represented four type of experimental treatments, which included A1B1 (distributive justice  $\times$  procedural justice); A1B2 (distributive justice  $\times$  procedural injustice); A2B1 (distributive injustice  $\times$  procedural justice); and A2B2 (distributive injustice  $\times$  procedural injustice). Each story was in accordance with the logic of the event development, which means that the bonus distribution was conformed to the order from the process to the outcomes.

This is an example of the situational story one. (A1B1: distributive justice  $\times$  procedural justice). The situational stories of A1B2, A2B1, and A2B2 are shown in the Appendix.

(Story) Senior managers of a company intend to give a large amount of bonus for employees. They formulate the standards and organize managers of each layer and representative of the employees to have a discussion. After discussions, the distributive standard is determined preliminarily. Then, the document of the standard is shown publicly to collect opinions of ordinary employees until the document is approved by all staff. Based on the arrangement without objection, the Personnel Department evaluates every employee according to the distributive document and personal job performance. The result is shown publicly for correction of mistakes. According to the distributive arrangement and personal job performance, Zhangsan obtained the lowest score and the minimum bonus.

(Instructions) Please answer the following questions based on your real thoughts and physical truth according to the situational story. When answering the questions, mark directly on the selected option (5 = Absolutely agree, 4 = Partly agree, 3 = A little bit agree, 2 = Partly disagree, and 1 = Absolutely disagree).

*Absolutely disagree—Absolutely agree*

(1) Based on the bonus distributive procedure mentioned above, Zhangsan will think it is fair and he will do his work actively.

1 2 3 4 5

(2) Based on the bonus distributive procedure mentioned above, if we were employees in the company, we will also feel it is fair and do our work actively.

1 2 3 4 5

(3) Based on the bonus distributive procedure mentioned above, Zhangsan will feel it is unfair. He will slow down, be absent, not obey the arrangement in his work, or even resign.

1 2 3 4 5

(4) Based on the bonus distributive procedure mentioned above, if we were employees in the company, we will also feel it is unfair. We will slow down, be absent, not obey the arrangement in our work, or even resign.

1 2 3 4 5

## Design

The situational experiment used a  $2 \times 2$  between-subjects design. The independent variables were organizational justice in form of distributive justice and injustice and procedural justice and injustice. The specific operational definition of these independent variables as follows: (1) Distributive justice: More labor efforts, higher production rate, and more contributions result in higher bonus. By contrast, less labor effort, lower production rate, and less contribution resulted in lower bonus; (2) Distributive injustice: More labor effort, higher production rate, and more contributions result in lower bonus. By contrast, less labor effort, lower production rate, and less contribution led to higher bonus. (3) Procedural justice: Bonus distribution standard justice, process-transparent, accurate information, publicly showed result, and correctable mistakes; (4) Procedural injustice: Injustice bonus distribution standard, closed procedure, inaccurate information, and closed results. The response variables are POB and NOB of employees. POB here refers to the devoted, active, helping, responsible, innovative and harmonious behavior. NOB refers to inimical, aggressive, and backward-looking behavior, and mainly performs as discontentment, hostility, sabotage, absence, and retirement. The response variables were measured by two types of indexes: (1) Evaluated by the situation (The subject was asked to give a response to the experience of hero in the story) and (2) Evaluated by self-experience (the subject was asked to read the situational story carefully and then answer the following questions according to his real thoughts assuming that he is the hero in the story). The scores of these two types of indexes both adopted a five-point Likert scale, where 1 indicates disagree absolutely and 5 indicates agree absolutely. Additionally, we controlled for age, gender, level of education, and organizational position to rule out possible alternative explanations for our findings.

## Procedure

At the beginning of this study, the examiners explained to each subject about the nature and the aim of the manipulation and ensured all responses would be kept confidential and anonymous with the same instruction and same situational

condition. Subsequently, examiners randomly assigned one certain situational story to each group and asked the subjects to read the story carefully and then make judgment: (a) choosing the best answers to the following questions according to the feelings of the person in the story—Evaluated by the situation; (b) choosing the best answers to the following questions according to their own feeling supposing themselves as the person in the story—Evaluated by self-experience.

## Results

### Correlation Analyses

The means, standard deviations, and correlations among the study variables are displayed in **Table 4**. The results show that distributive justice and procedural justice were correlated with POB, and further the correlation between procedural justice and POB ( $r = 0.319, p < 0.01$ ) was greater than between distributive justice and POB ( $r = 0.079, p < 0.05$ ). Additionally, age, level of education, and organizational position were correlated with distributive justice and procedural justice. Therefore, we decided to examine the effects of these demographic variables in the subsequent analyses.

### Hierarchical Regression Analyses

We preformed a hierarchical regression analysis for the effect of each predictor on the outcome variable POB of employees. Our goal was to determine if the hypothesized variables added a unique contribution in the prediction of the criterion above and beyond the control variables. As such, we first entered the control variables. Second, we entered the distributive justice. Next, we entered the procedural justice. To control for potential demographic effects, we included age, gender, highest level of education and organizational position as control variables.

As shown in **Table 5**, the individual characteristics did not account for the variance in POB, and distributive and procedural justice predicted 10% of the variance in POB of employees. Excluding the effects of distributive justice, the strongest predictor of POB was procedural justice which means that the higher the perceptions of procedural justice, the more POB employees performed.

### Examining the Effectiveness of Experimental Operation

Before verification of the research hypothesis, the discriminability of dependent variable was examined through the pretest. As shown in the **Figure 2**, the results of  $t$ -test indicated that the experience of distributive justice was more frequent than the experience of distributive injustice to the subject under the situation of distributive justice ( $M_{\text{distributive justice}} = 3.08, M_{\text{distributive injustice}} = 1.92, t = 97.10, P < 0.001$ ). The experience of procedural justice was also more frequent than the experience of procedural injustice to the subject under the situation of procedural justice ( $M_{\text{procedural justice}} = 2.91, M_{\text{procedural injustice}} = 1.97, t = 32.87, P < 0.001$ ). Hence, OJ experienced by the subjects was equal to the experimental orientation, and the experiment had obvious discriminability.

The effectiveness of evaluation by situation and evaluation by self-experience were also examined. As shown in the **Figure 3**, the results of the  $t$ -test indicated that the difference in OJ evaluation between others in the situation and themselves in the situation was obvious. Thus, (Situation 1:  $M_{\text{peer assessment}} = 3.17, M_{\text{self-evaluation}} = 3.62, t = 3.20, P < 0.01$ ; Situation 2:  $M_{\text{peer assessment}} = 2.56, M_{\text{self-evaluation}} = 1.97, t = 2.58, P < 0.01$ ;

**TABLE 5 |** Hierarchical regression analyses ( $N = 747$ ).

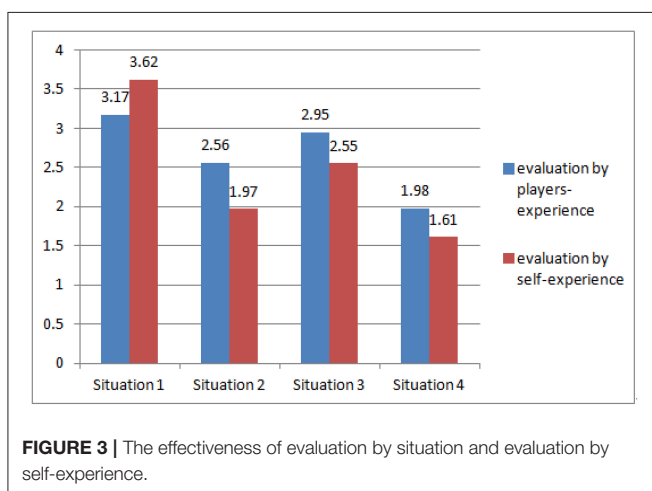
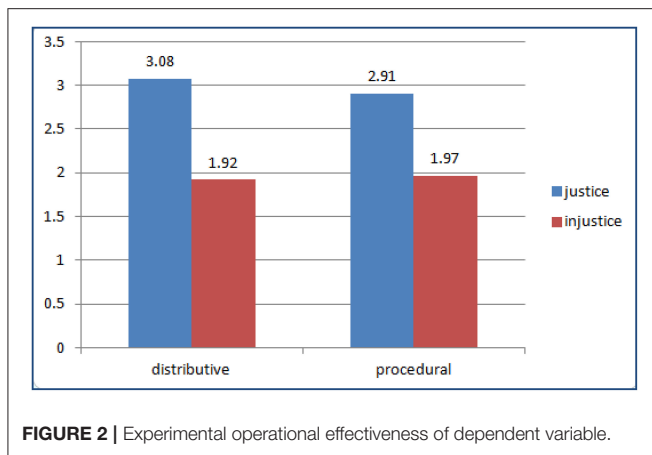
Predictors	Standard regression coefficient		
	Step 1	Step 2	Step 3
Gender	0.006	0.008	0.020
Age	−0.015	−0.004	−0.022
Level of Education	−0.052	−0.064	−0.028
Position	0.016	0.008	0.024
Distributive justice		0.099*	0.098**
Procedural justice			0.317***
Adjusted $R^2$	−0.003	0.005	0.103
$\Delta R^2$	0.003	0.009	0.100
$F(7, 747)$	0.521	1.75	14.47***

\* $p < 0.05$ ; \*\* $p < 0.01$ , \*\*\* $p < 0.001$ . two tailed test.  $\Delta R^2$  = Change in  $R^2$ .

**TABLE 4 |** Correlation analysis ( $n = 747$ ).

	M ± SD	1	2	3	4	5	6	7
1. Gender	1.44 ± 0.50	1						
2. Age	2.14 ± 1.00	−0.194**	1					
3. Level of Education	2.53 ± 1.06	−0.074*	0.207**	1				
4. Position	1.52 ± 0.79	−0.087*	0.246**	0.303**	1			
5. DJ	1.48 ± 0.50	0.001	0.081*	−0.126**	−0.089*	1		
6. PJ	1.50 ± 0.50	0.023	−0.029	0.099**	0.049	−0.015	1	
7. POB	6.16 ± 2.32	0.016	−0.018	−0.043	−0.002	0.079*	0.319**	1

\* $p < 0.05$ ; \*\* $p < 0.01$ , two tailed test. Gender: 1 = male, 2 = female. Age: 1 = under 25 years old, 2 = 25–34 years old, 3 = 35–44 years old, 4 = 45–54 years old, 5 = over 55 years old. Level of education: 1 = under or junior high schools, 2 = high schools, 3 = junior college degree, 3 = bachelor degree, 4 = master and Ph.D. degree. Position: 1 = ordinary employees, 2 = first-line managers, 3 = middle managers, 4 = senior managers. DJ: 1 = distributive injustice; 2 = distributive justice. PJ: 1 = procedural injustice; 2 = procedural justice.



Situation 3:  $M_{\text{peer assessment}} = 2.95$ ,  $M_{\text{self-evaluation}} = 2.55$ ,  $t = 3.55$ ,  $P < 0.001$ ; Situation 4:  $M_{\text{peer assessment}} = 1.98$ ,  $M_{\text{self-evaluation}} = 1.61$ ,  $t = 3.12$ ,  $P < 0.01$ ). The results indicated a subject effect. Therefore, the effect of the independent variable on two response variables should be further examined.

### Full Model Analysis

As presented in **Table 6**, we used multivariable variance analysis to examine the hypothesis proposed in this study. The results showed that distributive justice and procedural justice had a significant effect on employee POB, both in situational or self-experienced behavior. Furthermore, the interactions between distributive justice and procedural justice are significant ( $p < 0.001$ ).

### Analysis of the Effect of Distributive Justice and Procedural Justice on POB and Negative Organizational Behavior

The full model test to experimental hypothesis was general, which made the analysis of the effects of independent variable on dependent variables difficult to conduct. Hence, a one-way ANOVA was adopted in this study to verify H4.

As shown in **Table 7** and **Figure 4**, employee positive behavior under the situation of distributive justice was more common than under the situation of distributive injustice ( $M_{\text{distributive justice}} = 3.28$ ,  $M_{\text{distributive injustice}} = 2.93$ ,  $F = 9.67$ ,  $P < 0.001$ ). Employee negative behavior under the situation of distributive justice was less than the behavior under the situation of distributive injustice ( $M_{\text{distributive justice}} = 2.41$ ,  $M_{\text{distributive injustice}} = 2.75$ ,  $F = 7.87$ ,  $P < 0.001$ ). Employee positive behavior under the situation of procedural justice was more common than that under the situation of procedural injustice ( $M_{\text{procedural justice}} = 3.47$ ,  $M_{\text{procedural injustice}} = 2.71$ ,  $F = 127.35$ ,  $P < 0.001$ ). Employee negative behavior under the situation of procedural justice was also less than that in the situation of procedural injustice ( $M_{\text{procedural justice}} = 2.35$ ,  $M_{\text{procedural injustice}} = 2.77$ ,  $F = 19.17$ ,  $P < 0.001$ ). This outcome further confirmed that the distributive justice and procedural justice had significant effects on the pros and cons of employees' POB. The difference of interaction level between the distributive justice and procedural justice was significant ( $P < 0.05$ ). In terms of the positive behavior, the diversity among A1B1, A2B1, and A1B2 showed that A2B2 was more obvious. In terms of the negative behavior, the diversity among A1B1, A2B1, and A1B2, A2B2 was less obvious. The difference between these situations was also obvious. Hence, procedural justice had a significant effect on POB, while distributive justice had a significant effect on NOB. In addition, from  $R^2$  in **Table 7**, the explanation of distributive justice and procedural justice effects on POB was 13.8% and for the NOB, the rate was only 3.6%. Therefore, OJ had greater effect on POB than that on the NOB. Therefore, H4 could be verified.

In addition, the results also showed that distributive justice and procedural justice explained 13% variation of POB of employee, and explained only 3.6% variation of NOB. Therefore, OJ had greater effect on POB than NOB.

## GENERAL DISCUSSION

The correlation analysis showed that overall POB of employee has a significant correlation with organizational justice in manufacturing-type enterprises. The results also suggested that all dimensions of POB of employee were significantly related to distributive justice and procedural justice ( $r > 0.3$ ,  $P < 0.001$ ). Multiple regression analysis showed that OJ has a significant effect on POB of employees, and procedural justice and distributive fairness had significant positive effects on all dimensions of POB of employees. In other words, OJ is a positive predictor of POB of employee.

The situational experiment also confirmed the significant effects of procedural and distributive justice on positive and negative justice, as well as their interaction. The results confirmed that distributive and procedural justice had a significant effect on POB from the pros and cons of employee's POB. Many researches demonstrated that OJ had the remarkable two-way effect on employees' behavior. Specifically, organizational justice would boost employees' positive attitudes and behavior related to organizations such as improving employee job satisfaction (Tammy et al., 2010; Yijuan et al., 2011; Khan et al., 2015), organizational commitment (Ölçer, 2015; Sökmen

**TABLE 6 |** Full model analysis.

	Evaluated by situation				Evaluated by self-experience			
	Wilks' $\Lambda$	F	Df	P	Wilks' $\Lambda$	F	df	P
Distributive justice (A)	0.98	5.19	4	0.003	0.98	5.25	4	0.002
Procedural justice (B)	0.88	36.15	4	0.000	0.88	36.21	4	0.000
A $\times$ B	0.98	6.97	4	0.000	0.98	6.73	4	0.000

**TABLE 7 |** Effects of distributive justice and procedural justice on positive/negative organizational behavior.

		Positive behavior				Negative behavior			
		M $\pm$ SE	Df	F	P	M $\pm$ SE	df	F	P
Distributive justice (A)	A1	3.28 $\pm$ 0.05				2.41 $\pm$ 0.05			
	A2	2.93 $\pm$ 0.04	1	9.67	0.003	2.75 $\pm$ 0.06	1	7.87	0.005
Procedural justice (B)	B1	3.47 $\pm$ 0.05				2.35 $\pm$ 0.04			
	B2	2.71 $\pm$ 0.04	1	127.35	0.000	2.77 $\pm$ 0.06	1	19.17	0.000
A $\times$ B	A1B1	3.61 $\pm$ 0.06				2.55 $\pm$ 0.05			
	A1B2	2.87 $\pm$ 0.05	1	2.37	0.041	2.73 $\pm$ 0.06	1	2.75	0.021
	A2B1	3.52 $\pm$ 0.06				2.61 $\pm$ 0.05			
	A2B2	2.63 $\pm$ 0.07				2.93 $\pm$ 0.09			
R <sup>2</sup>		0.138				0.036			

A1, Distributive justice; A2, Distributive injustice; B1, Procedural justice; B2, Procedural injustice.

and Ekmekçioğlu, 2016), organizational productivity (Imran et al., 2015), organizational citizenship behavior (Karraker and Williams, 2009; Tziner and Sharoni, 2014; Gurbuz et al., 2016) and job performance (Walumbwa et al., 2009).

But if employees feel organizational injustice, they will display negative attitudes and behavior outcomes (Adams, 1965; Greenberg, 1990, 1993, 2001; Li and Shi, 2003; Pi, 2006; Ceylan and Sulu, 2011; Mingzheng et al., 2014; Chih et al., 2016). These results were in line with previous studies. Further, this research examined different directions of procedural and distributive justice on POB. Procedural justice is more likely to trigger POB of employees, whereas distributive injustice tended to result NOB. OJ also had greater effects on the POB of employees than NOB.

Further, this research examined different direction of procedural and distributive justice on POB. Procedural justice is more likely to trigger POB of employees, whereas distributive injustice tended to trigger NOB. OJ also had greater effects on the POB of employees than NOB. Therefore, future researchers should further analyze the relationship of these related factors with OJ or the POB of employees.

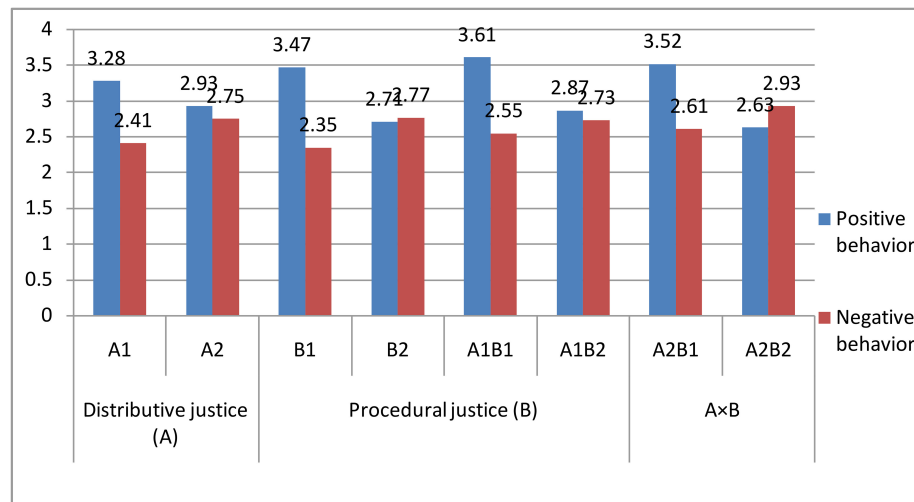
In addition, the findings revealed the remarkable result that the explanatory power of OJ theory to employees' POB was weak, which may have something to do with the effects of the Chinese traditional culture. In China, people pay attention to humanity, face, and euphemistical interpersonal association. In addition, people think highly of collectivity, collective honor, connotation, and great harmony. Under the cultural background of harmony (Yang, 1988; Wang and Zheng,

2005), the consciousness of dealing with affairs according to justice, procedure, social contract, and regulation is weaker than among Western people. In China, social relation network, implicit rules, and the way of saving the nation by curve may be more effective in social and enterprise management. Thereby, the consciousness of justice is weak in the mind of enterprise employees. The relationship comes down in one continuous line with the discovery that Chinese enterprise employees attach considerable attention to seeking harmonious interpersonal relations. Given the special cultural background in China, employee ownership of organizational achievement and reputation, organizational belongingness, sense of worth and pride based on the organization, sense of cohesiveness formed by organizational ideals and organizational support have far more significant effect on employees' POB than OJ. Hence, future replication studies in other contexts are needed to verify the findings of this study and consider the relationship between these factors described above and POB of employees.

## STRENGTHS AND LIMITATIONS

A key strength of the present research is that we used a newly explicit definition of POB: an organizational behavior of employees would be beneficial to organization. The POB of employee is mainly composed of devoted, responsible, active, innovative, helping, and harmonious behavior. It is important to emphasize that this framework of POB can be





**FIGURE 4 |** Effects of Distributive Justice and Procedural Justice to Positive/Negative Organizational Behavior.

measurable, assessable, controllable and changeable and it was conformed to the Chinese cultural background. Future research should investigate whether this definition of POB can conduct on other specific cultural, industrial and regional group.

The study has several limitations. First, all the measures in this study draw on self-reported data of individuals' attitudes and perceptions. Although we have used the pre-control method, such as ensuring the anonymity of respondents, designing the response questionnaire as a combination of self and peer evaluation and conducting the investigation in different periods, it may lead to common method variance that would have a negative impact on the reliability of the obtained results. We would encourage future researches to use longitudinal design to make causal statement address any concerns related to causal relationships, and also collect multiple data to measure the behavioral outcomes of POB. This would strengthen the research design and enhance the reliability of the results.

Second, the present study adopted two-factor models to analyze organizational justice because it was regarded as the most common model. However, it is suggested that for better understanding of OJ, interactional justice and informational justice can be included into the framework of OJ. Future researchers can analyze the effect of four dimensions of OJ on the POB of employees in detail.

Third, the experimental study used four different stimulus stories as materials to analyze the relationship between OJ and POB of employees, including devoted, responsible, active, innovative, helping and harmonious behavior. Although these stimulus stories were considered to be effective and reliable because of the connotation of these stories contains every facet of POB of employees (e.g., "striving for the best," "working hard," and "helping others"), we did not adequately measure other facets of POB of employees except for "active

behavior". Therefore, future research should address this issue by using diverse and complete materials and devising more elaborate procedures to examine the effect of OJ on POB of employees.

## THEORETICAL AND PRACTICAL IMPLICATIONS

The findings of this study have many theoretical and practical implications for researchers and managers. From the theoretical perspective, firstly, the current research contributes to the existing literature by empirically investigating and validating relationships between organizational justice and POB. The obtained results of research demonstrate that the direct and positive relationships between organizational justice and POB are all statistically significant. And it reveals that procedural justice has a more powerful effect on POB of employees, whereas employees' NOB is more strongly influenced by distributive injustice. Moreover, the results of the path analysis show that organizational justice has stronger indirect impact on POB of employees than direct effects. Based on the findings of current research, researchers could extend the results of this study by considering other variables, in order to better comprehend and generalize the results of this study. Furthermore, researchers could consider the effect of economic situation on organizational outcomes. Specifically, whether people have stronger feelings of injustice during economic downturn and to what extent the economic crisis negatively affect employees' emotional and behavioral outcomes for organizations.

In addition, the current study distinguished that two dimensions (distributive and procedural justice) of OJ have distinct influence to employees' organizational behavior. It suggested that distributive justice and procedural justice would trigger different behavioral aspects of employees, which may

make a contribution to the previous knowledge about the theory of organizational justice.

From the practical perspective, employees of an organization will reflect positive behavior and productivity if they perceive their organization as fair and just in its procedures and distribution systems. Enhancing organizational justice results in improved outcomes from employees. Therefore, managers should make efforts to enhance the perceived organizational justice of employees to improve their POB. Furthermore, the findings suggest that procedural justice differ from distributive justice in effectiveness and direction of effect. It is important for organizational managers to consider when they formulate and implement justice strategies to influence employees' related attitudes and behaviors. They should ensure both processes are fair, transparent and just and distributions are equitable and reasonable. Therefore, managers are encouraged to have a comprehensive consideration to increase the POB of employees and to decrease the NOB of employees, due to the employees' negative perception about distributive injustice.

To conclude, this current study contributes to the literature in the following ways. First, the current study offers a new perspective about POB of employees, including devoted, responsible, active, innovative, helping, and harmonious behavior. Second, this study confirms past findings by showing organizational justice has a significant impact on POB of employees. Finally, the study contributes to our understanding that two forms of organizational justice have different influences on employees' organizational behavior. In other words, procedural justice significantly influenced POB of employees, and distribution injustice significantly influenced NOB.

## CONCLUSION

Employees' POB has an obviously positive relation with OJ in the manufacturing-type enterprises. OJ clearly indicates the

positive prediction on POB. Situational experiments have further confirmed that the main effect of procedural and distributive justice on POB and NOB is obvious, and there is frequent interaction between them. In addition, the influence orientation and the effectiveness between procedural and distributive justice also differ. In other words, procedural justice is prone to result in POB and distributive justice has a significant effect on negative organizational behavior. Furthermore, path analysis suggested that OJ has more indirect effects on POB than direct effects, which could probably because the effects of other mediating variables.

## ETHICS STATEMENT

The study was carried out in accordance with the recommendations of "the University of Southwest's Human Research Ethics Committee" with written informed consent from all subjects. All subjects gave written informed consent in accordance with the Declaration of Helsinki. The protocol was approved by the "the University of Southwest's Human Research Ethics Committee."

## AUTHOR CONTRIBUTIONS

The current research was carried out in collaboration between all authors. XP designed the study, analyzed the data and wrote the framework of the manuscript. MC analyzed the literature and wrote the first draft of the manuscript. ZH and WB conducted the literature research and carried out experimental process. Finally, XP and MC revised and perfected the manuscript. All authors read and approved the final manuscript.

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**Conflict of Interest Statement:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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## APPENDIX

### Scene 2: A1B2 (distributive justice × procedural injustice)

#### (Story)

Senior managers of a company intend to give a large amount of bonus for employees. *Not only the distributive standard is not known by employees, but also the evaluation process is not transparent. Even they don't know how their evaluation score is calculated by company. The result is not shown publicly. No reason for complaint if mistakes exist. Finally, zhangsan obtained a bonus. Later he learned that his bonus roughly consistent with his income.*

(Instructions) Please answer the following questions based on your real thoughts and physical truth according to the situational story. When answering the questions, mark directly on the selected option (5 = Absolutely agree, 4 = Partly agree, 3 = A little bit agree, 2 = Partly disagree, and 1 = Absolutely disagree).

#### Absolutely disagree—Absolutely agree

(1) Based on the bonus distributive procedure mentioned above, Zhangsan will think it is fair and he will do his work actively. 1 2 3 4 5

(2) Based on the bonus distributive procedure mentioned above, if we were employees in the company, we would also feel it is fair and do our work actively. 1 2 3 4 5

(3) Based on the bonus distributive procedure mentioned above, Zhangsan will feel it is unfair. He will slow down, be absent, not obey the arrangement in his work, or even resign. 1 2 3 4 5

(4) Based on the bonus distributive procedure mentioned above, if we were employees in the company, we would also feel it is unfair. We would slow down, be absent, not obey the arrangement in our work, or even resign. 1 2 3 4 5

### Scene 3: A2B1 (distributive injustice × procedural justice)

#### (Story)

Senior managers of a company intend to give a large amount of bonus for employees. They formulate the standards and organize multi-level managers and representatives of employees to have a discussion. After discussion, the distributive standard is determined preliminarily. Then, the standard is shown publicly to collect opinions from ordinary employees until all staves approve the standard. Based on the decision without objection, the Human Resources Department evaluates every employee according to the distributive standard and personal job performance. The result is shown publicly for correction if mistakes exist. According to the distributive arrangement and personal job performance, Zhangsan got the lowest score, while did not obtain the minimum bonus.

(Instructions) Please answer the following questions based on your real thoughts and physical truth according to the situational story. When answering the questions, mark directly on the selected option (5 = Absolutely agree, 4 = Partly agree, 3 = A little bit agree, 2 = Partly disagree, and 1 = Absolutely disagree).

#### Absolutely disagree—Absolutely agree

(1) Based on the bonus distributive procedure mentioned above, Zhangsan will think it is fair and he will do his work actively. 1 2 3 4 5

(2) Based on the bonus distributive procedure mentioned above, if we were employees in the company, we would also feel it is fair and do our work actively. 1 2 3 4 5

(3) Based on the bonus distributive procedure mentioned above, Zhangsan will feel it is unfair. He will slow down, be absent, not obey the arrangement in his work, or even resign. 1 2 3 4 5

(4) Based on the bonus distributive procedure mentioned above, if we were employees in the company, we would also feel it is unfair. We would slow down, be absent, not obey the arrangement in our work, or even resign. 1 2 3 4 5

### Scene 4: A2B2 (distributive injustice × procedural injustice)

#### (Story)

Senior managers of a company intend to give a large amount of bonus for employees. Not only the distributive standard is not known by employees, but also the evaluation process is not transparent. Even they don't know how their evaluation score is calculated by company. The results of bonus distribution are not shown publicly. Even if the results are wrong, the senior managers don't allow you to appeal freely. Finally, zhangsan obtained a bonus. Later he learned that his bonus did not consistent with his income. Compared with him, those who did less job, created lower performance, and contributed less, eventually obtained more bonuses.

(Instructions) Please answer the following questions based on your real thoughts and physical truth according to the situational story. When answering the questions, mark directly on the selected option (5 = Absolutely agree, 4 = Partly agree, 3 = A little bit agree, 2 = Partly disagree, and 1 = Absolutely disagree).

#### Absolutely disagree—Absolutely agree

(1) Based on the bonus distributive procedure mentioned above, Zhangsan will think it is fair and he will do his work actively. 1 2 3 4 5

(2) Based on the bonus distributive procedure mentioned above, if we were employees in the company, we would also feel it is fair and do our work actively. 1 2 3 4 5

(3) Based on the bonus distributive procedure mentioned above, Zhangsan will feel it is unfair. He will slow down, be absent, not obey the arrangement in his work, or even resign. 1 2 3 4 5

(4) Based on the bonus distributive procedure mentioned above, if we were employees in the company, we would also feel it is unfair. We would slow down, be absent, not obey the arrangement in our work, or even resign. 1 2 3 4 5



# Well-Being and Functioning at Work Following Thefts and Robberies: A Comparative Study

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Thefts and robberies may be traumatizing experiences for employees. The aim of this study is to explore to what extent experiencing robberies and/or thefts at work affect workers' mental health, coping-self-efficacy, social support seeking, workload and job satisfaction. Drawing on Conservation of Resources theory, this research contributes to our understanding of the psychological sequelae of robbery and theft for employees working in small businesses. The few studies on the effects of robberies and thefts in the past have predominantly focused on bank employees. A sample of Italian tobacconists and jewelers completed an anonymous self-report questionnaire examining the experience of robbery and/or theft, social support seeking (Coping Orientation to Problem Experienced scale, COPE-IV), psycho-somatic well-being (General Health Questionnaire, GHQ-12), job satisfaction (a single item). Victims of thefts and/or robberies reported their PTSD symptoms (Impact of Event- Revised 6, IES-R-6) and trauma-related coping self-efficacy (Coping Self-Efficacy scale, CSE-7), based on the last event ( $N = 319$ ). Descriptive analyses, ANOVA, ANCOVA and multiple regressions analyses have been carried out. The results indicated that victims of thefts and robberies experienced greater workload, higher psycho-physical complaints and greater tendency to seek social support in comparison with their non-affected counterparts. They additionally experienced more post-traumatic symptomatology and perceived lower coping self-efficacy, when compared to those who experienced thefts "only." Multiple regression analyses revealed that CSE was positively related to job satisfaction, although the presence of psycho-physical symptoms was the main predictor of job satisfaction among both non-affected and affected employees. PTSD was not an independent predictor of job satisfaction. In sum, robberies and/or thefts exposure undermines differently workers' well-being.

**Keywords:** violence at work, post-traumatic stress disorder (PTSD), psycho-somatic well-being, trauma-related coping self-efficacy (CSE), job satisfaction

## INTRODUCTION

Robberies and thefts represent a serious threat to workplace safety. For instance, in Italy the numbers of robberies and thefts in 2015 among retailers were 5,337 and 102,041 respectively (Istat, 2015). In fact, Italy had the twelfth highest robbery rates out of 71 countries in 2006 (Aebi et al., 2010; European Institute for Crime Prevention and Control International Statistics on Crime Justice, 2011). To date, only a few studies have focused on the psychological impact of

these types of events on employees working in small, independently owned businesses (Casteel et al., 2008; Söndergaard, 2008; Belleville et al., 2012), with previous research on this topic predominantly focusing on the banking context (Van der Velden et al., 1992; Kamphuis and Emmelkamp, 1998; Hansen and Elklit, 2011, 2013; Hansen et al., 2012, 2014; Armour and Hansen, 2015; Christiansen and Hansen, 2015; Giorgi et al., 2015a,b; Mucci et al., 2015). The present research focused on jewelers and tobacconists because their job characteristics (e.g., customer-facing, working alone or in a small team, handling valuables and selling items of value) may potentially increase workers' risk for theft and robbery-related violence. The main purpose of this study was to investigate how experiencing robberies and/or thefts at work may affect workers' psychological well-being and job satisfaction. Indeed, previous research has widely demonstrated that being exposed to traumatizing experiences—such as robberies—may negatively affect individuals' mental health (Van der Velden et al., 1992; Hansen et al., 2014) with resulting effects on work-related aspects, such as job satisfaction (Giorgi et al., 2015b).

Both robberies and thefts are considered property crimes, perpetrated by “anyone who gains possession of another person's movable goods, stealing them from the owner with a view to drawing profit for themselves or others” (Article 624, 628 C.P.; Lattanzi, 2010). The key distinguishing factor between a theft from a robbery is that the latter involves the use of “personal violence or threats” of force (Article 628 C.P.; Lattanzi, 2010). Since such experiences are consistent with the conditions described by criterion A for PTSD as defined by the Diagnostic and Statistical Manual of Mental Disorder (DSM-V), thefts and robberies may be considered fully-fledged potentially traumatic events (PTEs).

Previous studies have shown that a robbery may be a traumatizing experience for workers, which may initiate the development of or increase existing mental health problems, such as psychological distress, major depression, acute stress disorder, and post-traumatic stress symptoms (Van der Velden et al., 1992; Kamphuis and Emmelkamp, 1998; Hansen and Elklit, 2014a,b; Hansen et al., 2014). This, in turn, may lead victims to experience reduced overall job satisfaction (Giorgi et al., 2015b), decreased work productivity (Zatzick et al., 2008), and increased demand for medical and mental healthcare services (Van der Velden et al., 1992; Mucci et al., 2015).

Experiencing a robbery or theft constitutes a threat to one's working conditions, which are one of four resources identified by Conservation of Resources (COR) theory (i.e., objects, conditions, personal characteristics, energies; Hobfoll, 1989). Following the exposure to a theft or robbery, workers experience a loss in their resources with regard to their working conditions such as their personal safety at work and the perception of a secure working environment. If workers (continue to) suffer from resource loss without being able to compensate through resource replenishment by employing other resources to offset the loss, they are at increased risk for mental health problems and PTSD symptoms. Furthermore, employing resources for coping can be stressful too (Hobfoll, 1989). If the resources expended in coping are greater than the resulting benefits, then the outcome of coping is likely to be negative (Hobfoll,

1989). Thus, if workers expend energy trying to cope with the aftermath of the theft or robbery, but are unsuccessful in doing so, they may further exacerbate their losses. In this situation, the likelihood for post-traumatic complaints and continued health impairment are more likely. In a situation of continued resource depletion, work demands may be perceived as more effortful due to an individual's reduced coping capacity. COR theory suggests that stress is not the result of an imbalance between objective demands and resource capacity, but rather the perception of these factors (Hobfoll, 1989). Little research to date has considered the effect of robberies and thefts on the regular everyday demands of one's job, such as perceived workload. However, it is likely that if one's resources are already depleted due to a traumatic event than a worker's capacity to deal with everyday work demands is reduced and thus, workload may be perceived to be higher. We investigate this aspect in the present study.

In the context of resource loss, or threat of loss, the harnessing of other types of resources becomes important (e.g., resource replacement; Hobfoll, 1989) to meet the demands related to the recovery, restore lost resources or reduce the negative impact. Social support seeking is an active coping strategy (Schaefer and Moos, 1998; Norberg et al., 2006; Taylor and Stanton, 2007) that may facilitate this process following robberies and thefts. Social resources may foster victim's resilience and recovery in the aftermath of a trauma because it may have a positive impact on the victims' perceptions of social support competence (Lepore, 2001) and the belief about their ability to cope with the stressor (Schwarzer and Knoll, 2007) by decreasing feelings of isolation (Ozer et al., 2003). Furthermore, when constructively provided, social support may encourage successful adaptation by helping victims to re-appraise the traumatic event and thus, engage in more effective coping strategies (Schaefer and Moos, 1998; Prati and Pietrantonio, 2009). In sum, receiving social support may reduce the emotional burden of robberies and thefts (Thoits, 2011).

Since robberies are different from thefts (because by definition the level of violence is more severe in a robbery), we expected that thefts and robberies would have differential impacts on workers' well-being. To examine these expectations, normally we would distinguish the following three groups of victimized workers: (1) workers who experienced thefts only; (2) workers who were victims of robberies only; (3) workers who were targeted of both thefts and robberies. However, at the beginning of our study we became aware that the majority of (if not all) robbed workers were also confronted with thefts (or vice versa). For this reason, the subgroup including those who experienced robberies only was eliminated and we focused on the comparison between the other two affected groups.

**Hypothesis (1)** Workers employed in jewelers and tobacco shops who were affected by both robberies and thefts will experience higher levels of psycho-somatic complaints and higher perceived workload, and they will seek more social support compared to non-affected workers.

PTEs like robberies and thefts may be accompanied by more specific post-traumatic symptoms such as re-experiencing the

event, avoiding event-related feelings and places, event-related anger and fear in the short, medium or long term. Some victims may develop a mental disorder, such as PTSD (DSM-5; American psychiatric association, 2013). The development of psycho-physical problems and post-traumatic stress symptoms may depend on the severity of trauma exposure and how it is subjectively experienced (Tsai et al., 2012). Furthermore, individuals exposed to multiple traumatic events may experience higher levels of post-traumatic symptoms and more severe impairment of mental health compared to those exposed to single events (Schwartz et al., 2005; Wahlström et al., 2008; Wisnivesky et al., 2011; Yuan et al., 2013; Karam et al., 2014). Taken together, these findings suggest that being exposed to both robberies and thefts may exacerbate the detrimental outcomes over and above being exposed to thefts only.

**Hypothesis (2)** Workers who were exposed to both robberies and thefts will be more likely to experience PTSD symptomatology than colleagues who were victims of thefts only.

As stated by COR theory (Hobfoll, 1989), personal resources are beneficial because they help individuals to deal with stressors. In the context of trauma exposure, trauma-related coping self-efficacy (CSE) is an important personal resource, which has been found to protect individuals from psychological distress (Benka et al., 2014) and is positively associated with psychological well-being (Benight et al., 2001; Lambert et al., 2012). CSE refers to the perceived ability to effectively manage both personal functioning and external recovery demands handled in the aftermath of a traumatic event (Benight and Bandura, 2004). CSE impacts the perceived stressfulness of traumatic events through various mechanisms. First, CSE influences the extent to which an event is perceived as threatening through an appraisal of the balance between personal coping abilities, environmental demands and potentially harmful characteristics of the event (Bandura, 1997). Secondly, CSE perceptions affect both the motivation to utilize and sustain effective coping strategies and the choice of adopted strategies, thereby influencing the perception of the event as stressful over time (Benight et al., 1999; Kraaij et al., 2002; Benight and Bandura, 2004). Thirdly, since CSE regards the belief in one's own ability to relieve stress reactions, it plays an important role because it helps victims to perceive stressors as less distressing (Kent, 1987; Kent and Gibbons, 1987). CSE perceptions are continuously adapting over time on the basis of individuals' perceptions of their own effectiveness in dealing with emotional and psychological consequences of the trauma. The level of stress perceived during or immediately after the traumatic event seems to have an impact on both short-term symptoms and the ability to overcome the event (Bosmans and van der Velden, 2015; Bosmans et al., 2015a). This suggests that the perceived seriousness of the event could affect CSE levels, so that traumatic events perceived as more serious may lead individuals to experience lower CSE perceptions.

**Hypothesis (3)** Workers who were exposed to both robberies and thefts will report lower CSE levels than those who were victims of thefts only.

The negative association between psychological well-being and job satisfaction has been widely demonstrated across several types of professional populations (Faragher et al., 2005; Alexopoulos et al., 2014). A longitudinal study by Giorgi et al. (2015b) showed that robberies had long-term effects on victims' psychological distress, which in turn may lead to reduced overall job satisfaction. In addition, a meta-analysis by Bowling et al. (2015) revealed that workload was significantly and negatively associated with job satisfaction, although this association was relatively weak. Consequently, we expected that workers who reported greater psycho-physical complaints and higher perceived workload would be less satisfied with their job.

Furthermore, coping self-efficacy perceptions have been shown to be particularly important for job satisfaction (Judge et al., 2001; Schyns and von Collani, 2002). A strong relationship was found between feeling generally competent and being satisfied with one's job (Judge et al., 2001; Law and Guo, 2016). More specifically, previous studies found that occupational self-efficacy predicts job satisfaction (Schyns and von Collani, 2002; Paggi and Jopp, 2015). However, to the best of our knowledge, no studies investigating the relationship between the more specific construct of trauma-related CSE and job satisfaction have been carried out to date. Feeling more confident in one's ability to cope with trauma should protect employees against detrimental psychological consequences and, in turn, contribute to the maintenance of job satisfaction levels following a theft or robbery. Some studies have found relationships between PTSD and job dissatisfaction (North et al., 2002; Paunović and Öst, 2004), whereas others failed to identify such relationship (Nandi et al., 2004; Vinokur et al., 2011). These mixed findings suggest the need to examine this association more in depth.

**Hypothesis (4)** High psycho-physical symptoms and workload levels are negatively associated with job satisfaction among affected and non-affected workers over and above demographic variables. Perceived job satisfaction is negatively associated with PTSD symptoms and positively associated with coping self-efficacy among victimized workers, over and above psycho-physical symptoms and workload, and time since event.

Since victims with low CSE levels and high PTSD symptoms are less likely to recover spontaneously and more likely to experience a weaker decline in symptoms (Morina et al., 2014), they are more likely to require treatment. However, only one study to date has specifically investigated the relationship between CSE and help-seeking behavior (Bosmans and van der Velden, 2015). Past studies suggest that the severity of post-event mental health problems, particularly PTSD symptomatology, is the factor most consistently related to the utilization of mental health services (MHS) following trauma exposure (Boscarino et al., 2004; Gavrilovic et al., 2005; Elhai et al., 2006; van der Velden et al., 2007). Indeed, PTSD severity is related to increased use of MHS among residents of disaster affected areas (Frahm et al., 2013), survivors of terrorist attacks (Boscarino et al., 2004) and, more generally, victims of disasters (Van der Velden et al., 2006). Although trauma-exposed individuals are more likely to use MHS compared to non-affected people (Van der Velden



et al., 1992, 2006), many victims do not utilize MHS or wait to seek treatment, even when they experience severe mental health problems (Kessler et al., 1998; Koenen et al., 2017). This may be due to different perceived barriers, such as stigma associated with mental health care (Gorman et al., 2011), low mental health literacy and helplessness related to ongoing symptoms (Davis et al., 2008; Ghafoori et al., 2014). With respect to robberies, a study among Dutch victims of bank robberies found that significantly more victims (32%) compared to non-victimized colleagues (9%) had used MHS, while the number of therapeutic sessions did not significantly differ between victims and non-victims who sought treatment (Van der Velden et al., 1992). To our knowledge, there are no studies available that have evaluated post-robbery and post-theft MHS utilization among victimized employees working in small, independently owned businesses.

Furthermore, because workload is positively associated with emotional exhaustion (Aronsson et al., 2017) which, in turn, may impair workers' mental health, those who perceive higher workload could be more likely to seek treatment than those who experience low workload. Indeed, previous research has found that poor mental health is an important factor predicting primary care consultation (Bellón et al., 2007). Edmond et al. (2013) found that the family doctor was the most frequently utilized service by the survivors of intimate partner violence. In Italy, the popularity of general practitioners (GP) can be explained by the fact that all citizens have access to this service free of charge. Furthermore, GPs play a gatekeeping role because they are the first point of contact for referrals to consultants, and are responsible for prescribing medication.

Since victims with low CSE and high PTSD symptoms are more likely to experience mental health complaints, we expected that they will be more likely to use MHS and consult their family doctor.

**Hypothesis (5)** The use of medical health services (MHS) by workers affected by thefts and/or robberies will be positively associated with post-traumatic symptoms and negatively associated with coping self-efficacy, over and above psycho-somatic symptoms and workload.

## MATERIALS AND METHODS

### Sample and Procedure

This cross-sectional study was carried out with 492 workers employed in jewelers ( $N = 250$ ) and tobacco shops ( $N = 242$ ) throughout Italy in collaboration with their national trade unions. Respondents completed an anonymous self-report questionnaire. Tobacconists completed a paper-and-pencil questionnaire—since they are less likely to use the internet—whereas jewelers completed an online questionnaire.

As revealed by **Table 1**, the sample was equally distributed between jewelers and tobacconists who were the 50.81% and the 49.19% of the total sample respectively. The two professional categories were broadly similar as regards the main socio-demographic variables; with regard to the exposure to violent events, 31.90% of jewelers and 36.60% of tobacconists were victims of thefts, whereas 68.10% of jewelers and 63.40%

**TABLE 1 |** Socio-demographic data compared for professional categories.

Socio-demographic variables	Jewelers ( $N = 250$ )	Tobacconists ( $N = 242$ )
	<i>n (%)</i>	<i>n (%)</i>
<b>GENDER</b>		
Male	202 (80.80%)	202 (84.20%)
Female	48 (19.20%)	38 (15.80%)
<b>MARITAL STATUS</b>		
Single	32 (12.80%)	39 (16.50%)
Married	195 (78.00%)	177 (74.70%)
Divorced	18 (7.20%)	16 (6.80%)
Widower	5 (2.00%)	5 (2.10%)
<b>WORK WITH</b>		
Always alone	25 (10.00%)	12 (5.00%)
Mainly alone	55 (22.00%)	47 (19.50%)
With one or more colleagues	170 (68.00%)	182 (75.50%)
<b>SHOP LOCATION</b>		
Isolated	5 (2.00%)	23 (9.60%)
Proximity of houses and shops	240 (98.00%)	217 (90.40%)
<b>SHOP LOCATION</b>		
Northern of Italy	90 (38.30%)	92 (38.50%)
Centre of Italy	40 (17.00%)	52 (21.80%)
Southern of Italy and Islands	105 (44.70%)	95 (39.70%)
<b>I WORK AS</b>		
Owner	222 (94.50%)	196 (82.00%)
Employee	13 (5.50%)	43 (18.00%)
	<i>M (SD)</i>	<i>M (SD)</i>
Age	51.60 (9.94)	48.96 (10.15)
Job tenure	31.00 (11.49)	27.05 (10.75)
Job tenure in the current position	26.00 (12.03)	17.53 (11.03)

of tobacconists were exposed to both thefts and robberies. Considering the similarities between the two professional categories, we considered them comparable, and we carried out all analyses on the combined sample. Considering the total sample, the majority of respondents were male (82.40%), married (76.40%), working with other co-workers (71.70%) and were owners of the shop (88.20%). The average age was 50.28 years ( $SD = 10.12$ ) with an average job tenure of 29.04 years ( $SD = 11.29$ ) and average tenure in their current position of 21.79 years ( $SD = 12.29$ ). In the majority of cases, the shop was located in the immediate proximity of houses and other shops (94.20%) and open only during the day (67.20%). 182 shops were located in the North, 92 small business in the Centre and 200 in the South of Italy.

In total, 319 workers had been exposed to robberies and/or thefts. More specifically, 108 workers were victims of thefts only, 211 were exposed to both thefts and robberies, and 173 workers didn't experience any events. Most respondents had been exposed to thefts in the past 13–24 months (80.30%), while more than half (56.70%) were victims of robberies in the past 7–12 months.

## Measurement

Participants who were exposed to thefts and/or robberies were invited to complete the whole questionnaire, whereas those who had not been exposed completed some sections only. Victims completed additional measures related to post-traumatic stress symptomatology, trauma related copy self-efficacy and use of mental health services.

Participants were asked whether they experienced thefts or robberies in their workplace. The two items were combined to a dichotomous measure of **exposure severity** to distinguish between respondents who were exposed to thefts only and those who reported multiple exposures (both thefts and robberies). Being exposed to both types of events was considered as more severe than being victims of a single type of event. In addition, participants were invited to indicate when the event took place (e.g., *How long ago was the last theft in your workplace?*) on a 5-point scale, ranging from 1 = *0–6 months ago* to 5 = *more than 24 months ago*.

## General Psychological Health

General psychological health was assessed using the 12-item General Health Questionnaire (Goldberg, 1978, 1992; Goldberg and Williams, 1988; GHQ-12). This well-established screening instrument has been widely used in trauma research in different settings (e.g., Connor et al., 2006). It exists in several versions, but we decided to use the twelve-item version because of its good statistical properties (Goldberg and Williams, 1988). The questionnaire comprises three subscales: social dysfunction is assessed with six items related to difficulties in social performing and dealing with problems (e.g., *“Have you recently felt you couldn’t overcome your difficulties?”*); general dysphoria evaluates the presence of psycho-somatic symptoms (four items, e.g., *“Have you recently been confidence in yourself?”*), and finally, loss of confidence assesses self-esteem levels (two items, e.g., *“Have you recently been losing confidence in yourself?”*). Responses are based on a four-point Likert scale that assesses if and how the individual’s mental state differs from his or her usual state (from 0 = *better than usual/more so than usual* to 3 = *much less than usual* for positively worded items and for negatively 0 = *not at all* to 3 = *much more than usual* for negative worded items). For the purpose of this study, the total GHQ score was chosen over the three-dimensional model (with items loading exclusively on each GHQ factor), as the GHQ-12 was initially designed as a one-factor measure (Goldberg and Williams, 1988), and many researchers support the unidimensional use of the questionnaire (e.g., Shevlin and Adamson, 2005). This scale gives a total score ranging from 0 to 36 points, in which a greater score means a high level of malaise. In the present study, Cronbach’s alpha for this scale was good ( $\alpha = 0.80$ ).

## Job Satisfaction

Job satisfaction was assessed using a single item measuring overall satisfaction (Giorgi et al., 2015b; e.g., *How satisfied have you been with your work?*). The responses were obtained on a ten-point scale (from 0 = *no satisfaction* to 10 = *satisfaction*) where a higher score indicates greater job satisfaction. This single item was used in previous studies focused on robberies (Giorgi et al., 2015b),

showed sufficient validity and was positively related to more general scales of theoretically associated constructs (Faragher et al., 2005; Lapierre et al., 2005).

## Social Support Seeking

Social support seeking as a coping strategy was assessed using Coping Orientation to Problems Experienced scale (COPE-IV; Sica et al., 2008). This instrument was used to assess participants’ tendency to seek social support in the process of coping with problems (10 items; e.g., *I’ve been getting emotional support from others*). Cronbach’s alpha for this scale was good ( $\alpha = 0.88$ ).

## Workload

Workload perceptions were evaluated using a subscale taken from the Areas of Work life Survey (Leiter and Maslach, 2006) to capture the extent to which work demands spill into personal life as well as the physical and intellectual burden of job demands (e.g., *I do not have time to do the work that must be done*). The six items were assessed on a five-point Likert-type scale (from 1 = *strongly disagree* to 5 = *strongly agree*). As indicated by Maslach and Leiter (2008), scores greater than 3 denote a satisfactory alignment between the individual and the workplace’s demands, whereas low scores reveal the presence of risk factors for the development of work-related stress. Cronbach’s alpha for this scale was good ( $\alpha = 0.81$ ).

## Post-Traumatic Stress Symptoms

The six-item Impact of Event-Revised scale (IES-R; Thoresen et al., 2010) was used to assess symptoms of post-traumatic stress in response to a traumatic event. Participants were invited to indicate how frequently symptoms of intrusion (two items; e.g., *Other things kept making me think about it*), avoidance (two items; e.g., *I tried not to think about it*) and hyperarousal (two items; e.g., *I felt watchful or on-guard*; Weiss and Marmar, 1997) were experienced in the period following the last robbery or theft on a four-point scale (from 1 = *never* to 4 = *often*). Instead of using the three-dimensional solution, a global score (from 0 to 24) was calculated by adding the scores for each of the three subscales. This unidimensional solution gives an overall post-traumatic stress measure and it was found to be positively correlated with general health (Giorgi et al., 2015a). Cronbach’s alpha for the IES scale was good ( $\alpha = 0.88$ ). Respondents were asked to take the (most recent) theft/robbery in mind when answering the questions on PTSD symptoms. In case respondents experienced both thefts and robberies, they were asked to focus on one of these events of their own choosing.

## Trauma-Related Coping Self-efficacy

Trauma-related coping self-efficacy (CSE) was assessed with a seven-item Coping self-efficacy scale (CSE-7; Bosmans et al., 2015b). Respondents rated their perceived efficacy in coping with diverse consequences derived from the theft or robbery (e.g., *“dealing with frightening images or events about the event,” “being emotionally strong”*) on a seven-point Likert scales (from 1 = *I am completely incapable of* to 7 = *I am perfectly capable of*). Cronbach’s alpha for the CSE scale was good ( $\alpha = 0.89$ ). Respondents were asked to take the same event in mind as the event when they answered the questions about PTSD symptoms.

## Use of (Medical) Health Services

Use of (medical) health services was assessed using a single item (*"Have you contacted your general practitioner at any time during the past 12 months in connection with the last armed robbery/theft?"*). Participants were invited to indicate on a ten-point Likert scale (from 1 = never to 10 = 9 or more times) how frequently, during the past 12 months, they have contacted their general practitioner to deal with consequences due to the last robbery or theft. Using the same scale, respondents answered whether, during the past 12 months, they have contacted a mental health professional (through public or private mental health services) to manage the consequences derived from theft and/or robbery exposure (e.g., *Have you been in contact with an independent psychiatrist, psychologist and/or psychotherapist for yourself during the past 12 months?*).

## Statistical Analyses

The data were analyzed using SPSS, version 20. One-way analysis of variance (ANOVA) was carried out to verify the presence of differences in levels of psycho-somatic complaints, workload and social support, comparing victims of thefts and robberies with non-affected workers. Significant differences were subjected to multiple comparisons using Bonferroni's highly significant difference to understand the nature of the differences.

One-way analysis of covariance (ANCOVA) was used in order to analyze differences in levels of PTSD symptoms and CSE, comparing workers affected by thefts and robberies with victims of thefts only. ANCOVA was also used to explore differences in the number of GP visits in the past 12 months, comparing non-affected individuals with those who were affected by thefts only and those who were exposed to both thefts and robberies.

Multivariate regression analyses were carried out to verify the influence exerted by psycho-physical symptoms and workload on job satisfaction among affected and non-affected workers. Furthermore, regressions were used to assess the influence of psycho-physical and post-traumatic symptoms, coping self-efficacy and workload on job satisfaction among affected workers.

A  $p$  value  $< 0.05$  was considered as statistically significant.

## RESULTS

The means, standard deviations, intercorrelations, skewness and kurtosis statistics, and internal consistencies (Cronbach's alpha) for the measures used in this study are provided in **Tables 2, 3** (for non-affected and affected subjects, respectively).

With regard to Hypothesis 1, as expected *post-hoc* comparisons showed that victims of both thefts and robberies experienced higher levels of psycho-somatic symptoms [ $F_{(2, 486)} = 6.65$ ;  $p < 0.01$ ], workload [ $F_{(2, 485)} = 13.49$ ;  $p < 0.001$ ] and seeking social support [ $F_{(2, 486)} = 4.47$ ;  $p < 0.05$ ], compared to non-affected colleagues (all Cohen's  $D$  between 0.18 and 0.51) (see **Table 4**).

With regard to hypotheses 2 and 3, one-way analysis of covariance (ANCOVA) showed that workers affected by thefts and robberies had significantly higher PTSD-symptom levels [ $F_{(1, 303)} = 22.43$ ;  $p < 0.001$ ; Cohen's  $D = -0.58$ ] and significant

**TABLE 2 |** Descriptive, internal consistency, and intercorrelations for study variables among non-affected workers ( $N = 173$ ).

Measure	<i>M</i>	<i>SD</i>	Skewness	Kurtosis	1	2	3
1. Psycho-physical health	2.92	1.48	0.65	−0.30	<b>0.80</b>		
2. Social support seeking	2.08	0.61	0.55	0.34	0.32**	<b>0.87</b>	
3. Workload	3.19	0.80	−0.05	−0.58	0.12	−0.17*	<b>0.79</b>

Boldfaced numbers on the diagonal represent Cronbach's alpha; \* $p < 0.05$ , \*\* $p < 0.01$ .

lower coping self-efficacy levels, compared to workers affected by thefts only [ $F_{(1, 296)} = 8.37$ ;  $p < 0.01$ ; Cohen's  $D = 0.36$ ; see **Table 5**].

According to hypothesis 4, we expected that the presence of psycho-physical symptoms and the perception of high workload would be negatively associated with job satisfaction (while controlling for gender, age and marital status). The results of the multivariate regression analyses with workload and psycho-somatic symptoms as predictors of job satisfaction were statistically significant for non-affected workers only (see **Table 6**). The full model explained 39% of total variance, but when controlling for gender, age and marital status, only psycho-physical symptoms level was significantly and strongly related to job satisfaction ( $\Delta R^2 = 0.29$ ;  $\beta = -0.56$ ;  $p < 0.001$ ; Cohen's  $f^2 = 0.64$ ). The perception of high workload was not associated with the job satisfaction levels of workers who had not been affected by assessed traumatic events.

In addition, according to hypothesis 4, we expected that job satisfaction would be negatively related to post-traumatic symptoms and positively related to coping self-efficacy in workers affected by thefts and/or robberies, over and above the effects of psycho-somatic symptoms and workload (controlling for gender, age, marital status and time since event). The results show that the factor highly related to job satisfaction in workers affected by thefts and/or robberies was psycho-somatic symptoms level ( $\beta = -0.31$ ;  $p < 0.001$ ); the level of coping self-efficacy ( $\beta = 0.20$ ;  $p < 0.01$ ) was significantly related to job satisfaction, explaining a limited amount of variance while controlling for psycho-somatic symptoms (see **Table 7**). Post-traumatic symptoms were not independently associated with job satisfaction.

Finally, regarding hypothesis 5, the results of ANCOVA showed no significant differences in the number of GP visits in the past 12 between non-affected individuals ( $M = 1.88$ ), those affected by thefts only ( $M = 2.24$ ) and those exposed to both thefts and robberies ( $M = 2.23$ ). Differences in the number of event-related GP-visits between thefts ( $M = 1.02$ ) and thefts and robberies ( $M = 1.30$ ) did not reach the  $p < 0.05$  significance level between ( $p = 0.06$ ) while controlling for gender, age and marital status.

With respect to the use of mental health services in the past 12 months, multivariate logistic regression analyses showed no significant differences between non-affected (9.8%), those affected by thefts (7.4%) and those affected by thefts and robberies (9%).

**TABLE 3 |** Descriptive, internal consistency, and intercorrelations for study variables among affected workers ( $N = 319$ ).

Measure	<i>M</i>	<i>SD</i>	Skewness	Kurtosis	1	2	3	4	5
1. Psycho-physical health	<b>3.37</b>	<b>1.55</b>	0.66	0.42	<b>0.80</b>				
2. Social support seeking	2.20	0.65	0.61	0.07	0.40**	<b>0.88</b>			
3. Workload	3.58	0.80	−0.35	0.03	0.28**	0.10	<b>0.80</b>		
4. CSE	4.85	1.36	−0.39	−0.14	−0.08	0.06	0.06	<b>0.89</b>	
5. PTSD symptoms	2.18	1.01	−0.26	−0.73	0.26**	0.29**	0.20**	−0.27**	<b>0.88</b>

Boldfaced numbers on the diagonal represent Cronbach's alpha; \*\* $p < 0.01$ .

**TABLE 4 |** ANOVA results for workload and social support seeking among the three study groups.

Variables	Groups	Mean	<i>SD</i>	<i>F</i> <sup>a</sup>
Psycho-somatic symptoms	No event	2.92	1.48	6.65**
	Thefts	3.15	1.42	
	Thefts and robberies	3.49	1.61	
Workload	No event	3.19	0.80	13.49***
	Thefts	3.53	0.72	
	Thefts and robberies	3.61	0.84	
Social support seeking	No event	2.08	0.61	4.47**
	Thefts	2.08	0.66	
	Thefts and robberies	2.25	0.64	
Job satisfaction	No event	6.88	1.99	12.14***
	Thefts	6.46	2.12	
	Thefts and robberies	5.74	2.23	

\*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

<sup>a</sup> $DF = 2$ .

**TABLE 5 |** ANCOVA results for PTSD symptoms and coping self-efficacy among affected groups.

Variables	Groups	Mean	<i>SD</i>	<i>F</i> Time <sup>a</sup>	<i>F</i> groups <sup>a</sup>
PTSD symptoms	Thefts	5.36	2.94	1.75	22.43***
	Thefts and robberies	5.19	1.34		
Coping self-efficacy	Thefts	5.14	2.93	5.50*	8.37***
	Thefts and robberies	4.71	1.34		

<sup>a</sup> $DF = 1$ .

\* $p < 0.05$ , \*\*\* $p < 0.001$ .

Covariate: time since event.

**TABLE 6 |** Summary of regression analyses for variables predicting job satisfaction in non-affected group.

Variable	$\Delta R^2$	<i>f</i> <sup>2</sup>	Non-affected ( $N^{\max} = 163$ )		
			$\beta$	<i>t</i>	<i>P</i>
Step 1	0.10				
Gender			−0.32	−4.10	0.00
Age			−0.01	−0.10	0.92
Marital status			−0.01	−0.09	0.93
Step 2	0.29	0.64			
Gender			−0.20	−3.06	0.00
Age			0.05	0.69	0.49
Marital status			−0.02	−0.31	0.76
Workload			0.09	1.37	0.17
GHQ total score			−0.56	−8.39	0.00

et al., 2015), the ways in which experiencing these PTEs at work may affect workers' perceptions remains unclear. This study assessed the associations between exposure to robberies and thefts with psychological well-being in light of the solid scientific framework of the Conservation of Resource Theory (Hobfoll, 1989; Halbesleben et al., 2014).

Firstly, this study confirmed the hypotheses 1, 2, and 3. Victims of multiple violence (both thefts and robberies) reported higher levels of psycho-somatic complaints, greater workload perceptions and higher levels of social support seeking compared to non-affected counterparts. Additionally, they experienced higher levels of PTSD symptoms and weaker CSE perceptions compared to those who were exposed to thefts only. According to the COR model, the higher the threat of loss or actual loss of resources, the more harmful are the negative psycho-social consequences. Workers who are victims of both thefts and robberies seem to be more likely to perceive a threat to their working conditions, feeling less safe within their workplace and needing more resources to face the trauma and its aftermath, than their counterparts. Consequently, they tend to experience more serious resource depletion, which may result in a reduced capacity to manage everyday work demands, the need for compensatory resource replacement and the risk of being stressed by the negative balance between energies invested in dealing with recovery demands and poor benefits achieved. As a result, they are more likely to perceive higher

## DISCUSSION

This cross-sectional study focuses on psychological consequences of robberies and thefts, an increasing health and safety issue in Italy, among the under-investigated population of jewelers and tobacconists. Although some studies have investigated the consequences of being exposed to robberies and thefts on workers' well-being, post-traumatic stress, psycho-physical symptoms and job satisfaction (e.g., Giorgi et al., 2015b; Mucci



**TABLE 7 |** Summary of regression analyses for variables predicting job satisfaction in affected group.

Variable	$\Delta R^2$	$f^2$	Affected ( $N^{\max} = 303$ )		
			$\beta$	$t$	$p$
Step 1	0.01				
Gender			0.02	0.31	0.76
Age			-0.08	-1.28	0.20
Marital status			0.10	1.64	0.10
Step 2	0.11	0.14			
Gender			0.05	0.86	0.39
Age			-0.06	-1.08	0.28
Marital status			0.10	1.73	0.08
Workload			-0.04	-0.68	0.50
GHQ total score			-0.32	-5.57	0.00
Step 3	0.03	0.18			
Gender			0.04	0.67	0.49
Age			-0.01	-0.22	0.82
Marital status			0.09	1.54	0.12
Workload			-0.05	-0.95	0.34
GHQ total score			-0.31	-5.28	0.00
PTSD symptoms			0.02	0.28	0.78
Coping self-efficacy			0.20	3.27	0.00
Time since event			-0.01	-0.15	0.88

workload, search for greater social support and experience a more serious psycho-physical impairment than their non-exposed counterpart. Furthermore, workers may experience trauma re-actualization when they are victims of both thefts and robberies, increasing post-traumatic symptoms (Van der Kolk, 1989; Schwartz et al., 2005; Wisnivesky et al., 2011; Yuan et al., 2013). Indeed, the reoccurrences of violence may stimulate hopelessness, which may influence workers' health (Herschcovis and Barling, 2010). Moreover, literature found associations between perceived helplessness and post-traumatic complaints, since victims of violence seem to commonly feel helpless or fearful even after a robbery (Mucci et al., 2015). Consequently, it is possible that employees who were exposed to robberies are more likely to experience feelings of helpless or fearful and, in turn, they may be at higher risk of developing PTSD symptoms.

In addition, the development of fears (for instance of being a victim of future robberies) might decrease CSE levels. For example, Di Giacinto et al. (2014) pointed out that fear is an important factor that influences the extent to which robbery victims experience post-traumatic symptoms. Van der Velden et al. (1992) showed that victims of bank robberies are more afraid of future robberies than non-victims.

Accordingly, workers affected by violence reported impediments in self-management, a factor related to self-efficacy (Giorgi et al., 2016). Furthermore, CSE might be impaired by the level of stress perceived during or immediately after the trauma (Bosmans and van der Velden, 2015; Bosmans

et al., 2015c). In line with COR theory, workers who are exposed to both thefts and robberies, which are perceived as fearful and stressful events, continue to be affected by resource loss and, thus, they are more likely to feel like they don't have the necessary energies and capacities to successfully manage the negative consequences following traumas, experiencing higher PTSD symptoms and lower CSE levels.

Hypothesis 4 was not confirmed. In non-affected workers, job satisfaction was associated to workload and psycho-somatic symptoms. However, when controlling for socio-demographic variables, only psycho-somatic symptoms were related to job satisfaction in this cohort. Among those who were exposed to both thefts and robberies, PTSD symptomatology and high workload were not independently related to job satisfaction, whereas CSE levels explained a small amount of variance in satisfaction, over and above all other predictors. The differences regarding workload found between the two groups could be explained by the fact that those affected by violence might have learned, to a certain extent, to cope with the trauma by becoming more resilient. In line with this reasoning, post-traumatic growth - which may stem from the struggle with the trauma - has been found to be associated with the development of coping skills and the redefinition of life in a more meaningful way (Williams et al., 2003; Baillie et al., 2014).

Similar to findings regarding non-exposed workers, psycho-somatic symptoms represent the variables more strongly related to job satisfaction in workers exposed to thefts or robberies (or both). Indeed, job satisfaction is affected by psycho-somatic complaints, as shown by previous research (Faragher et al., 2005; Alexopoulos et al., 2014). The fact that the presence of post-traumatic symptoms did not influence job satisfaction is in line with some previous findings (Nandi et al., 2004; Vinokur et al., 2011). This might be due to the fact that in our sample, some time had elapsed since the trauma for the majority of the sample (as confirmed by reported time since the last theft or robbery) and, as a result, its effect might be attenuated by natural course of coping. Robbery puts demands on workers - often company owners - to remain resilient and cope in a positive way.

In conclusion, hypothesis 5 was not confirmed: no differences were found in (mental) health services utilization. There might be several explanations for this finding. Possibly cultural aspects might emerge: discrimination and stigma potentially associated with a mental health diagnosis or receiving mental health treatment may be responsible for delays in seeking treatment (Gorman et al., 2011). Thus, in Italy—like in other countries—some workers might be still reluctant to use mental health services (Kessler et al., 1998; Koenen et al., 2017). This may explain the fact that affected and non-affected workers did differ in mental health problems, while no differences were found in MHS utilization. Since treatment seeking victims tend to have lower CSE perceptions than nontreatment seeking individuals (Bosmans et al., 2016), an alternative explanation could be that victims didn't seek treatment because they had high overall CSE levels. It would be interesting to test this hypothesis in future. From an applied perspective, even if no significant differences were found in mental health problems and services utilization between affected and non-affected workers, it is

noteworthy that therapists may help victims to reduce negative effects deriving from the exposure to PTEs at work. Indeed, several psychological interventions aimed at individuals who experienced a trauma have been designed to mitigate acute distress reactions with the goal of preventing the development of chronic PTSD symptoms (Foa et al., 2005). Such interventions include both traditional individual crisis interventions (e.g., prompt intervention aimed at comforting victims, mobilizing their resources to react to the traumatic experience; Setti and Argentero, 2016) and group psychological debriefing, especially Critical Incident Stress Debriefing (i.e., small-group discussion implemented to assist individuals in reaching a sense of closure post crisis and encourage them to discuss and ventilate intense emotions facilitating their processing of their responses to the trauma; Mitchell and Everly, 2000). Furthermore, brief (i.e., 4–5 sessions) cognitive-behavioral therapy (Bryant et al., 1998) and medication (e.g., benzodiazepines, propranolol, and hydrocortisone; Pitman et al., 2002) may be useful to support victims who exhibit malaise symptoms.

## STRENGTHS AND LIMITATIONS

The current study has a number of strengths. It gives an original contribution to the existing literature of psychological sequelae following robbery and theft exposure: to date, this is one of the first studies with a large sample of workers employed in small businesses assessing how experiencing these PTEs may impact on their well-being and job satisfaction. In addition, to the best of our knowledge, this is the first study to compare the differences in terms of PTSD symptoms, by coping self-efficacy perceptions, social support and treatment seeking, between workers who were exposed to both thefts and robberies and those who were victims of thefts only.

A further strength is the focus on an understudied and difficult-to-track population, since only a few studies have concentrated on workers employed in small businesses while previous research has predominantly focused on other professional categories, such as bank tellers (e.g., Armour and Hansen, 2015; Mucci et al., 2015).

However, the findings are also subjected to several limitations. First, since the majority of our subjects were men, and gender has been found to affect the levels of mental health and PTSD symptoms (see Christiansen and Hansen, 2015), this might have partially influenced our findings. However, the gender distribution in our sample is representative of these worker cohorts in the Italian context. Secondly, causal relationships cannot be inferred since the study design was cross-sectional. Consequently, further research should adopt longitudinal design and assess workers' well-being and job satisfaction before violent episodes take place, in order to more thoroughly interpret how experiencing robberies and thefts may impact on these psychological states. Using a longitudinal design, it will be beneficial to examine the potential moderation role exerted by resources (for example, in terms of CSE) in the relationship between the exposure to PTEs (i.e., thefts and robberies), and individual and occupational outcomes (respectively in terms,

for example, of health symptoms and job satisfaction), among exposed subjects.

Furthermore, this study used only self-report measures for data gathering which might contribute to common method bias. Therefore, a further limitation was that the assessment of post-traumatic stress symptomatology was based on self-reporting without a clinical examination. Although IES score has a good accuracy showing a high correlation with PTSD diagnosis, this scale does not include all criteria for PTSD as stated by DSM-5. Further research should collect information from other sources rather than rely solely on self-reports: clinical interviews should be integrated to assess PTSD symptomatology.

Furthermore, data on pre- and peri-trauma variables were not gathered, although it has been found that they may affect individuals' susceptibility to PTSD. Thus, it has been shown that both pre-traumatic risk factors—such as the presence of pre-event mental health problems; (Van der Velden et al., 2016); co-existing psychopathological disorders; (Skogstad et al., 2013); or having experienced prior non-occupational traumatic life events; (Hansen and Elklit, 2011)—and peri-traumatic factors—such as perceived threat to one's life, helplessness and the presence of a weapon; (Giorgi et al., 2015a)—might increase the likelihood of developing PTSD. Therefore, controlling for these confounding variables is suggested going forward.

The fact that results were based on a sample of jewelers and tobacconists means that they may not be generalizable to other working populations. Replications should be conducted in other professional categories. Moreover, an important endeavor would be to examine whether these findings replicate in other cultural contexts through comparative studies.

Another limitation is due to the fact that we received a response from a representative sample from each category of theft and robbery related violence, although possible selection bias due to the voluntary participation into the research cannot be ruled out. It is possible that those who experienced robbery and theft-related violence were more motivated to respond and, as such, are overrepresented. Alternatively, non-response to a survey of this type may be due to avoidance symptoms associated with post-traumatic stress.

Finally, although job satisfaction was measured by a well-validated single item, the use of facet measures would make it possible to identify specific areas that might be differently influenced by trauma exposure. Future studies should attempt to study different aspects of job satisfaction and examine other behavioral work-related outcomes of robbery and theft exposure (e.g., work performance). In addition, future research should also focus on the influence of possible compensations from insurance companies, or problems with receiving compensations, on post-event mental health problems, workload and job satisfaction (O'Donnell et al., 2015).

## CONCLUSION

In conclusion, thefts and/or robberies exposure undermines differently workers' well-being and job satisfaction. Workers who were exposed to both types of events were more likely

to develop PTSD symptomatology and impaired perceived ability to cope with the trauma, when compared to those who were exposed to thefts only. Victims of multiple violence reported greater workload, higher psycho-somatic complaints and greater tendency to seek social support in comparison with their unexposed colleagues. PTSD symptomatology was not significantly associated with job satisfaction. By contrast, CSE perceptions explained a limited amount of variance of satisfaction, although psycho-somatic impairment was the main predictor of job satisfaction both in affected and non-affected workers. Investigating these effects is crucial to formulate preventive measures and tailored interventions for victims.

## ETHICS STATEMENT

We have investigated topics related to occupational well-being and work environment/conditions without any reference to private/personal issues. All participants were employees of private businesses, and they can be classified as “normal subjects” (i.e., without specific mental health problems): they were all adult mentally fit. Italian law does not impose these requirements (i.e., ethics approval and written informed consent) in case of these type of self-report and anonymous research carried out on healthy subjects.

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## AUTHOR CONTRIBUTIONS

IS gave substantial contribution to the design of the work (acquisition and interpretation of the data); in drafting the work and revising it critically; gave the final approval of the version to be published; agrees to be accountable. PvdV gave substantial contribution to the analysis and interpretation of the data; in drafting the work; in revising the work critically; gave the final approval of the version to be published; agrees to be accountable. VS gave substantial contribution to the design of the work (acquisition and interpretation of the data); in revising the work critically; gave the final approval of the version to be published; agrees to be accountable. MF gave contribution to the data analysis; gave the final approval of the version to be published; agrees to be accountable. GG gave contribution to the design of the work (acquisition and interpretation); gave the final approval of the version to be published; agrees to be accountable. DO gave contribution to the data analysis; in revising the work critically; gave the final approval of the version to be published; agrees to be accountable. PA gave substantial contribution to the design of the work (acquisition and interpretation); in revising the work critically; gave the final approval of the version to be published; agrees to be accountable.

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# Psychological Availability between Self-Initiated Expatriates and Host Country Nationals during Their Adjustment: The Moderating Role of Supportive Supervisor Relations

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This research examined the role of psychological availability as a means of psychological engagement between self-initiated expatriates (SIEs) and their host-country nationals (HCNs) colleagues during their work and interaction adjustment. To reveal this process, this study presented the concept of psychological availability, which refers to an individual's belief that they are physically, cognitively, and emotionally ready or confident to engage the self with their colleagues, as a mediator between proactive personality and adjustment. Also, it investigated the relationship between proactive personality and psychological availability and how it was moderated by supportive supervisor relations. We hypothesized, this relationship would be weakened/strengthened when SIEs and HCNs received low/high level of support from their supervisor. This study was conducted as a quantitative study, data was used from 342 SIEs and 342 HCNs working in mainland China. Our finding supported the hypothesis that psychological availability mediated the relationship between proactive personality and their adjustment to an international work environment; in addition, the relationship between proactive personality and psychological availability would be stronger when the level of superiors relations support is high between SIEs and HCNs. This study demonstrated the value of proactive personality as an antecedent effect and supportive supervisor relations as a moderating effect, and investigated how these factors can lead to a sense of psychological availability and boost psychological engagement between SIEs and HCNs in order to improve the adjustment between them.

**Keywords:** adjustment, psychological availability, self-initiated expatriates, host country national, proactive personality, supportive supervisor relations

## INTRODUCTION

Due to the increasing globalization of work environments and enhanced competition between global organizations, the spread of expatriates' assignments to enable global growth is increasing among global organization (Brookfield Global Relocation Services, 2016). Thus, one of the areas that has caught the attention of international human resource managers is the adjustment of

their expatriates to their new situation (Zhang and Dodgson, 2007; Fee et al., 2013; Ren et al., 2014). Specifically, they are coming to realize how they should develop relationships during the adjustment between their expatriates and their local personnel to maintain their competitive advantages (Chen et al., 2002; Toh and DeNisi, 2005; Luo, 2016). This becomes more challenging for them when these personnel are self-initiated expatriates (SIEs) who are not transferred overseas from a parent company, because they are not pre-trained or prepared to adjust to their new cultural environment and local colleagues (Peltokorpi and Froese, 2013). Although, this is challenging for them to adapt their SIEs employees to the new situation, maintaining an expatriate is costly and complicated process, and if they fail in their tasks this would be even more costly (Toh and DeNisi, 2005). Therefore, global organizations and scholars (Al Ariss and Ozbilgin, 2010; Doherty et al., 2011; Vaiman et al., 2015) have been focusing on SIEs who are rising in number. A SIE is defined as a person who independently chooses to expatriate (Suutari and Brewster, 2000). Their expatriation experiences are riskier than corporate expatriates who are sponsored by organizations to take an international assignment for a specific time and prepared for better interaction with their HCNs colleagues who are from different cultural backgrounds (Peltokorpi and Froese, 2009). Another reason to focus on SIEs is that they are more vulnerable during their adjustment with their local colleagues than traditional organizational expatriates who are selected and trained by headquarters to be ready for this adjustment to their new cultural work situation (Doherty and Dickmann, 2013).

Also, in this research, we direct our attention toward psychological availability. This is a concept that deals with the “sense of having the physical, cognitive, emotional, or psychological resources to personally engage at a particular moment” (Kahn, 1990, p. 714). And psychological availability is considered as one of the psychological conditions that can help individuals to determine how to engage with their roles or colleagues (May et al., 2004). In another word, they defined psychological availability as “one’s ability and motivation to direct psychological resources at the partner” (Danner-Vlaardingerbroek et al., 2013, p. 54). Therefore, this is very important for SIEs and their HCNs colleagues to understand how to be psychologically available for their colleagues and how to have the mental capacity to give more attention to their colleagues while they are adjusting to them (Danner-Vlaardingerbroek et al., 2013). This issue has never been considered before between SIEs and their local colleagues. Especially, at the present time, the researchers mainly focused on how to develop adjustments among SIEs by different career competencies (e.g., Cao et al., 2013), and they have given less attention on how SIEs are psychologically present during particular moments of adjustment. Most SIEs research focuses on unidirectional adjustment from SIEs to HCNs (Nolan and Morley, 2014; Selmer and Lauring, 2015), but this study goes beyond this tradition by considering the process of adjustment from the perspective of both parties (i.e., SIEs to HCNs at the same as from HCNs to SIEs). Traditional expatriate research, which is SIEs-centric, often neglected the roles of HCN colleagues (e.g., Selmer and Lauring,

2014a,b). This study filled this research gap by incorporating HCNs’ perspectives in the process of adjustment. Therefore, based on these arguments we’ve developed our research question: *How do SIEs and HCNs develop their psychological availability as an instrument that can allow them to better adjust to each other?*

The purpose of this study, is to help SIEs and HCNs develop psychological availability as a tool to bolster psychological engagement which can provides guidance on how to adjust with each other. To address this implication this study traced and developed a research model by first and second exploring proactive personality as a potential personality trait that might shape cross-cultural adjustment and psychological availability, respectively, between SIEs and HCNs. According to previous investigation (Crockett, 1962.), personality traits are critical factors in determining how individuals feel, think and how they behave with regards to their occupational mobility, and this study considered the effect of proactive personality on adjustment and psychological availability between two actors. Due to this issue, in the 21st century, careers have become increasingly boundaryless (e.g., Arthur and Rousseau, 1996; Hall, 1996; Sullivan and Arthur, 2006), and individuals are more likely to work with multinational colleagues (Firth et al., 2014) and this is a very important strategy for individuals to behave proactively to have successful psychological engagements with their colleague from a different culture (Sonnentag et al., 2012). Particularly, for SIEs, who unlike those sent by their organization, should be proactive because they need to handle all the difficulties by themselves during their adjustment with their local colleagues (Andresen et al., 2015). Third, we investigated the psychological availability concept, which is considered as “being interpersonally present for the partner and having the mental capacity to actively direct attention to the partner” (Danner-Vlaardingerbroek et al., 2013, p. 53), as a mediator in the relationship between proactive personality and adjustment. Final, we examined the relationship between the concepts of proactive personality and psychological availability would be weakened/strengthened when SIEs and HCNs received low/high level of support from their supervisor. Previous literature also revealed support supervisor relations can predict the quality of the relationship between employees and their supervisor, i.e., high level of support supervisor relations represent mutual understanding, common vision, and respects between them (Kraimer et al., 2001). Also, in cross-cultural adjustment, this concept is one of the critical sources that can increase the ability of SIEs to adjust with new situations or colleagues (Kraimer and Wayne, 2004; Lee et al., 2013).

In sum, we identified the direct and indirect potential antecedents of SIEs and HCNs that contributed to their positive psychological availability to each other, which is an instrument in developing and helping adjustment between them.

## Proactive Personality and Adjustment

Bateman and Crant (1993) defined proactive personality as a concept which refers to an individual’s dispositional ability to take reaction initiatively to their environment changes, Crant (2000) manifested a person with high level of proactive personality, who is initiative, can recognize opportunities and immediate perform until creating positive changes in their environments. Also, there



are numbers of cross-cultural studies examining the expatriates during their assignments who behave proactively. Normally, behaving proactively, is considered a positive factor to their adjustments and allows them to easily overcome cultural barriers (Ren et al., 2014). Although, in their studies, the relationship between proactive personality and adjustment has never been generalized to any types of dyads such as supervisor-expatriates or SIEs-HCNs, instead, they emphasized the interaction consists of two sources or actors. Specially, for SIEs-HCNs coming from different cultural backgrounds this may provide them with a big obstacle to managing uncertainty and anxiety among them which has negative effects on them during their work and interaction adjustment (Gudykunst, 1998; Gudykunst and Nishida, 2001).

This study defined the relationship between SIEs and HCNs who act proactively to each other, they may look at cultural barriers between them as disguised opportunities. They don't look at them as a problem; they take the initiative to find a way to address the problem. Instead of viewing these barriers as roadblocks, these obstacles become their personal challenges to overcome, proactively they act to control their environment in order to have better adjustment between. As well as, in Selmer and Luring's (2013) study, showed that those SIEs with a more proactive personality as a competent people who are capable in their decisions and behaviors, likely they are more willing to be socially integrated and develop their relationship with HCNs. Also, Shaffer et al. (2006) declared that when individuals go to a new country where they are unfamiliar with the norms of behavior, their behavior will be more shaped by personal resources in order to determine their adjustment to this new cultural environment. Also, in other practical expatriate studies, it demonstrated that proactive behaviors could reduce the anxiety and uncertainty as cultural barriers and provide socialization among them (Fang et al., 2011). That helps them to feel comfortable when they are interacting and working with each other (Hsu, 2012). In other words, when two actors proactively engage in networking, they are more willing to have frequent interactions with each other (Fang et al., 2011). Therefore, based on above arguments, this study believed and the hypothesized that the proactive personality will be positively related to the adjustment between SIEs and HCNs.

*Hypothesis 1a:* The SIEs with high proactive personality will be associated with better adjustment to their HCN colleagues.

*Hypothesis 1b:* The HCNs with high proactive personality will be associated with better adjustment to their SIE colleagues.

## Proactive Personality and Psychological Availability

Kahn (1990, p. 700) defined psychological availability as the "simultaneous employment and expression of a person's 'preferred self' in task behaviors that promote connections to work and to others, personal presence (physical, cognitive, and emotional) and active, full performances." In another word, availability of individuals is considered as being psychologically present to others in such a way that confers that person their

full focus and attention when they are connecting and interacting with their partner, colleagues, supervisor and etc. (Kahn, 1992). Therefore, Kahn (1992) viewed psychological availability as a behavioral engagement of personal physical, cognitive, and emotional energy into connecting with others. Furthermore, an individual present psychological availability when they are willing or ready to physically engage, cognitively focused, and emotionally connect to others (Danner-Vlaardingierbroek et al., 2013). In another point of view, Ashforth and Humphrey (1995) assimilated the psychological availability as an individual's engaging the "hands, head, and heart" (p. 110) with others.

Also, in the practical study by Rich et al. (2010), they employed psychological availability as a concept in order to represent individuals' readiness to personally engage at a certain time. Indeed, they realized that one of the key factors that can enhance an individual's availability or readiness is that an individual have a high level of confidence in their own capabilities that give more invest of self in the role of personal engagement with their colleagues.

Therefore, this study postulated that the proactive personality would positively influence psychological availability between individuals and their partners, such an individual with the high proactive personality will be more capable of identifying and preventing potential problems that can help to control their psychological personal resources (cognitive, emotional, and physical) that they have to put in when they are working together. It further suggested that the proactive personality is a type of confidence (Grant and Ashford, 2008), which helps SIEs and HCNs to approach and deal with their cultural difference and shapes better behavior toward each other, in such a way with more confidence they feel about their capabilities and status, and they are more willing to feel available and ready to engage fully with each other. Also, Kahn (1990) discussed that controlling and enhancing psychological availability between colleagues correlates to that individual feeling of security during their work with their colleagues, also, being less psychological present for the colleagues display insecurity felt by that individual. As well as, in practical research by Binyamin and Carmeli (2010), it has displayed that stress and anxieties negatively affect psychological availability of employees which in turn reduce their creativities.

Kahn (1990, p. 716) mentioned that "being available was partly a matter of security in abilities and status and maintaining a focus on tasks rather than anxieties." Due to this inherent aspect of proactive personalities, this facilitates individuals to reduce the influence of stressors during their work task and this can assist them to more focus on relationship with their colleagues or supervisor (Hsu, 2012). Especially, working in a cross-cultural environment is highly stressful and uncertain, which is faced by both SIEs and their local colleagues when they are working together. Therefore, in this environment it's not sufficient for SIEs and their local colleagues to simply react to each other, indeed, they have to act proactively upon to each other in order to raise the capabilities that they possess which can help to reduce uncertainty between them (Aragon-Correa, 1998; Griffin et al., 2007); they will tend to have more psychological resources to put toward each other's. In turn, they will likely put more energy to focus attention at their SIE/HCN colleagues when they

are communicating with each other. This makes them more physically, emotionally, and cognitively available for each other. Therefore, this study predicted that proactive personality will be positively related to psychological availability between SIEs and HCNs, and we hypothesize thus:

*Hypothesis 2a:* The SIEs with a more proactive personality to be related to higher levels of psychological availability for their HCN colleagues.

*Hypothesis 2b:* The HCNs with more proactive personality and this relates to higher levels of psychological availability for their SIE colleagues.

## Mediating Effect of Psychological Availability

According to this point, we have claimed that proactive personality promotes individuals' ability to simultaneously engage physically, cognitively, and emotionally in the relationship with others. Also, for this study we developed a model in which psychological availability mediates the relationship between proactive personality and adjustment. Although, in expatriates studies we have found that proactive personality (Ren et al., 2014) are significantly related to adjustment, this study suggested that psychological availability plays a critical role in this relationship in order to promote adjustment between SIEs and HCNs. Also, in practical research, it assumed that to enhance positive behaviors during the interactions between two actors, it requires both to take the perspectives and self-interested behavior toward each other in order to take to assess the quality of the relationship (Rusbult et al., 1991). This quality of the relationship requires psychological resources that are fully or sensitively focused on each other (Yovetich and Rusbult, 1994; Finkel and Campbell, 2001). Also, recent practical study displayed, that psychological availability has a high influence on positive marital behaviors (Danner-Vlaardingerbroek et al., 2013).

In cross-cultural studies, intercultural adjustment has been considered as one of the most critical factors between expatriates and local peoples (Davies et al., 2015). This concept can reveal that to what extent expatriates and local peoples would like to incorporate in work and daily life or how much willing they would interact with each other (Davies et al., 2015; Salamin and Davoine, 2015). For instance, Sonnentag et al. (2012) argued that expatriates who are simultaneously engaged (physically effort to pursue the relationship, being cognitively attentive, and emotionally connected to their local colleagues), are better able to adjust to their host colleagues. Particularly, when SIEs and HCNs behave proactively this might help them to have more readiness or confidence to engage themselves physically, cognitively, and emotionally in their adjustment to each other, and this should provide them with security which will make them more willing to step outside their comfort zone and take more risks in order to more fully engage with each other in their adjustment (Bakker et al., 2005; Molinsky, 2007, 2012). Therefore, this study expected that with proactive personality they can enhance their available psychological resources and create and focus their attention on

the other group, finally result in better adjustment for both SIEs and HCNs.

In further discussions, Sonnentag et al. (2012) defined individuals' psychological availability as being psychologically present in the sense that they are fully linked and attentive to their partners. Also, Kahn (1990) discussed that high level of psychological availability among employees helps to inspire and sustain collaborative behavior and openness, not only within the pair but also between other colleagues, and this can bring their fully open themselves to interactions with each other. In this way, psychologically available SIEs and HCNs will tend to be more willing to learn about each other (i.e., about cultural norms and language) which can help them to know how to function with proper behaviors toward each other which in turn leads to better adjustments between them. Due to above arguments, this study expected that proactive personality may facilitate work and interaction adjustment between SIEs and their local colleagues through being psychologically available of the self as reflected by engagement physically, cognitively, and emotionally. And we hypothesized as below:

*Hypothesis 3a:* The SIEs' psychological availability will mediate the relationships between their proactive personality and adjustment with their HCN colleagues.

*Hypothesis 3b:* The HCNs' psychological availability will mediate the relationships between their proactive personality and adjustment with their SIE colleagues.

## Moderating Effect of Support Supervisor Relations

Working in the cross-cultural environment has been viewed as a problematic situation for both foreigners and local employees (Van Vianen et al., 2004), because the foreigners in this environment always encounter cultural confusion, strangeness, and language barriers with local employees (Louis, 1980; Tu and Sullivan, 1994). Also, local employees during their work with foreign colleague may experience a fear of the foreign colleagues' potential to hold higher position in the organization (Jannesari et al., 2016), because of that issues, the foreigners and their local colleagues may not be able to cope with each other. This inability may lead to cope with their colleague on the opposite side of the dyad may lead both of them to experience an intense degree of stress which may lead them to feel distrust, humiliation, failure, anxiety or hostility for their other colleague in the dyad (Mendenhall and Oddou, 1985; Adler, 1991; Coyle and Shortland, 1992; Hippler, 2000). Thus, in order to reduce this failure, Kim et al. (2009) described supervisor support as one of the key element that can help to increase emotional well-being between two individuals from a different culture which can help prevent any psychological distress. Therefore, this study investigated supportive supervisor relationships in this phase of leader-member exchange (LMX) (Liden et al., 1997; Kraimer et al., 2001). Leader-member exchange in cross-cultural studies is regarded as the quality of the interpersonal exchange relationship between foreigners and their supervisors (Kraimer et al., 2001).

Furthermore, expatriates with high-quality LMX relationship may receive information and assistance from their supervisor that will contribute to their adjustment (Kraimer and Wayne, 2004). Also, practical research has manifested the LMX as an element of a social support mechanism that can assist and share information about cultural values and norms, and individuals can soon understand about deviation from cultural norms and fix it (Sorensen, 2002). Thus, by LMX which emphasize on relationship development, individuals can feel more confident from their psychological availability among others and in turns reciprocate correct behavior. Therefore, this study extended this consideration and examined this relationship between local employees and their supervisor while they are working with their foreigner colleagues. Thus, this study predicted supportive supervisor relationship will provide a positive working atmosphere among their foreign and local employees, and it will have an effect on the relationship between SIEs- HCN's proactive personality and psychological availability. Therefore, we hypothesize this relationship as below:

*Hypothesis 4:* Relationship between proactive personality and psychological availability would be weakened/strengthened when SIEs and HCNs received low/high level of support from their supervisor.

**Figure 1** demonstrates the conceptual model for this study.

## MATERIALS AND METHODS

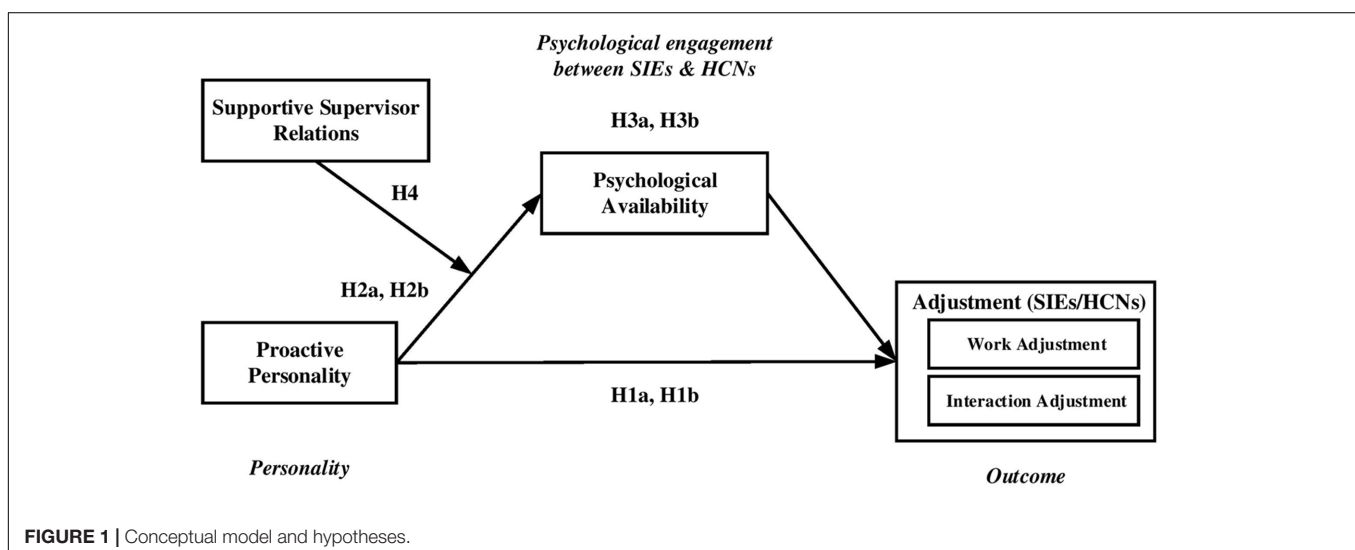
### Sample and Procedures

This study used a cross-sectional investigation strategy and employed data from SIEs-HCNs dyadic sample. We collected data from SIEs are originally from different nations/regions who are trying to live and work in China mainland. We obtained our samples by identifying multinational companies from two sources China-based MNCs and information from

LinkedIn. For this study we sent an email to 820 Multinational companies' human resource department to ask whether or not they were willing to participate in this study. Those multinational companies that agreed to participate in this study, forwarded our requirement to their SIE employees. After that, we sent them an email that explained our research goals. If they confirmed their status as SIEs based on our questionnaire, and agreed to participate in our study (Selmer and Luring, 2011), we linked them to the web survey. Also, at the end of the survey, we requested that they give us the name and email of a local colleague with whom she/he would be working and interacting. In the final step, we sent our invitation to HCN colleagues by email, after they agreed we also connected them to online survey system. More than five hundred companies participated in this study. We sent survey invitations to a total of 670 SIEs-HCNs dyadic, we received 342 SIEs-HCNs dyadic valid surveys.

The demographic profile of SIEs: The average age was 41 years ( $SD = 9.65$ ), and were 74% male. 68% held a bachelor degree. For the length of SIEs expatriation, 32% were less than 4 years, 53% had been expatriated between 4 and 8 year, 13% had been expatriated for more than 8 years, and 2% were missing the information. They were from 32 countries and regions: Australia, Austria, Belgium, Brazil, Canada, Croatia, Denmark, England, France, Germany, Hong Kong, Iran, India, Indonesia, Italy, Korea, Malaysia, Mexico, Netherlands, New Zealand, Norway, Switzerland, Scotland, Singapore, South Africa, Sri Lanka, Sweden, Taiwan, Turkey, United Kingdom, United States, and Vietnam. The dyadic tenure or length of the relationship in years between SIEs-HCNs: 11% below 1 year, 56% between 1 and 4 years, 31% more than 4 years, and 2% were missing. The level of position between SIEs-HCNs: 81% of SIEs-HCNs had a peer relationship, 12% of HCNs were supervisors of the SIEs, and 7% of SIEs were supervisors of the HCNs.

The demographic profile of HCNs: The average age was 37 years ( $SD = 7.23$ ), and 62% female, 86% held a bachelor



degree. All the HCNs participants in this study were Chinese because we conducted this research in China.

## Measures

### Proactive Personality

We used 10 items developed by Seibert et al. (1999), which was adopted from Bateman and Crant's (1993) 17-item scale. For further consideration, a sample item is "I am always looking for better ways to do things with my foreigner/local colleagues." Items were on a seven-point Likert-type scale ranging from 1 = strongly disagree to 7 = strongly agree. According to Seibert et al. (1999), the Cronbach's alpha for proactive personality was 0.82.

### Supportive Supervisor Relations

It was measured by 12 items which we borrowed from Liden and Maslyn's (1998). A sample item is "I have a supervisor who always defends and supports me if I'm hurt by other colleagues." All the scales were measured on a 7-point Likert scale ranging from 1 = strongly disagree to 7 = strongly agree. Cronbach's alpha was 0.93.

### Psychological Availability

It was measured by using five items employed from May et al. (2004) which were created based on Kahn's (1990) study. These items were considered if the individuals were physically, cognitively, and emotionally available for adjustment with their partners. A sample item was "I am confident in my ability to deal with problems that come up at work with my foreigner/local colleagues." All the scales were measured on a 7-point Likert scale ranging from 1 = strongly disagree to 7 = strongly agree. According to May et al. (2004), the Cronbach's alpha for psychological availability was 0.85.

### Adjustment

According to Lee (2010) and Lee et al.'s (2013) studies, work and interaction adjustment are the most important two sub-dimensions to predict cross-cultural adjustment. Therefore, we borrowed two sub-dimensions from their study, and borrowed five items from Black and Stephens (1989). The items we employed from Black and Stephens included three items for work adjustment, a sample item is "I am a flexible person who can adjust to working with Local/foreigner colleagues"; and two items for interaction adjustment, a sample item is "I've adjusted to interacting with the Local/foreigner colleagues in general." All the scales were measured on a 7-point Likert scale ranging from 1 = strongly disagree to 7 = strongly agree. Black and Stephens (1989) reported the reliability for interaction adjustment was  $\alpha = 0.99$ , and for work adjustment was  $\alpha = 0.88$ .

### Control Variables

This study followed the same model as Varma et al. (2011) and believed that the similarities and differences between two sources or parties have a high influence on their psychological engagement. Hence, we controlled the level of differences and similarities of position in the organizational hierarchy between SIEs and HCNs. Therefore, we conducted two dummy variables:

dyadic relationship (1 = dyadic; 0 = SIEs or HCNs as supervisor) and HCN as a supervisor (1 = HCN as supervisor; 0 = peer or SIEs as supervisor). Also, this study controlled for the length of the relationship between SIEs and HCNs because those with longer relationships have better relationship and psychological engagement (Harrison et al., 2004; Muthusamy and White, 2005). Therefore, we measured the dyadic tenure or the length of relationship in years between SIEs and HCNs. In addition, we also examined SIE's tenure of expatriation, the more years or longer time they've work overseas, the more flexible to psychological adjustment they are (Doherty et al., 2013), and this control variable was measured in terms of years that SIEs worked in foreigner countries.

To avoid common method variance (Podsakoff et al., 2003), this study collected data for adjustment concept from leaders or supervisors working with our SIEs and HCNs participants. Thus, we borrowed "Harman's single factor" techniques in order to control for variance, and the result only presented a 41% of the variance which is not more than 50% of the total variance, therefore, we can claim that there is no issue from common method variance for this study.

## Data Analysis

Before testing hypotheses, this study ran normality test to check all the variables were normally distributed (Kline, 2005). Using Kolmogorov-Smirnov approach, the statistics of proactive personality, supportive supervisor relations, psychological availability, adjustment from SIE's samples were 0.074 ( $p < 0.05$ ), 0.118 ( $p < 0.01$ ), 0.094 ( $p < 0.01$ ) and 0.091 ( $p < 0.01$ ), respectively; from HCN's samples were 0.123 ( $p < 0.00$ ), 0.105 ( $p < 0.01$ ), 0.117 ( $p < 0.00$ ) and 0.109 ( $p < 0.00$ ), respectively, indicating the normality of all the variables. The results of Shapiro-Wilk also supported this, given that the statistics of proactive personality, supportive supervisor relations, psychological availability, adjustment from SIE's samples were 0.979 ( $p < 0.05$ ), 0.940 ( $p < 0.01$ ), 0.966 ( $p < 0.01$ ) and 0.981 ( $p < 0.05$ ), respectively; from HCN's samples were 0.970 ( $p < 0.00$ ), 0.955 ( $p < 0.00$ ), 0.973 ( $p < 0.01$ ) and 0.974 ( $p < 0.01$ ), respectively.

Then, this study tested hypotheses in two interlinked steps: first, we examined a simple mediation model (hypothesis 1a–3b); second, we examined the proposed moderator variable into the model (hypothesis 4).

For mediation test, we followed Baron and Kenny's (1986) suggestion. First step, the direct effect from independent variable X (proactive personality) to the outcome Y (adjustment) must be significant (hypothesis 1a and 1b). Second step, the independent variable X (proactive personality) should be a significant predictor of the mediator M (psychological availability), which were also predicted by hypothesis 2a and 2b. Third step, to confirm the mediation effect, the effects of independent variable X (proactive personality) and mediator M (psychological availability) on outcome Y (adjustment) should be examined (hypothesis 3a and 3b). Moreover, we also ran Sobel's test to check whether it is a full mediation or partial mediation.

For moderation test, we predicted that supportive supervisor relations would moderate the relationship



between proactive personality and psychological availability in hypothesis 4. According to Aiken and West (1991) a moderated regression analysis is appropriate for testing the effect.

This study tested mediation effect and moderation effect by the PROCESS model in a bootstrap approach, developed by Hayes (2013), which is an add-on of SPSS.

## Ethics Statement

Following the 2013 revision of Helsinki Declaration, we designed our research to emulate a medical research study. The study was reviewed and approved by the Zhejiang University's Global Entrepreneurship Research Centre ethics committees: Dr. Wang Wei, and Dr. Shao Yixuan. The data was volunteered by our studies participants and all research participants provided written and informed consent. They gave their responses after they were provide amble information on the studies parameters and we assured them that their responses were private and anonymous; they were under no pressure to respond to the researcher immediately. Additionally, every participant consent was obtained after they were provided information on the "aims, methods, duration of the questionnaires, sources of funding, any possible conflicts of interest, institutional affiliations of the researcher, the anticipated benefits and potential risks of the study and the discomfort it may entail"; between information and consent stage we gave every participant at least 48 h to think about whether to consent or not. Moreover, we confirmed that

our research was conducted in an independent and unbiased manner.

## RESULTS

**Tables 1** and **2** presents means, standard deviations, reliabilities, and correlations among the variables of SIE and HCN samples respectively.

### Test Mediation Effect

The Hypothesis 1a and 1b of this study were to examine the relationship between proactive personality and work and interaction adjustment. According to **Table 3**, SIEs' proactive personality was positively and significantly related to work adjustment ( $\beta = 0.57$ ,  $t = 5.77$ ,  $p < 0.001$ ,  $CI [0.378, 0.772]$ ) and interaction adjustment ( $\beta = 0.61$ ,  $t = 6.30$ ,  $p < 0.001$ ,  $CI [0.418, 0.801]$ ). And, HCN's proactive personality was positively related to work adjustment ( $\beta = 0.60$ ,  $t = 4.76$ ,  $p < 0.001$ ,  $CI [0.352, 0.861]$ ) but negatively related to interaction adjustment ( $\beta = -0.45$ ,  $t = -2.55$ ,  $p < 0.05$ ,  $CI [-0.815, -0.099]$ ). Therefore, Hypothesis 1a and 1b were supported.

Hypothesis 2a and 2b investigated the relationship between proactive personality and psychological availability. The **Table 3** presents that, SIEs' proactive personality was positively and significantly related to psychological availability ( $\beta = 0.54$ ,  $t = 6.35$ ,  $p < 0.001$ ,  $CI [0.377, 0.719]$ ). Therefore, Hypothesis 2a was supported. Also, **Table 3** displays that, HCN's proactive

**TABLE 1 |** Means, standard deviations, reliabilities, and correlations of SIE samples.

Variables	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9
(1) Proactive relationship	5.48	0.74	(0.82)								
(2) Supportive supervisor relations	4.60	1.40	0.26**	(0.93)							
(3) Psychological availability	5.59	0.85	0.48**	0.33**	(0.85)						
(4) Work adjustment	4.30	1.11	0.41**	0.45**	0.31**	(0.88)					
(5) Interaction adjustment	4.19	1.08	0.42**	0.45**	0.30**	0.64**	(0.99)				
(6) Dyadic tenure	0.41	0.49	0.11	-0.10	0.05	-0.23**	-0.17*	-			
(7) Peer relationship	2.07	0.92	0.00	-0.11	-0.15	-0.14	-0.25*	0.27**	-		
(8) HCN as supervisor	0.83	0.36	-0.07	0.05	0.04	0.09	0.07	-0.27**	-0.22**	-	
(9) Length of SIEs	1.27	0.62	0.32**	0.16	0.25**	0.06	0.12	0.15	0.20*	-0.09	-

\* $p < 0.05$ , \*\* $p < 0.01$ , in brackets show the reliability coefficient.

**TABLE 2 |** Means, standard deviations, reliabilities, and correlations of HCN samples.

Variables	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8
(1) Proactive relationship	6.50	0.64	(0.82)							
(2) Supportive supervisor relations	5.17	1.53	0.41**	(0.93)						
(3) Psychological availability	4.06	0.70	0.22**	0.27**	(0.85)					
(4) Work adjustment	3.97	1.01	0.42**	0.52**	0.45**	(0.88)				
(5) Interaction adjustment	3.57	1.20	0.33**	0.55**	0.31**	0.59**	(0.99)			
(6) Dyadic tenure	0.52	0.58	-0.02	0.09	-0.11	-0.14	-0.13	-		
(7) Peer relationship	2.24	0.99	0.12	-0.09	-0.10	-0.18*	-0.29**	0.14	-	
(8) HCN as supervisor	0.69	0.40	-0.10	-0.03	0.01	0.07	0.09	-0.12	-0.37**	-

\* $p < 0.05$ , \*\* $p < 0.01$ , in brackets show the reliability coefficient.

**TABLE 3 |** Regression results for mediation effect (SIE and HCN samples).

Path estimated	Adjustment (SIEs/HCNs)									
	Psychological availability		Work adjustment				Interaction adjustment			
	H2		H1		H3		H1		H3	
	Effect	SE	Effect	SE	Effect	SE	Effect	SE	Effect	SE
Dyadic tenure	−0.03	(0.09)	−0.08	(0.14)	−0.05	(0.12)	−0.16	(0.25)	0.19	(0.15)
Dyadic tenure <sup>a</sup>	0.44**	(0.13)	−0.22	(0.14)	−0.20	(0.16)	0.42*	(0.24)	0.47*	(0.25)
Peer relationship	0.21*	(0.10)	−0.08	(0.10)	−0.09	(0.11)	0.33*	(0.14)	−0.15	(0.08)
Peer relationship <sup>a</sup>	−0.18	(0.15)	0.18	(0.17)	0.07	(0.18)	0.29	(0.23)	0.23	(0.24)
HCN as supervisor	0.11	(0.18)	−0.03	(0.18)	0.02	(0.21)	−15	(0.08)	0.07	(0.15)
HCN as supervisor <sup>a</sup>	−0.21*	(0.10)	0.06	(0.15)	−0.11	(0.09)	−0.27*	(0.16)	−0.35*	(0.16)
Length of SIEs	−0.24*	(0.11)	0.30	(0.11)	0.42**	(0.12)	0.19	(0.15)	0.32*	(0.13)
Proactive personality	0.54***	(0.08)	0.57***	(0.09)	0.27**	(0.10)	0.61***	(0.09)	0.23**	(0.08)
Proactive personality <sup>a</sup>	0.51***	(0.11)	0.60***	(0.12)	0.35**	(0.13)	−0.45*	(0.17)	−0.71***	(0.19)
Psychological availability					0.54***	(0.08)			0.67***	(0.07)
Psychological availability <sup>a</sup>					0.48***	(0.12)			0.49**	(0.19)
Overall $R^2$	0.21		0.28		0.25		0.26		0.29	
Adjusted $R^2$	0.14		0.18		0.15		0.16		0.19	

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ , <sup>a</sup>Rated by HCNs.

personality was positively and significantly related to psychological availability ( $\beta = 0.51$ ,  $t = 4.52$ ,  $p < 0.001$ ,  $CI [0.286, 0.738]$ ). Therefore, hypothesis 2a and 2b were supported.

The Hypothesis 3a and 3b examined the relationship between proactive personality and work and interaction adjustment through psychological availability as a mediator. According to our results, the total effect of proactive personality on work adjustment from SIE's perspective was significant ( $\beta = 0.57$ ,  $t = 5.77$ ,  $CI [0.378, 0.772]$ ) also on interaction adjustment was positively significant ( $\beta = 0.61$ ,  $t = 6.30$ ,  $p < 0.001$ ,  $CI [0.418, 0.801]$ ). We found the indirect effect of proactive personality on work adjustment through psychological availability from SIE samples was ( $Effect = 0.29$ ,  $Boot SE = 0.07$ ,  $95\%CI [0.168, 0.475]$ ), (Sobel  $z = 4.39$ ,  $p < 0.00$ ), indicating a full mediation; We also found indirect effect of proactive personality on interaction adjustment through psychological availability ( $Effect = 0.37$ ,  $Boot SE = 0.08$ ,  $95\%CI [0.217, 0.548]$ ), (Sobel  $z = 5.12$ ,  $p < 0.00$ ), indicating a full mediation. Therefore, hypothesis 3a was supported. Also, the total effect of proactive personality on work adjustment from HCN's perspectives was positively significant ( $\beta = 0.60$ ,  $t = 4.76$ ,  $p < 0.001$ ,  $CI [0.352, 0.861]$ ) but on interaction adjustment was negatively significant ( $\beta = -0.45$ ,  $t = -2.55$ ,  $p < 0.01$ ,  $CI [-0.815, -0.099]$ ). As well, we found the indirect effect of proactive personality on work and interaction adjustment through psychological availability HCN's samples was ( $Effect = 0.24$ ,  $Boot SE = 0.10$ ,  $95\%CI [0.094, 0.525]$ ), (Sobel  $z = 2.84$ ,  $p < 0.00$ ) and ( $Effect = 0.25$ ,  $Boot SE = 0.13$ ,  $95\%CI [0.032, 0.573]$ ), (Sobel  $z = 2.20$ ,  $p < 0.01$ ), respectively. Both of them were fully mediated. Thus, Hypothesis 3b was supported.

## Test Moderation Effect

Hypothesis 4 predicted the relationship between proactive personality and psychological availability would be weakened

or strengthened when SIEs and HCNs received low or high level of support from their supervisor. The **Table 4** shows that, from the SIE's perspectives the coefficient of the interaction was 0.28 ( $95\%CI [0.056, 0.518]$ ), while from HCN's perspectives it was 0.82 ( $95\%CI [0.520, 1.235]$ ). These results represented that supportive supervisor relations positively moderated the effect of proactive personality on psychological availability from both SIEs and HCNs perspectives. Thus, hypothesis 4 was supported. The conditional effect varied at different levels of supportive supervisor relations from SIEs perspectives (−1 SD as Low: 3.91; +1 SD as High: 4.34); HCN's perspectives (−1 SD as Low: 4.96; +1 SD as High: 6.23). Also, **Figure 2** showed the interaction effects of the proactive personality and supportive supervisor relations on psychological availability from SIEs, and **Figure 3** showed the interaction effects of the proactive personality and supportive supervisor relations on psychological availability from HCN's perspectives, both results displayed that the relationship between proactive personality and psychological availability would be strengthened when SIEs and HCNs received high support from their supervisor relations.

## DISCUSSION

The core contribution of this study was focusing on the research question of how SIEs and their local colleagues with high proactive personality can have a direct effect on their adjustment. Moreover, it discussed how the level of support received from a supervisor relationship, can act as a factor and can lead to sense of psychological availability between SIEs-HCNs, which in turn can enhance adjustment during their work and interactions.

**TABLE 4 |** Regression results for moderation effect (SIEs and HCNs sample).

Path estimated	Psychological availability	
	H4	
Hypotheses	Effect	SE
Dyadic tenure	0.29*	0.13
Dyadic tenure <sup>a</sup>	0.64*	0.15
Peer relationship	0.03	0.10
Peer relationship <sup>a</sup>	-0.07	0.17
HCN as manager	0.21	0.19
HCN as manager <sup>a</sup>	0.05	0.27
Length of SIEs	0.01	0.12
Proactive personality	0.00	0.09
Proactive personality <sup>a</sup>	0.53***	0.10
Supportive supervisor relations	-0.11*	0.04
Supportive supervisor relations <sup>a</sup>	0.28**	0.09
ProacPer × SupSuperRela	-0.19**	0.06
ProacPer × SupSuperRela <sup>a</sup>	0.41**	0.14
R <sup>2</sup>	0.26	
R <sup>2a</sup>		0.34

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ , <sup>a</sup>Rated by HCNs.

## Theoretical Implications

The first theoretical contribution of this study is that we extended Kahn's (1990) psychological availability concept by investigating the degree of availability between two actors, as a key issue of coping mechanisms which mediated the relationship between proactive personality and adjustment. Our hypothesis 3a's and 3b's results supported this mechanism and found a significant though indirect relationship through psychological availability between proactive personality and adjustment. Although cross-cultural research has previously linked proactive personality to adjustment (e.g., Ren et al., 2014), this study is the first to claim that psychological availability mediates this relationship to help to understand how to enhance the availability of SIEs and their local colleagues in turns to have a better adjustment. This can add additional support to SIE's adjustment studies, during the challenges they face interacting with HCNs (e.g., Froese, 2012; Selmer and Luring, 2014a). Therefore, the finding of the hypothesis 3a's and 3b's of this study support this proposition: if SIEs-HCNs behave proactively toward each other that can help to increase their levels of confidence and belief in their abilities (Hough and Schneider's, 1996), in order to control the situation and overcome cultural barriers (Ashford and Black, 1996), this can help them to feel comfortable and have the mental capacity to be more available for each other, and in turn to have better adjustment.

Furthermore, in this study, our hypothesis 1b's result displayed that if HCN behaves proactively without a sense of psychological availability with their SIEs colleague, they negatively effect their interaction adjustment with them. The previous literature which focused on the positive effect of proactive personality on individual's adjustments (e.g., Kim et al., 2009; Li et al., 2014) ignored this factor and only view proactive personalities as a

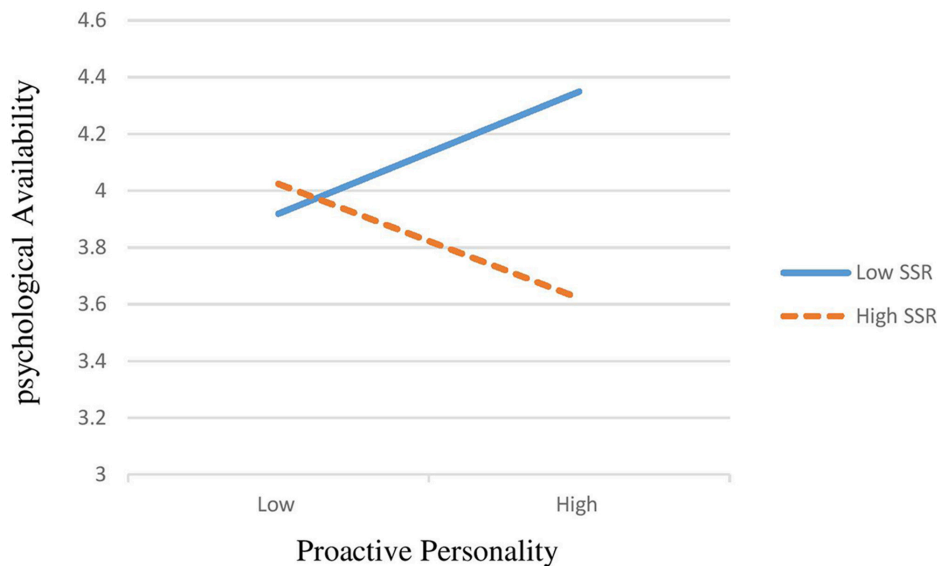
positive factor. For this reason, in this study, the concept of proactive personality with a focus on the relationship, when HCN proactively take action to build a relationship in the absence of investing available psychological resources with their SIEs colleague that may cause the SIEs to feel more stress and in turn to have negative interactions. Therefore, the results of this study represent the value of psychological availability as a mediator between proactive personality and adjustment, which is supported by the previous researchers (Finkel and Campbell, 2001; Danner-Vlaardingerbroek et al., 2013).

The second theoretical contribution is, this study extends the role of supervisor support (Liden et al., 1997; Kraimer et al., 2001) that can be leveraged to enhance psychological availability between foreigners and their local colleagues. Also, Kahn (1990) suggested that working in the insecure situation it's a critical issue that may cause individuals to feel anxieties and leads them to lose their sense of availability for their partners. Moreover, this will hinder their abilities to maintain their focus on their roles. Therefore, we argued that supervisor support is facilitated that can help to provide a stable and secure environment (e.g., Cao et al., 2014; Nahum-Shani et al., 2014) and this can encourage both SIEs-HCNs to act proactively incapable to identifying and preventing potential problems that can help to control stress and lead to the sense of psychological availability. In support of this argument, our hypothesis 4's result displayed that those SIEs-HCNs who received strong support from their supervisor they took more initiative in their relationship and were more eager to be available for each other. This outcome adds value of the role of supervisor support in SIE's studies (Chen and Shaffer, 2017).

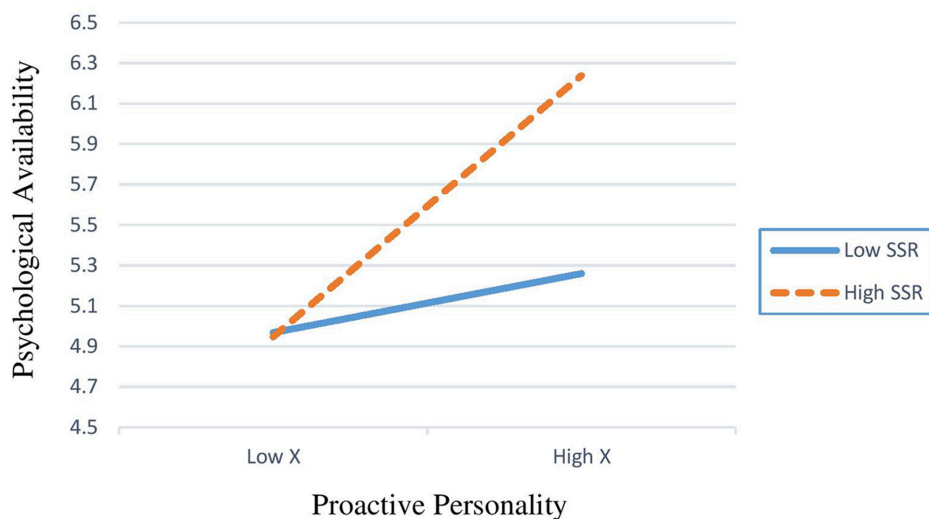
Finally, the global work situation has been recognized as a highly challenging situation full of new stressors. This is exacerbated by the fact that these actors share a cultural background (Lusha and Brian, 2001; Hsu, 2012). Indeed, in cross-cultural studies, we know less about how two actors at the same time adopt new coping strategies and interacting with each other. Most studies just spotlight SIEs (see Baruch and Forstenlechner, 2017 for a review). Although, in previous studies, it has been emphasized that both actors influence the interaction that is happening between them (e.g., Greenhaus et al., 2003; Hill, 2005; Danner-Vlaardingerbroek et al., 2013), impressively few studies have simultaneously observed both actors' behavior in order to predict their mutual relationship aspects (e.g., Liu and Shaffer, 2005). But, this study fills this research gap by incorporating both SIEs- HCNs' perspectives in the process of adjustment.

## Practical Implications

Working in the cross-cultural situation creates high amounts of stress, cultural confusion, strangeness, and emotional discomfort (Cao et al., 2013; Nolan and Morley, 2014) which may hamper SIEs-HCNs from being available to each other. Therefore, the hypothesis 4's result displayed the quality of supervisor relations can play a critical role and encourage SIEs-HCNs to behave proactively, in order to enhance their perceived availability, to each other, and this may contribute to the body of international human resource management literature a study that will emphasize the importance of building good relationship between supervisors and the SIEs-HCNs dyads. Moreover, the lack of



**FIGURE 2 |** Interactive effects of the proactive personality and their supportive supervisor relations on psychological availability (SIE samples).



**FIGURE 3 |** Interactive effects of the proactive personality and their supportive supervisor relations on psychological availability (HCN samples).

this support can undermine these relationships which create an insecure working environment and decrease the tendency to show initiatives between their SIEs-HCN. Conversely, it's crucial for SIEs-HCNs to build a good relationship with their supervisors at work. This relationship can serve to relieve the stress and cultural confusion within the SIE-HCN dyad. This can increase their confidence and encourage them to behave proactively and lead to a sense of psychological availability among both SIE and HCN.

Adjustment between SIEs and their local colleagues has been considered as one of the important issues for global organizations, in order to build healthy and cooperative relationship among them as their competitive advantages (Froese

and Peltokorpi, 2013; Nolan and Morley, 2014). Therefore, the hypothesis 3a's and 3b's results of this study can indicate that the quality and effectiveness of two-way of adjustment between SIEs-HCNs depends on their level of interest to being psychologically available with each other. Also, international human resource managers can utilize the model and results of this study as a coping mechanism between their SIEs-HCNs employees. They need to encourage or train their SIEs-HCNs employees how to act proactively or select ideal SIEs-HCNs who can behave proactively in their roles and relationship which this can help to enhance their interest in overcoming their cultural barriers and learn about each other, and they will feel comfortable being available to each other.



Finally, according to our control variable results, the length of SIE's expatriation (in years) shows that those SIEs who stay longer in the host country or work in overseas are more capable of having better interactions and making better adjustments with their local colleagues. Therefore, the international human resource managers can select those SIEs who have long experience in overseas as the ideal candidate to work with their HCN employees. Also, the result of the dyadic tenure or the length of relationship in years from HCN's perspective represented that those HCNs who have longer years working relationship with their SIEs partners are more eager to be psychologically available to them, as well as leading to better interactions with their SIEs.

## Limitations and Future Studies

There are several limitations of this study which we will be addressing in future studies. First, although, the research was investigating the adjusting strategy between SIEs and HCNs dyads, this may not be used to generalize to other types of dyads. Therefore, in future studies other may need to be extended to another kind of dyads, i.e., SIEs-supervisors. Secondly, in cross-cultural studies, there's an emphasis on the fact that it takes time for individuals to adjust to the new cultural environment and local peoples (Furnham and Bochner, 1986; Black et al., 1991; Takeuchi, 2010; Firth et al., 2014). Also, Oberg (1960) suggested adaptation process with the new cultural situation by four stages or phases which can appear only at certain times, and during each phase, the individuals are experiencing difference difficulties and cultural shocks. Thus, this is very important issues for cross-cultural practitioners to identify how an individual adjustment occurs over time (Firth et al., 2014). But, this study was based on cross-sectional investigation and this may not give us a clear picture about the role of psychological availability between SIEs and HCNs during their adjustment in different phases or over the time. Therefore, future studies should pursue a longitudinal study in order to study the role of psychological availability on adjustment during different phases. Third, in this study, we focused on psychological availability in order to mitigate distinction between SIEs and their local colleagues and how this can help them to engage more fully and adjust to each other. But, we didn't investigate how psychological availability cognitively, physically, emotionally effects this engagement, therefore, future research may need to take this matter under further consideration. Fourth, although, this study has controlled for length of relationship and peer relationship between SIEs and HCNs, in previous SIEs studies (Selmer and Luring, 2010; Tharenou, 2010, 2013) they didn't consider age and gender as key variables to be controlled for and in their studies, they found these variables have a high influence on SIEs adjustment, which in this study these control

variables have been neglected. Also in our sample from our HCNs participant the majority of them are female and that may signal that HCN females are more able to psychologically engage with their foreign colleagues than males. In the future studies other may wish to consider this issue. Finally, the model of this research was only conducted in a Chinese cultural context and we believe the results of this model will be different if they are conducted in another cultural context, therefore, we suggest in future research investigating the same model in another country or within different cultural context.

## CONCLUSION

This paper reveals four main findings. First, the SIE's/HCN's proactive personality is linked to their better adjustment within that dyad. Secondly, the SIEs/HCNs with a high level of proactive personality are related to higher levels of psychological availability between each other. Third, for SIEs, psychological availability mediate the relationships between their proactive personality and adjustment with their HCN colleagues. Fourth, Relationship between proactive personality and psychological availability would be weakened/strengthened when SIEs and HCNs received low/high support from their supervisor. As a result, this study displayed the value of psychological availability as a coping mechanism between SIEs-HCNs which in turns leads them to better adjust to the new colleague. Besides, the direct effect of proactive personality as an antecedent and the indirect effect of supportive supervisor relations as a moderator, can leads SIEs/HCNs to have higher levels psychological availability between each other. Thus, the implication of this study is to help SIEs and HCNs in terms of perceiving different situations/environments and to provide guidance on how to cope with each other.

## AUTHOR CONTRIBUTIONS

MJ focused on the theoretical foundation, model development, research design, data collection, and data analysis. ZW focused on the theoretical foundation. JM focused on data collection and editing the manuscript. BZ focused on data collection and data analysis.

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# The Multifactor Measure of Performance: Its Development, Norming, and Validation

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This article describes the development as well as the initial norming and validation of the Multifactor Measure of Performance<sup>TM</sup> (MMP<sup>TM</sup>)<sup>1</sup>, which is a psychometric instrument that is designed to study, assess and enhance key predictors of human performance to help individuals perform at a higher level. It was created by the author, for the purpose of going beyond existing conceptual and psychometric models that often focus on relatively few factors that are purported to assess performance at school, in the workplace and elsewhere. The relative sparsity of multifactorial pre-employment assessment instruments exemplifies, for the author, one of the important reasons for developing the MMP<sup>TM</sup>, which attempts to comprehensively evaluate a wider array of factors that are thought to contribute to performance. In that this situation creates a need in the area of test-construction that should be addressed, the author sought to develop a multifactorial assessment and development instrument that could concomitantly evaluate a combination of physical, cognitive, intra-personal, inter-personal, and motivational factors that significantly contribute to performance. The specific aim of this article is to show why, how and if this could be done as well as to present and discuss the potential importance of the results obtained to date. The findings presented here will hopefully add to what is known about human performance and thus contribute to the professional literature, in addition to contribute to the continued development of the MMP<sup>TM</sup>. The impetus for developing the MMP<sup>TM</sup> is first explained below, followed by a detailed description of the process involved and the findings obtained; and their potential application is then discussed as well as the possible limitations of the present research and the need for future studies to address them.

**Keywords:** multifactor measure of performance, MMP3, Reuven Bar-On, performance, assessing and developing performance

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## INTRODUCTION

While the beta version of Multifactor Measure of Performance<sup>TM</sup> (referred to as the “MMP1<sup>TM</sup>”), the key predictors of performance it was designed to measure and the initial research involved in developing it were first described by the author in an earlier publication (Bar-On, 2016), the purpose of the present article is to describe the latest version and third revision of the

<sup>1</sup>The MMP<sup>TM</sup> is the intellectual property (IP) of Bar-On Test Developers.

MMP™—“MMP3™”—and how it was created, normed and validated based on research that was conducted since that first publication. This article documents the continuation of the original research that was conducted by the author and first reported in 2016 (Bar-On, 2016) and presents the basic psychometric properties, strengths, and potential applicability of the MMP3™.

The primary purpose and focus of this introductory section is to explain the basic reasons for conducting the initial research that led to the creation of the Multifactor Measure of Performance™ and the specific context in which this work began. One of the author's reasons for beginning this research emerged from reviewing, over the years, a wide variety instruments that were designed to assess various aspects of human behavior and performance. This review indicated, early on, a need for multifactor assessment instruments capable of concomitantly evaluating a combination of predictors of performance, which would hopefully reduce the need for time-consuming and costly *batteries of tests* in psycho-assessment. Additionally, this need to develop a multifactor assessment instrument, designed to measure human performance, emerged from the desire to, metaphorically, “go beyond IQ and EQ” (Bar-On, 2016, p. 104) and include a wide array of physical, cognitive, intra-personal, inter-personal, and motivational contributors to and predictors of performance. Furthermore, the author's overall approach to this endeavor was purposely *a-theoretical* in nature from the outset, in order to avoid being restrained by rigid conceptual frameworks that run the risk of restricting rather than facilitating the ability to examine and potentially include a wider range of contributors to human performance. Essentially, the author envisioned the development of a multifactor assessment instrument that endeavors to include as many significant contributors to performance as possible and to combine them to enhance overall predictive ability.

The above-mentioned need for *a better assessment instrument* was once again confirmed by a survey that the author recently conducted of existing pre-employment tests. Based on a random sample of 120 of the 359 pre-employment tests listed in the 20th edition of the *Mental Measurement Yearbook* (MMY), he found that there appears to be eight major categories describing the vast majority of presently available tests (Carlson et al., 2017). These eight categories are listed in Appendix A and include the number of pre-employment tests identified in each category based on a random sampling of every third test listed in the latest edition of the MMY. A review of Appendix A indicates the percentage of pre-employment tests that are designed to obtain the following information from individuals exploring careers and from job applicants: (1) 9% identify vocational and career interests; (2) 20% evaluate employability as well as general and specific employment skills; (3) 37% examine cognitive or academic potential; (4) 14% assess intra-personal competencies and personality traits; (5) 5% estimate inter-personal compatibility and communication skills; (6) 3% tap managerial and leadership skills; (7) 8% focus on job commitment, social responsibility, work ethics, honesty and/or dependability; and (8) 3% attempt to screen for possible disruptive psychological problems and/or potential criminal

behavior. It is interesting to note that almost none of the pre-employment tests reviewed evaluate motivational drive, which is thought to be an important predictor of performance in the workplace and elsewhere (Weitz et al., 1986; Cotton, 1993; Becker et al., 1996; Diefendorff et al., 2002; Locke and Latham, 2002; Halbesleben and Wheeler, 2008; Markos and Sridevi, 2010; Rich et al., 2010). While the MMP3™ was not designed to identify vocational interests or specific occupational skills, it will be shown in the Results section that it is capable of assessing most of the factors that many of the pre-employment tests are designed to evaluate as well as additional factors that they do not assess. The author's examination of the pre-employment tests reviewed by MMY also suggests that they focus on an average of five potential predictors of performance, while the MMP3™ focuses on 25 contributors to performance in the workplace and elsewhere. The MMP3™, moreover, *combines* multifactor contributors to performance in one assessment instrument including (1) physical, (2) cognitive, (3) intra-personal, (4) inter-personal, and (5) motivational factors; and this has the potential of significantly reducing the need to create a battery of pre-employment tests to obtain a more comprehensive evaluation of job applicants, which can be obtained from one assessment instrument (i.e., the MMP3™). Last, the predictive validity of many pre-employment tests listed is not always available in the MMY nor is it frequently convincing when findings are documented in the peer-reviewed literature.

The main reason for developing the Multifactor Measure of Performance™ can be summarized as *the need to develop a better assessment instrument than currently exists*. Moreover, the ultimate aim of creating such an instrument is to substantially contribute to the study, assessment and enhancement of human performance; and the primary purpose of this article is to describe the process involved, which is explained in detail below, as well as to present the key findings, discuss their importance and potential application.

## METHODOLOGY

### Sample

The approach used to obtain subjects, in the present study, was to make the 189-item MMP2™ available on SurveyMonkey.com and circulate the link to a number of websites, organizations, and individuals in United States and Canada. This same approach was also used in piloting the beta version of this questionnaire (the MMP1™). In that the initial piloting and norming of this instrument was done on the Internet and not in an academic, medical, or government setting, formal permission was not requested from an official institutional review board to conduct this research. It is also important to convey that the participants were not paid to participate in this research project nor were they coerced to do so in any manner whatsoever. Additionally, it was clearly stated in the introductory section of the MMP2™ that completing the questionnaire was solely for research purposes. In very similar formats moreover, it was also stated at the beginning and at the end of the introductory section that “your agreement to participate in this project, by completing the questionnaire, means that you have given your voluntary consent to do so.”

The above-mentioned process of making the questionnaire available on the Internet generated a sample of, primarily, North American subjects that included a total of 2,380 adults with an average age of 38.0 years. Those who identified their gender and age ( $n = 2,004$ ) included 1,064 males with an average age of 38.4 years and 940 females with an average age of 37.4 years. As is the case with voluntary participation in research, it is difficult to determine the degree to which this population sample represents the total population (although this can be statistically estimated by examining the standard error of the means for the scale scores as is explained in the Results section of this article).

## Data Collection

The MMP2<sup>TM</sup> was the main source of data collection used in the present study to develop of the third and most recent version of the questionnaire—the MMP3<sup>TM</sup>—described in the present article. In an effort to briefly clarify the differences between these three versions of the Multifactor Measure of Performance<sup>TM</sup>, the 216-item “MMP1<sup>TM</sup>” was the beta version, the 189-item “MMP2<sup>TM</sup>” is the second version, and the 142-item “MMP3<sup>TM</sup>” is the third and most recent version. While the development of the MMP1<sup>TM</sup> was described in an earlier publication in greater detail (Bar-On, 2016), the development the MMP2<sup>TM</sup> and MMP3<sup>TM</sup> is described in this article.

The author’s approach in developing the original MMP<sup>TM</sup> was based on the test-construction strategy he applied in developing other psychometric instruments he has developed over the years (Bar-On, 1988, 1997, 2000, 2004, 2006). This involved the following steps: (1) first identifying factors in the literature thought to contribute to performance; (2) receiving input from experienced professionals—“experts”—who have researched, assessed and/or developed performance; (3) then selecting and defining the contributors to and predictors of performance that emerged from his review of the literature and input he received from others; and (4) finally creating, selecting, and further editing scale items. This process created the MMP1<sup>TM</sup>, the beta version of the questionnaire, which comprised 26 primary scales and two validity scales containing a total of 216 items. The two validity scales are unrelated to performance but were included to help examine response accuracy (“Self-Image Accuracy”) and consistency (“Self-Image Consistency”). The Self-Image Accuracy scale originally contained eight items in the MMP1<sup>TM</sup>, while the Self-Image Consistency scale was created by averaging the *absolute differences* in responses to the instrument’s highest correlating items across scales. The 26 major scales that were designed to assess contributors to performance, that the author originally identified, and used to develop the MMP1<sup>TM</sup>, are listed in Appendix B. While a detailed description of how the MMP1<sup>TM</sup> scales were identified, labeled, and defined as well as how the items were selected appear in an earlier publication (Bar-On, 2016), those scales that were retained and included in the MMP3<sup>TM</sup> are described in the Results section of this article. The response format originally considered was a 5-point Likert scale; however, it was eventually decided to use a slider bar to report responses in percentages based on the author’s desire to go from an ordinal to a more statistically sophisticated ratio level of measurement with equal intervals that also include

a true zero value (i.e., 0–100%). The MMP1<sup>TM</sup> was piloted on 997 adults in 2015. The eight items in each scale were then examined with Item Analysis, in order to identify the psychometrically weakest items (i.e., those with the lowest item-scale correlation). This was done to (a) shorten and (b) psychometrically strengthen the questionnaire, by deleting the weakest item and retaining the strongest ones in each scale. This process created the 189-item MMP2<sup>TM</sup>, with 27 scales (including one of the validity scales previously mentioned) comprising seven items in each scale.

An additional source of data collection was the application of a method designed to estimate current occupational performance for those who completed the MMP2<sup>TM</sup>, based on including the following question toward the end of the questionnaire: “If your organization would use the following format to evaluate your work, please indicate how your overall performance was most recently rated on a scale of 0–100%.” The responses from (a) those who answered this question and (b) who also responded with a score of 65% or greater to the following question were used to examine the questionnaire’s validity: “Please indicate how often you responded openly and accurately to this questionnaire on a scale of 0–100% of the time.” This generated a sample of 1,788 individuals that was used in examining the questionnaire’s discriminatory and predictive validity, which is explained in the data analysis sub-section below.

## Data Analysis

In light of the fact that the data collection procedure employed was multivariate in nature, multivariate statistics were applied to examine responses generated by the 189-item MMP2<sup>TM</sup> and the 142-item MMP3<sup>TM</sup>; and the specific statistical applications applied are described below. The statistical package used by the author was “Statistica 12.7<sup>2</sup>.”

## Exploratory Factor Analysis (EFA)

EFA was used to estimate the factorial structure of the MMP2<sup>TM</sup>, which guided the development of the MMP3<sup>TM</sup>. The EFA was conducted on the responses generated by the MMP2<sup>TM</sup> ( $n = 2,380$ ). Nine consecutive EFAs were carried out, in which factor output was limited by progressing from 18 to 26 factors. This was done to estimate the simplest and clearest factorial structure using a varimax normalized rotation. In that the statistical package used did not include oblique rotations, the application of orthogonal rotations needed to be justified and was based on a number of well-documented arguments in the literature since Spearman (1950) and Cattell (1952) first introduced the use of factor analysis in psychology. It has been consistently emphasized that the fundamental goal of EFA is to obtain a *simple factorial structure* that is easy to understand (Cattell, 1978; Yaremkov et al., 1986; Bryant and Yarnold, 1995; Kline, 2002; Hill and Lewicki, 2006) and makes good theoretical sense (Kim and Mueller, 1978; Vogt, 1993) irrespective if it was obtained by applying an orthogonal or oblique rotation (Kim and Mueller, 1978; Gorsuch, 1983; Brown, 2009). Moreover, Brown (2009, p. 21) concludes from his review of the literature on EFA

<sup>2</sup>Statistica 12.7 is referenced in <https://en.wikipedia.org/wiki/Statistica>.

that “the choice of rotation may not make much difference.” Kim and Mueller (1978, p. 50) provide one of the most compelling arguments for applying any rotation that generates a simple structure: “Even the issue of whether factors are correlated or not may not make much difference in the exploratory stages of analysis,” and “it even can be argued that employing a method of orthogonal rotation (or maintaining the arbitrary imposition that the factors remain orthogonal) may be preferred over oblique rotation, if for no other reason than that the former is much simpler to understand and interpret.” Hill and Lewicki (2006, p. 238) also focus on this particular issue with oblique rotations that the results obtained are “often not easily interpreted.” Their conclusion stresses the following important point: “If identification of the basic structuring of variables into theoretically meaningful sub-dimensions is the primary concern of the researcher, as is often the case in an exploratory factor analysis, almost any readily available method of rotation will do the job.” Gorsuch (1983, p. 205) also supports this notion and goes one step further: “If the simple structure is clear, any of the more popular procedures can be expected to lead to the same interpretations.” In addition to what many of these and other researchers have found, this important point about rotation selection was empirically demonstrated by Brown (2009, p. 23) who received the identical factorial structure and with very similar factor loadings, by examining the same dataset with three orthogonal rotations and two oblique rotations.

## Basic Psychometric Properties and Reliability

Based on the results of EFA, that guided the continued development of the Multifactor Measure of Performance™, the basic psychometric properties of the MMP3™ were examined and are presented in the Results section together with a description of the questionnaire's reliability. This was also conducted on the responses to the questionnaire generated by the North American normative sample ( $n = 2,380$ ).

## Analysis of Variance (ANOVA)

ANOVA was applied to evaluate MMP3™'s discriminatory validity, by examining the differences between high and low performers. “High performers” were those who scored +1 SD above the mean on self-reported performance ( $n = 304$ ), as described in the Methodology section, while “low performers” were those who scored -1 SD below the mean ( $n = 292$ ) for this estimate of performance. ANOVA was conducted on the responses to the questionnaire generated by those individuals, in the normative sample, who provided a self-reported estimate of their current occupational performance as well as a score 65% or higher on accurate and honest responding as was previously described.

## Multiple Regression Analysis (MRA)

MRA was used to examine MMP3™'s predictive validity. The MRA was also conducted on the responses to the questionnaire generated by those individuals who provided a self-reported estimate of their current occupational performance as well

as scored 65% or higher on accurate and honest responding ( $n = 1,788$ ). A forward stepwise analysis was applied.

## RESULTS

### MMP3™'s Factorial Structure

The simplest and most logical factorial structure of the MMP3™ emerged from limiting factor output to 22 factors, based on conducting nine consecutive EFAs in examining the MMP2™'s responses obtained from 2,380 adults who completed the questionnaire. The results are displayed in **Tables 1A–C**.

In addition to being logical and relatively uncomplicated to interpret, the results appearing in **Tables 1A–C** suggest that the estimated factorial structure of the MMP3™ accounts for nearly 82% of the total variance that it was designed to capture. Additionally, by comparing the original MMP1™ scales with those that were retained in the MMP3™, as shown in Appendix B, ~85% of them were retained. The results indicate that 14 factors and 11 sub-factors<sup>3</sup> emerged from EFA, with two or more of them loading on factors 3, 15, and 20. In accordance with requiring *most* of the highest loading items from the original scales being examined load on the resultant output factors that emerge, as suggested by Cattell (1952, 1978), Anastasi (1988), Tabachnick and Fidell (2001), a minimum of 4 out of the original 7 MMP2™ scale items was used in identifying the factors in **Tables 1A–C**. This approach guided the development of the MMP3™ with its 14 scales and 11 sub-scales<sup>4</sup> that were labeled according to the names of the original MMP1™/MMP2™ scales as well as the specific nature of the highest loading items. As a result of this approach, the labels of a few of the original MMP1™ scales were mildly altered. The MMP3™ scales currently comprise a minimum of 7 items, while the sub-scales contain a minimum of 5 items; and here it is important to mention that 5 items per scale is justified if there is an inner-correlation between them that is equal to or greater than 0.70 (Drolet and Morrison, 2001; Whittaker, 2006; Bergkvist and Rossiter, 2007; Hair et al., 2011), which was confirmed by the results in **Table 3**.

The results in **Table 1A** suggest that an additional sub-factor has apparently emerged from EFA, which was not previously considered or described by the author. The highest loading items on this new sub-factor originated from MMP1™'s (a) General Cognitive Competence, (b) Action-Planning, (c) Rapid Implementation, and (d) Discomfort Tolerance scales. An examination of the highest loading items, moreover, suggests that this new sub-factor appears to be associated with being prepared and ready to cope with situations requiring rapid execution of some immediate form of goal-oriented action. It was, therefore, decided to add “Preparedness and Readiness” as an additional MMP3™ sub-scale designed to assess this particular sub-factor.

<sup>3</sup>“Sub-factors” describe multiple smaller factors, two to six in the present study, that load on the same factor, as are observed in factors 3, 15, and 20 in **Tables 1A,C**. This term is descriptive in nature rather than statistical.

<sup>4</sup>“Sub-scales” describe smaller scales clustered within larger ones. In the MMP3™, they appear in the following scales: Key Cognitive Competencies, Finding Meaning and Acting Responsibly, and Motivational Drive. Once again, it is important to note that this term is descriptive rather than statistical.



**TABLE 1 |** The scale items' highest loadings on the clearest defined factors and sub-factors that emerged from EFA ( $n = 2,380$ ), appearing in parenthesis following the number of each of these items as listed in the MMP<sup>TM</sup>2.

<b>A</b>				
<b>F1</b>	<b>F2</b>	<b>F3</b>	<b>F4</b>	<b>F6</b>
<b>Engagement</b>	<b>General Cognitive Competence</b>	<b>Coping and Endurance</b>	<b>Connectedness</b>	<b>Self-Reliance</b>
19. (0.59)	3. (0.53)	44. (0.56)	24. (0.53)	14. (0.54)
46. (0.67)	30. (0.62)	71. (0.54)	78. (0.57)	41. (0.72)
73. (0.49)	57. (0.57)	98. (0.58)	105. (0.61)	68. (0.76)
100. (0.76)	84. (0.51)	125. (0.69)	132. (0.56)	95. (0.63)
127. (0.66)	111. (0.45)	152. (0.64)	159. (0.59)	149. (0.51)
154. (0.59)		Situational Awareness	186. (0.37)	
181. (0.62)		4. (0.33)		
		58. (0.40)		
		139. (0.47)		
		166. (0.43)		
		Flexibility		
		60. (0.56)		
		87. (0.58)		
		114. (0.58)		
		141. (0.43)		
		168. (0.37)		
		Resourcefulness and Resilience		
		61. (0.51)		
		88. (0.56)		
		115. (0.52)		
		142. (0.58)		
		Decision-Making		
		62. (0.58)		
		89. (0.51)		
		116. (0.61)		
		143. (0.61)		
		170. (0.63)		
		Preparedness and Readiness		
		63. (0.57)		
		64. (0.54)		
		91. (0.60)		
		144. (0.52)		
		171. (0.58)		
Var. = 7.04%	Var. = 5.82%	Var. = 20.75%	Var. = 5.48%	Var. = 3.08%
<b>B</b>				
<b>F7</b>	<b>F8</b>	<b>F9</b>	<b>F11</b>	
<b>Physical Fitness and Well-Being</b>	<b>Courage</b>	<b>Discomfort Tolerance and Stamina</b>	<b>Decisiveness</b>	
1. (0.71)	15. (0.63)	83. (0.65)	13. (0.49)	
28. (0.83)	42. (0.69)	110. (0.64)	40. (0.60)	
54. (0.81)	69. (0.53)	137. (0.76)	67. (0.60)	
55. (0.56)	96. (0.54)	164. (0.65)	94. (0.50)	
81. (0.71)	177. (0.42)		175. (0.41)	
109. (0.46)				
163. (0.38)				
Var. = 6.37%	Var. = 3.40%	Var. = 2.72%	Var. = 3.31%	

(Continued)

TABLE 1 | Continued

C				
F12	F14	F15	F19	F20
Applying Experience	Social Awareness	Self-Motivation	Self-Control	Meaningfulness
5. (0.48)	23. (0.62)	18. (0.46)	16. (0.61)	26. (0.51)
32. (0.50)	50. (0.74)	45. (0.28)	43. (0.53)	80. (0.55)
59. (0.49)	77. (0.77)	72. (0.53)	70. (0.55)	107. (0.40)
86. (0.65)	104. (0.47)	99. (0.30)	97. (0.54)	134. (0.47)
113. (0.70)		Determination	124. (0.53)	161. (0.36)
140. (0.59)		20. (0.50)	178. (0.44)	Social Responsibility
167. (0.57)		47. (0.68)		25. (0.38)
		74. (0.48)		52. (0.31)
		128. (0.56)		79. (0.43)
		155. (0.68)		133. (0.27)
		182. (0.53)		
		Perseverance		
		21. (0.48)		
		48. (0.56)		
		75. (0.70)		
		102. (0.44)		
		156. (0.50)		
Var. = 4.60%	Var. = 3.76%	Var. = 8.10%	Var. = 4.07%	Var. = 3.27%

A further examination of the factor loadings in **Tables 1A–C** reveals an average factor loading of 0.55, which could suggest the potential for significant factorial validity; however, this will need to be confirmed by Confirmatory Factor Analysis (CFA) in future studies that will need to be conducted on larger and more diverse independent samples. Additionally, only four out of the 113 highest loadings are lower than 0.32 with the lowest being 0.27. While 0.30 has been considered the minimum loading for inclusion in resultant factors (Tabachnick and Fidell, 2001), some consider loadings even lower than 0.30 to be acceptable for samples larger than 100 (Kline, 2002, p. 52–53).

The MMP3™ presently contains 142 items loading on 14 scales and 11 sub-scales, which takes an average of 25 min to complete based on a North American sample of 468 adults who recently completed this version of the questionnaire.

When the order of the resultant factors in **Tables 1A–C** are rearranged in a theoretically logical order, the following would appear to be the structure of the factors and sub-factors that are assessed with the MMP3™ scales and sub-scales (which will need to be confirmed by CFA to verify this apparent structure):

1. Physical Fitness and Well-Being
2. Discomfort Tolerance and Stamina
3. General Cognitive Competence
4. Key Cognitive Competencies
  - 4.1 Coping and Endurance
  - 4.2 Situational Awareness
  - 4.3 Flexibility
  - 4.4 Resourcefulness and Resilience

#### 4.5 Decision-Making

#### 4.6 Preparedness and Readiness

5. Applying Experience
6. Self-Control
7. Self-Reliance
8. Decisiveness
9. Courage
10. Social Awareness
11. Connectedness
12. Finding Meaning and Acting Responsibly

##### 12.1 Meaningfulness

##### 12.2 Social Responsibility

13. Engagement
14. Motivational Drive

##### 14.1 Self-Motivation

##### 14.2 Determination

##### 14.3 Perseverance

According to how the above factors were originally defined by the author (Bar-On, 2016) and based on the MMP2™ items that loaded the highest on the factors and sub-factors that emerged from EFA listed in **Tables 1A–C**, the MMP3™ scales and sub-scales are thought to assess the following contributors to performance:

- **Physical Fitness and Well-Being:** In addition to “striving to obtain and maintain good physical fitness” (Bar-On, 2016, p. 104) which contributes to “overall well-being” (Bar-On, 2016, p. 106), this scale emerged from EFA as a combination of

two MMP2<sup>TM</sup> scales which impacts performance. It appears to assess how people feel in general about their physical fitness, eating, and sleeping habits as well as how energetic they typically are in what they do.

- **Discomfort Tolerance and Stamina:** In addition to the ability to “temporarily suspend everyday physical needs and comforts in order to complete a task” (Bar-On, 2016, p. 104), this scale assesses the willingness to eat at irregular times, work longer hours with less sleep as well as to work on weekends in order to meet deadlines and finish the work on time. It also appears to measure stamina and the ability to continue functioning when need be.
- **General Cognitive Competence:** In addition to one’s ability to “learn new information and apply learned knowledge, logic, and reasoning for the purpose of understanding and solving problems” (Bar-On, 2016, p. 105), this scale appears to assess the capacity to learn more about the challenges one is faced with, to first understand them and then think about a reasonable course of action, to apply potentially effective solutions and weigh conflicting evidence, as well as to take into account the short-term and long-term consequences of potential solutions being considered.
- **Key Cognitive Competencies:** This composite scale<sup>5</sup> was created to measure a factor that emerged from EFA, which appears to collectively assesses the following six sub-factors that are important contributors to effective cognitive functioning:
  - **Coping and Endurance:** In addition to “managing one’s feelings in stressful situations” in order to function effectively while remaining relatively calm (Bar-On, 2016, p. 106), this sub-scale appears to assess how well people typically cope and function under pressure. This includes evaluating how effective they are in dealing with anxiety-provoking situations.
  - **Situational Awareness:** In addition to “evaluating the immediate situation, paying attention to detail as well as understanding, clarifying, and closing gaps between the perception of subjective reality and objective reality” (Bar-On, 2016, p. 105), this sub-scale assesses how attentive people are to their surroundings and how well they size up the situation. This appears to be based on an ability to update their assessment of situations in response to changes in the immediate environment as well as to filter out irrelevant information, in order not to get distracted.
  - **Flexibility:** In addition to “coping with and adapting to change as well as dealing with unexpected, unpredictable and confusing situations” (Bar-On, 2016, p. 105), this sub-scale assesses the ability to flexibly “think on one’s feet” and deal with the unexpected, finding ways to improvise and adapt when the unpredictable occurs, and to make the necessary adjustments to overcome. This often requires one to re-reframe setbacks and not to see them as personal or permanent.
- **Resourcefulness and Resilience:** In addition to the ability “to be innovative and consider different ways of coping with situations” (Bar-On, 2016, p. 105), this sub-scale appears to assess the capacity of individuals to generate different approaches to dealing with challenges and setbacks as well as to resiliently recover from them. If previous approaches are ineffective, resourceful individuals typically come up with alternative approaches that work; and this often depends on formulating an effective course of action aimed at going from the current situation to a better one.
- **Decision-Making:** In addition to “generating potentially effective solutions to problems, weighing the pros and cons of each possibility and deciding on the best solution” (Bar-On, 2016, p. 105), this sub-scale assesses the ability to make good decisions in general. Moreover, this scale measures the ability to come up with a potentially effective plan that requires coping with ambiguity and exercising sound judgement even when working under pressure and dealing with potential risks.
- **Preparedness and Readiness:** This sub-scale was created to measure a sub-factor that surfaced as a result of EFA. Based on the items that loaded on this sub-factor, this new sub-scale appears to assess the ability of individuals to be prepared and ready to cope with immediate situations that arise and/or to execute some form of goal-oriented action based on what they have learned. This includes immediately sizing up what is presently happening in the here-and-now, deciding on the best course of action and rapidly implementing it, which appears to be what is cognitively needed in dealing with emergency situations.
- **Applying Experience:** In addition to “appropriately and effectively applying past experience in order to facilitate current problem-analysis, problem-solving, and decision-making” (Bar-On, 2016, p. 105), this scale assesses the ability to apply experience in understanding and dealing with current challenges and problematic situations. This requires the capacity to effectively combine past experience with new information and approaches, which is an important contributor to effective cognitive functioning.
- **Self-Control:** In addition to “controlling emotions and maintaining self-composure” (Bar-On, 2016, p. 106), this scale essentially assesses “the ability of people to control their emotions so they work for them and not against them.” Moreover, it evaluates the ability to effectively deal with challenges while maintaining outward composure.
- **Self-Reliance:** In addition to “being independent from others and being able to think things out alone, make decisions and act independently when needed” (Bar-On, 2016, p. 105), this scale essentially assesses the capacity to think and act independently rather than depending on others. It evaluates the ability of people to act alone when need be, even though they are open to receiving input and suggestions from others.
- **Decisiveness:** In addition to “expressing oneself openly, clearly and boldly” as well as “being able to confidently convey

<sup>5</sup>A “composite scale” refers to a scale that comprises sub-scales (Key Cognitive Competencies, Finding Meaning and Acting Responsibly, and Motivational Drive); and a composite scale score is calculated by averaging its sub-scale scores. It is important to note that this is a descriptive rather than a statistical term.

feelings, beliefs, and ideas” (Bar-On, 2016, p. 105), this scale assesses the ability of people to be assertive and decisive as well as to set firm limits with others when necessary but without being aggressive or hostile.

- **Courage:** In addition to being able “to overcome one’s apprehensions and fears to act courageously” (Bar-On, 2016, p. 105–106), this scale was designed to measure the capability of individuals to protect, stand up for and support others even when there might be negative consequences for doing so. Additionally, this scale also evaluates the extent to which people are even prepared to risk their life to save another person’s life.
- **Social Awareness:** In addition to “being aware of others, their feelings and concerns which helps one interact with people and become a more cooperative, constructive, and contributing team player” (Bar-On, 2016, p. 106), this scale assesses the ability to understand non-verbal communication, to know how others feel and to be attentive to their needs.
- **Connectedness:** In addition to “being able to connect with other people and to establish and maintain mutually satisfying interpersonal relationships” (Bar-On, 2016, p. 106), this scale appears to evaluate the capacity to establish and maintain good relationships with others, get along with friends and colleagues as well as to enjoy social interactions in general.
- **Finding Meaning and Acting Responsibly:** This is a composite scale that was created to measure a factor that emerged from EFA, that assesses the following two sub-factors that are thought to be important contributors to finding meaning in what one does which also benefits others as well as oneself in a socially responsible manner:
  - **Meaningfulness:** In addition to “finding meaning in what one does as well as being passionately involved in meaningful pursuits that benefit others in addition to oneself” (Bar-On, 2016, p. 106), this sub-scale appears to assess the ability to live a meaningful and rewarding life.
  - **Social Responsibility:** In addition to “living according to a set of principles, values, and beliefs which guide one’s decisions and ability to do the right thing” (Bar-On, 2016, p. 106), this sub-scale appears to assess the consistency of one’s moral integrity when one is with family members, friends and/or colleagues. Fundamentally, this is based on the ability to understand the difference between *right* and *wrong* and to act accordingly.
- **Engagement:** In addition to “being committed to one’s work which builds on feeling passionate about what one enjoys doing” that enhances overall motivational drive (Bar-On, 2016, p. 106), this scale assesses the degree to which people feel positive about what they do or have done and understand the positive impact it has or might have on others.
- **Motivational Drive:** This is a composite scale that was created to measure a factor that emerged from EFA, which collectively assesses the following three sub-factors that are thought to be important contributors to one’s overall motivational drive that significantly impacts performance:
  - **Self-Motivation:** In addition to “being positive, optimistic, and energized in doing what one does” (Bar-On, 2016, p. 106), this sub-scale assesses the degree to which people are capable of motivating themselves. This enhances their drive to get as much as they can out of what they enjoy doing and energizes them to perform on an even higher level.
  - **Determination:** In addition to “being committed to decisions that are made and goals that are set as well as being determined to follow through with them” (Bar-On, 2016, p. 106), this sub-scale appears to assess how resolute people are in the choices and decisions they make. This essentially requires the resolve to begin what they decide to do and to move into action mode after decisions are made.
  - **Perseverance:** In addition to “persevering and following through with a task until it is completed” (Bar-On, 2016, p. 106), this sub-scale also assesses the drive to pursue goals in general.

## MMP3™’s Basic Psychometric Properties

Subsequent to obtaining an estimate of MMP3™’s factorial structure and what it appears to assess based on the highest loading items, the basic psychometric properties of this developing questionnaire were then examined by evaluating the scale score means, standard deviations, standard error of means, skewness, and kurtosis. The results are presented in **Table 2A**. Mean scores for males and females as well as for five different age groups were also examined for significant differences, and the results are presented in **Tables 2B,C** respectively. It is important to note that mean scores appear in percentages, in that the response options were formatted in percentages ranging from 0 to 100% as was previously described in the Methodology section. To reiterate moreover, the term “composite score” is descriptively used to refer to the following three scale scores that were created by averaging the sub-scales that they comprise: (1) Key Cognitive Competencies; (2) Finding Meaning and Acting Responsibly; and (3) Motivational Drive.

In that the skewness and kurtosis of all of the composite scales, scales and sub-scales fall within the acceptable  $\pm 2.0$  range (Trochim and Donnelly, 2014), the mean scores in **Table 2A** appear to be normally distributed. Moreover, the standard error of the means obtained for the scale scores suggests it is expected that similar results would be obtained from other samples from the same population (Tabachnick and Fidell, 2001; Barde and Prajakt, 2012). The mean scores, however, appear to be relatively high, substantially above an expected middle range, which suggests a need to adjust raw scores proportionally downward. Subsequent to collecting data from larger and more diverse samples across cultures, this will eventually be done by multiplying raw scores by non-standardized beta weights obtained from applying MRA in order to first examine the degree of correlation between the major scale scores and the validity scale score that attempts to assess social response bias. The software, used to score the responses, will then be programmed to automatically and proportionally reduce significantly high raw scores by converting them to adjusted scores thus improving the



**TABLE 2A |** The basic psychometric properties of the MMP3™, including mean scores and standard deviations (*SD*) in percentages, standard error of means (*SEM*), skewness (*Skew.*), and kurtosis (*Kurt.*), based on the normative sample ( $n = 2,380$ ).

MMP3™ scales	Mean (%)	SD (%)	SEM	Skew.	Kurt.
1. Physical Fitness and Well-Being	68.1	17.7	0.51	−0.44	−0.05
2. Discomfort Tolerance and Stamina	71.8	14.5	0.42	−0.48	0.11
3. General Cognitive Competence	76.8	13.3	0.38	−0.58	0.68
4. Key Cognitive Competencies	73.9	13.5	0.39	−0.60	1.00
4.1 Coping and Endurance	72.9	17.3	0.50	−0.74	0.82
4.2 Situational Awareness	72.9	14.1	0.41	−0.52	0.74
4.3 Flexibility	74.0	15.1	0.44	−0.68	1.26
4.4 Resourcefulness and Resilience	74.0	14.9	0.43	−0.37	0.12
4.5 Decision-Making	74.0	14.9	0.43	−0.45	0.49
4.6 Preparedness and Readiness	75.4	15.5	0.45	−0.65	0.45
5. Applying Experience	80.2	13.9	0.40	−0.79	1.23
6. Self-Control	73.0	15.2	0.44	−0.52	0.37
7. Self-Reliance	70.9	13.6	0.39	−0.45	0.54
8. Decisiveness	67.3	15.3	0.44	−0.51	0.35
9. Courage	68.8	15.6	0.45	−0.23	−0.38
10. Social Awareness	72.2	13.9	0.40	−0.46	0.51
11. Connectedness	73.4	14.6	0.42	−0.70	1.23
12. Finding Meaning and Acting Responsibly	82.4	12.2	0.35	−0.95	1.57
12.1 Meaningfulness	80.6	14.3	0.42	−0.84	1.01
12.2 Social Responsibility	84.2	12.7	0.37	−1.05	1.64
13. Engagement	76.3	17.2	0.50	−0.87	0.75
14. Motivational Drive	79.2	13.7	0.40	−0.82	0.93
14.1 Self-Motivation	79.2	14.6	0.42	−0.88	1.19
14.2 Determination	78.8	15.0	0.43	−0.71	0.42
14.3 Perseverance	79.6	14.6	0.42	−0.79	0.61

accuracy of the scores (i.e., raw scores adjusted through *factoring out* response bias).

While no significant differences were found in (a) general cognitive competence, (b) the ability to apply experience in coping with problems, (c) connecting with others, (d) finding meaning in one's work and acting responsibly, or in (e) motivational drive, significant gender differences are found in more than half of the scale scores appearing in **Table 2B**; and the majority of these scores were apparently higher for males in the North American samples examined. As such, gender-specific norms will be used in the future to score MMP3™ responses in order to generate more accurate results (i.e., raw scores adjusted by *factoring out* gender interaction).

The results in **Table 2C** indicate that most contributors to performance tend to increase with age, which suggests that older people perform better than younger people in general. While this might be the results of *experience-based wisdom*, this will need to be empirically examined in future studies. In any event, age-specific norms will be used in scoring MMP3™ responses in addition to gender-specific norms as was previously mentioned.

## MMP3™'s Reliability

The primary approach used to estimate MMP3™'s reliability was to evaluate the internal consistency of its scales with Cronbach alphas; and the results are presented in **Table 3**.

The results in **Table 3** suggest that all of the scales possess more than adequate reliability, based on the assumption that reliability coefficients equal to or greater than 0.70 indicate adequate reliability for scales and sub-scales (Anastasi, 1988; Tabachnick and Fidell, 2001) while coefficients equal to or greater than 0.80 are thought to be the minimum for composite scales which has been achieved in this study. These findings also justify the creation of sub-scales comprising as few as five items, as was previously mentioned (Hair et al., 2011). Furthermore, relatively high reliability coefficients usually predict that the scale's validity will be relatively high as well (Hill and Lewicki, 2006).

## MMP3™'s Validity

Discriminant validity and predictive validity were examined with ANOVA and MRA respectively. In the ANOVA evaluation of MMP3™'s discriminant validity, a sample of high performers and low performers were compared for possible significant differences based on their self-reported performance ratings at work. High performers were those whose recent performance rating was self-reported to be equal to or greater than one standard deviation above the mean ( $n = 304$ ), while low performers were those whose performance rating was equal to or less than one standard deviation from the mean ( $n = 292$ ) as was previously explained in the Methodology section. Although "self-reported performance ratings" are most likely biased as

**TABLE 2B |** The MMP3™ scale scores, in percentages, for males ( $n = 1,064$ ) and females ( $n = 940$ ), based on individuals who identified their gender when responding to the questionnaire.

MMP3™ Scales	Males (%)	Females (%)	F-value	p-level
1. Physical Fitness and Well-Being	71.1	66.0	18.98	<0.001
2. Discomfort Tolerance and Stamina	72.8	70.9	4.41	0.036
3. General Cognitive Competence	77.2	76.3	1.71	0.192
4. Key Cognitive Competencies	75.2	72.6	10.11	0.002
4.1 Coping and Endurance	74.9	70.8	15.07	<0.001
4.2 Situational Awareness	74.0	71.5	9.17	0.003
4.3 Flexibility	74.6	73.1	2.72	0.099
4.4 Resourcefulness and Resilience	75.4	73.0	6.92	0.009
4.5 Decision-Making	75.4	72.6	10.41	0.001
4.6 Preparedness and Readiness	76.7	74.8	4.67	0.031
5. Applying Experience	80.9	79.5	2.01	0.157
6. Self-Control	74.6	71.6	12.16	0.001
7. Self-Reliance	69.8	71.8	5.72	0.017
8. Decisiveness	68.7	65.5	10.76	0.001
9. Courage	71.7	65.6	41.32	<0.001
10. Social Awareness	70.7	74.3	13.22	<0.001
11. Connectedness	73.3	74.5	1.20	0.273
12. Finding Meaning and Acting Responsibly	82.0	82.8	0.99	0.321
12.1 Meaningfulness	80.3	80.9	0.63	0.429
12.2 Social Responsibility	83.8	84.6	1.03	0.311
13. Engagement	78.3	75.2	6.46	0.011
14. Motivational Drive	80.2	78.8	1.43	0.233
14.1 Self-Motivation	80.4	78.8	2.27	0.132
14.2 Determination	79.8	78.4	1.19	0.276
14.3 Perseverance	80.4	79.4	0.53	0.468

ANOVA was used to examine potential gender differences.

explained in that section, the method applied to calculate them may have provided a potentially accurate estimate of current occupational performance (which will need to be examined by more objective methods in future studies). The initial results for discriminatory validity are listed in **Table 4**. Additionally, predictive validity was evaluated by applying MRA to examine the ability of the MMP3™ scores to predict self-reported performance ( $n = 1,788$ ); and the results are presented in **Table 5**.

The findings in **Table 4** indicate that nearly all of the MMP3™ scales are capable of significantly discriminating between high and low performers in the present study, while the only scale that could not significantly discriminate between high and low performers was Self-Reliance for the population sample studied. Although this might justify the exclusion of this particular scale in the MMP3™, it was decided, at least temporarily, to retain it based numerous studies that support the importance of self-reliance as a significant contributor to performance (Bar-On et al., 2006).

While the results in **Table 4** indicate that nearly all of the MMP3™ scales are capable of significantly distinguishing between high and low performers, the findings in **Table 5** suggest that all of the scales, including Self-Reliance, are capable

of predicting performance. These findings would appear to justify retaining the Self-Reliance scale in the questionnaire. Moreover, the overall multivariate correlation—i.e., the Multiple R—between the MMP3™ scales and self-reported performance is 0.56 ( $F = 7.39$ ,  $p < 0.001$ ) suggesting that it possesses relatively high predictive validity; and this was expected from the scales' relatively high reliability as was previously mentioned. The three most robust predictors of performance appear to be situational awareness ( $\beta = 0.274$ ,  $t = 4.60$ ,  $p < 0.001$ ), coping and endurance ( $\beta = 0.154$ ,  $t = 3.01$ ,  $p = 0.003$ ), and engagement ( $\beta = 0.115$ ,  $t = 3.24$ ,  $p = 0.001$ ).

In a recently approved doctoral dissertation (Conroy, 2017), Dr. Richard Conroy demonstrated that the factors assessed by the MMP3™ adequately predict effective leadership. More succinctly, this instrument was shown to be a robust predictor of “transformational leadership” in a sample of 454 senior law enforcement officers. The predictive model that emerged, from Multiple Regression Analysis, indicated that most of the variance of this type of leadership can be significantly accounted for [ $R = 0.76$  ( $F = 35.00$ ,  $p < 0.001$ )] by the MMP3™. A re-examination of the dataset suggests that its predictive ability is even greater than was originally thought.

## DISCUSSION

### The Key Findings

The key findings presented in this article suggest that the MMP3™ is a reliable and valid measure of performance including leadership. Moreover, this psychometric instrument has been methodically developed based on (1) a systematic search of the literature, (2) input from expert consultants who have worked in various aspects of human performance as well as (3) the application of multivariate statistics designed to examine its factorial structure, reliability and validity. Furthermore, the MMP3™ addresses the need for developing more reliable and valid multifactor measures of performance in pre-employment testing. In addition to comprehensively assessing the potential for performance in the workplace, it is hoped that it can be applied elsewhere as is discussed below. The findings also suggest that three of the most robust predictors of occupational performance appear to be (1) possessing situational awareness and being attentive to detail, (2) being able to effectively cope with stress as well as (3) being totally engaged that significantly impacts one's motivational level. According to how these factors are described and assessed by the MMP3™, this means that performance is driven by being attentive to one's immediate surroundings, paying attention to detail and not getting distracted. Additionally, effective performance also requires the ability to cope well with stress and function well under pressure. Last, high performers need to be engaged in their work and feel passionate about what they do in order to be sufficiently motivated to function at their best.

### The Importance of the Findings

One of the most important findings revealed in this article is that the MMP3™ is capable of concomitantly assessing five different groups of significant contributors to performance, comprising

**TABLE 2C |** The MMP3™ scale scores, in percentages, for five different age groups [18–29 ( $n = 712$ ), 30–39 ( $n = 326$ ), 40–49 ( $n = 400$ ), 50–59 ( $n = 334$ ) and  $\geq 60$  ( $n = 138$ )] based on individuals who identified their age when responding to the questionnaire.

MMP3™ scales	18–29 (%)	30–39 (%)	40–49(%)	50–59(%)	$\geq 60$ (%)	F-value	p-level
1. Physical Fitness and Well-Being	72.5	66.3	63.7	67.9	72.2	9.64	<0.001
2. Discomfort Tolerance and Stamina	72.1	70.5	71.3	72.1	75.6	1.47	0.211
3. General Cognitive Competence	75.5	77.1	76.2	79.6	79.3	3.57	0.007
4. Key Cognitive Competencies	72.7	73.3	74.0	76.8	76.7	3.51	0.007
4.1 Coping and Endurance	71.1	71.9	73.7	76.3	77.0	3.65	0.006
4.2 Situational Awareness	72.5	71.1	72.8	74.9	76.2	2.29	0.058
4.3 Flexibility	71.6	73.5	75.0	77.4	76.1	5.03	0.001
4.4 Resourcefulness and Resilience	73.0	74.2	73.0	77.9	75.8	3.69	0.005
4.5 Decision-Making	72.4	73.7	73.9	77.1	77.0	3.45	0.008
4.6 Preparedness and Readiness	75.5	75.1	75.4	77.5	78.2	1.00	0.408
5. Applying Experience	78.5	80.6	80.9	82.5	82.5	2.93	0.020
6. Self-Control	73.3	70.7	73.0	74.8	76.2	2.10	0.079
7. Self-Reliance	67.7	70.5	72.5	72.1	74.7	7.05	<0.001
8. Decisiveness	66.5	66.0	66.9	69.5	67.7	1.29	0.273
9. Courage	66.6	66.2	70.1	73.0	73.6	8.25	<0.001
10. Social Awareness	69.8	73.5	73.7	74.6	72.6	4.70	0.001
11. Connectedness	75.1	71.7	72.9	74.9	74.5	2.09	0.080
12. Finding Meaning and Acting Responsibly	79.6	81.5	84.1	86.2	86.0	11.96	<0.001
12.1 Meaningfulness	78.9	79.0	81.7	83.7	83.8	4.87	0.001
12.2 Social Responsibility	80.3	84.0	86.5	88.8	88.2	18.42	<0.001
13. Engagement	77.7	75.0	73.3	79.5	81.4	4.92	0.001
14. Motivational Drive	81.2	77.4	77.3	79.8	83.2	4.84	0.001
14.1 Self-Motivation	82.2	77.3	76.5	79.8	81.5	6.58	<0.001
14.2 Determination	80.0	77.0	77.4	80.0	83.5	3.29	0.011
14.3 Perseverance	81.4	77.9	78.0	79.7	84.5	4.12	0.003

ANOVA was used to examine potential age differences.

a total of 22 factors, including the following: (1) two physical factors; (2) eight cognitive factors; (3) four intra-personal factors; (4) three inter-personal factors; and (5) five motivational factors. In addition to confirming more that 80% of the ideas presented in the author's previous publication moreover (Bar-On, 2016), the results presented here empirically support the importance of physical (Boles et al., 2004; Fritz and Sonnentag, 2005; Meerding et al., 2005; Conn et al., 2009; Pronk and Kottke, 2009), cognitive (Motowidlo et al., 1986; Mento et al., 1987; Pearson, 1987; Janssen and Van Yperen, 2004; Cote and Miners, 2006; Hill and Lewicki, 2006), intra-personal (Motowidlo et al., 1986; Matteson and Ivancevich, 1987; Sullivan and Bhagat, 1992; Kuncel et al., 2004; Bar-On et al., 2006; Martinuzzi, 2009), inter-personal (Babin and Boles, 1996; Schwepker and Ingram, 1996; Van Scotter and Motowidlo, 1996; Janssen and Van Yperen, 2004; Lennick and Kiel, 2007; Baker and O'Malley, 2008; Hsu, 2008), and motivational (Weitz et al., 1986; Cotton, 1993; Becker et al., 1996; Diefendorff et al., 2002; Locke and Latham, 2002; Halbesleben and Wheeler, 2008; Markos and Sridevi, 2010; Rich et al., 2010) predictors of performance proposed by others; and this, in turn, appears to help validate what the MMP3™ assesses as well. This also empirically confirms the value of combining the above-mentioned groups of contributors to better predict performance, which justifies the importance of developing a

multifactor conceptual and psychometric model that is designed to comprehensively evaluate the *whole person* when attempting to study, assess and enhance human behavior and performance.

The novelty of the MMP3™, as well as this publication in the professional literature, is that the above-mentioned five different groups of contributors to performance can be assessed by employing only *one* psychometric instrument, thus reducing the need to combine various different instruments to evaluate all of these key factors; and this, in turn, is expected to reduce the time and cost involved in psychological testing.

In addition to its assessment component, it is important to emphasize that the MMP3™ has a development component that will automatically provide a number of suggestions for strengthening the individuals' weakest contributors to performance indicated by their lowest scores. Thus, the MMP3™ can be contextualized as a comprehensive operational framework designed to help understand why some people perform better than others and to determine which contributing factors need to be strengthened in order to enhance performance in individuals who are underperforming.

Depending upon the outcome of future predictive validity and incremental validity studies, it is possible that the MMP3™ will compare favorably with other psychometric instruments used to predict performance in the workplace and elsewhere. This is,

**TABLE 3 |** The internal consistency reliability of the MMP3™ scales, based on the normative sample ( $n = 2,380$ ).

MMP3™ scales	Cronbach alphas
1. Physical Fitness and Well-Being	0.86
2. Discomfort Tolerance and Stamina	0.73
3. General Cognitive Competence	0.80
4. Key Cognitive Competencies	0.96
4.1 Coping and Endurance	0.87
4.2 Situational Awareness	0.73
4.3 Flexibility	0.78
4.4 Resourcefulness and Resilience	0.80
4.5 Decision-Making	0.84
4.6 Preparedness and Readiness	0.82
5. Applying Experience	0.86
6. Self-Control	0.87
7. Self-Reliance	0.72
8. Decisiveness	0.81
9. Courage	0.77
10. Social Awareness	0.79
11. Connectedness	0.82
12. Finding Meaning and Acting Responsibly	0.84
12.1 Meaningfulness	0.79
12.2 Socially Responsible	0.74
13. Engagement	0.88
14. Motivational Drive	0.93
14.1 Self-Motivation	0.78
14.2 Determination	0.85
14.3 Perseverance	0.79

cautiously, based on what has been presented here compared with findings from other publications describing the predictive validity of most pre-employment testing involving cognitive factors and personality traits for example. More specifically, the present article revealed a predictive coefficient of 0.56 suggesting that the MMP3™ scales are capable of assessing more than 30% of the variance that explains occupational performance accounting for nearly a third of the factors that predict performance in the workplace which is significant in the field of test-construction. These findings suggest that the MMP3™ could be a potentially valuable and desirable tool when this is compared with the results of very large meta-analyses that have been conducted on the predictive ability of cognitive and personality tests. More succinctly, Morgeson and his colleagues reported findings from 13 meta-analyses ( $n = 40,230$ ) indicating that the average predictive coefficient of cognitive testing is 0.25 accounting for only 6% of the variance of occupational performance (Morgeson et al., 2007, p. 700); and based on 12 meta-analyses ( $n = 23,413$ ), the average predictive coefficient of personality traits is only 0.15 accounting for a mere 2% of the variance (Morgeson et al., 2007, p. 705).

The importance of the MMP3™, as an assessment, development and research instrument, will depend on the extent to which it will be applied and the degree to which it will help improve human performance. If it can be effectively applied

**TABLE 4 |** The ability of the MMP3™ to distinguish between high performers ( $n = 304$ ) and low performers ( $n = 292$ ), examined by applying ANOVA with gender and age designated as co-variables.

MMP3™ scales	High (%)	Low (%)	F-value	p-level
1. Physical Fitness and Well-Being	77.0	63.9	22.18	<0.001
2. Discomfort Tolerance and Stamina	75.9	67.7	12.65	0.005
3. General Cognitive Competence	82.0	70.3	38.68	<0.001
4. Key Cognitive Competencies	80.7	65.6	56.75	<0.001
4.1 Coping and Endurance	80.6	61.9	47.62	<0.001
4.2 Situational Awareness	80.0	64.1	59.15	<0.001
4.3 Flexibility	78.3	66.4	27.78	<0.001
4.4 Resourcefulness and Resilience	80.6	67.4	35.56	<0.001
4.5 Decision-Making	81.3	66.3	50.05	<0.001
4.6 Preparedness and Readiness	83.7	67.7	50.26	<0.001
5. Applying Experience	82.1	76.6	10.32	0.003
6. Self-Control	79.7	65.2	39.94	<0.001
7. Self-Reliance	69.9	71.5	0.69	0.408
8. Decisiveness	72.0	62.2	19.67	<0.001
9. Courage	71.8	62.2	22.81	<0.001
10. Social Awareness	75.1	67.5	18.02	<0.001
11. Connectedness	79.0	67.4	28.78	<0.001
12. Finding Meaning and Acting Responsibly	86.7	77.1	33.55	<0.001
12.1 Meaningfulness	85.0	75.3	24.99	<0.001
12.2 Social Responsibility	88.3	78.8	30.49	<0.001
13. Engagement	83.5	69.4	33.66	<0.001
14. Motivational Drive	86.1	73.1	41.61	<0.001
14.1 Self-Motivation	86.4	72.4	41.76	<0.001
14.2 Determination	85.6	73.8	28.49	<0.001
14.3 Perseverance	86.3	73.3	36.78	<0.001

in one or more of the following areas and prove to be useful moreover, it is reasonable to assume that it will demonstrate both importance and value as an operational model of performance: (1) parenting; (2) education; (3) human resources; (4) healthcare; and (5) research designed to study and improve performance. These potential applications were described, in detail, by the author in his first publication on the Multifactor Measure of Performance™ (Bar-On, 2016, p. 113–115). An additional application of this psychometric instrument is currently being examined for the purpose of assessing and training emergency responders and managers, aimed at enhancing their performance in natural and man-made disasters. The author is currently working with Professor Isaac Ashkenazi, an internationally acknowledged expert in this field, to develop a customized version of the MMP™ which will include a VR (Virtual Reality) application designed to facilitate the assessment and development of emergency managers and crisis leaders.

If one takes into account the above-mentioned features, psychometric strengths and potential applications of the MMP3™, these would be the primary reasons for practitioners and researchers to apply this assessment and development instrument. To verify the potential of the MMP3™ however, additional studies will need to be conducted on larger and



**TABLE 5 |** The ability of the MMP3™ to predict performance, based on applying MRA to examine the degree of correlation between its scale scores and self-reported performance at work ( $n = 1,788$ ).

MMP3™ scales	Multiple R	F-value	p-level
1. Physical Fitness and Well-Being	0.23	18.78	<0.001
2. Discomfort Tolerance and Stamina	0.26	36.97	<0.001
3. General Cognitive Competence	0.33	40.64	<0.001
4. Key Cognitive Competencies	0.43	18.64	<0.001
4.1 Coping and Endurance	0.35	47.78	<0.001
4.2 Situational Awareness	0.37	39.27	<0.001
4.3 Flexibility	0.29	24.02	<0.001
4.4 Resourcefulness and Resilience	0.25	16.74	<0.001
4.5 Decision-Making	0.32	28.20	<0.001
4.6 Preparedness and Readiness	0.31	21.63	<0.001
5. Applying Experience	0.23	11.23	<0.001
6. Self-Control	0.31	18.38	<0.001
7. Self-Reliance	0.25	16.84	<0.001
8. Decisiveness	0.21	22.81	<0.001
9. Courage	0.26	14.91	<0.001
10. Social Awareness	0.22	10.53	<0.001
11. Connectedness	0.30	14.21	<0.001
12. Finding Meaning and Acting Responsibly	0.33	15.81	<0.001
12.1 Meaningfulness	0.26	17.82	<0.001
12.2 Social Responsibility	0.29	31.54	<0.001
13. Engagement	0.26	18.36	<0.001
14. Motivational Drive	0.32	16.74	<0.001
14.1 Self-Motivation	0.29	22.80	<0.001
14.2 Determination	0.24	21.35	<0.001
14.3 Perseverance	0.29	46.31	<0.001

more diverse population samples aimed at examining its discriminatory, predictive and incremental validity. Future studies will also need to address the potential limitations of the present study that are discussed below.

## Limitations of the Present Research and the Need for Future Studies

One of the basic approaches used in developing the Multifactor Measure of Performance™ also represents one of its potential limitations. More specifically, the contributors to performance that this questionnaire was designed to measure were those that were reviewed in the literature by the author who selected those he thought to be the key contributors to performance. It is reasonable to assume that other researchers would have reviewed the literature differently, possibly would have selected other predictors and might have also defined them differently. Additionally, others might have decided to combine what were perceived to be similar factors and divide other factors into two or more separate factors. It is therefore important to receive additional input on the author's approach to developing this particular model.

Another potential limitation of the present study was not including more experts in the field, who could have provided additional ideas regarding important contributors to

and predictors of performance, their description of these factors and selection of items designed to assess them.

It is also important to note that additional MMP3™ data are currently being collected by the author, colleagues and other researchers; and results from these and future studies might or might not confirm this questionnaire's estimated factorial structure, psychometric properties, and strengths as presented in this article.

To reiterate, the MMP3™ will need to be examined on larger and more diverse population samples across cultures. In order to receive a clearer and more accurate picture of the MMP3™'s factorial structure, CFA will be conducted *after* the author has obtained data from significantly larger samples. In addition to more extensively examining factorial structure and validity, the MMP3™'s discriminant, predictive and, especially, incremental validity studies will also need to be conducted as was previously mentioned.

An additional limitation of the current study can be seen in the way in which the MMP3™'s predictive validity has been examined. While the approach applied to estimate occupational performance, described in the data collection section, provided an *approximation* of how the subjects might be performing, it therefore has limitations and will eventually require the use of more objective methods in future studies such as (1) actual performance ratings completed by supervisors and co-workers as well as (2) comparing criterion groups of identified high and low performers for significant differences. Furthermore, future research will need to examine what types of human behavior and performance the MMP3™ predicts and how well. In addition to general occupational performance, its ability to predict and improve teamwork and leadership will be studied as well. Additionally, its ability to evaluate and enhance parenting, academic performance as well as physical and psychological health will also need to be researched. Test-retest reliability studies will also need to be conducted in addition to MMP3™'s internal consistency reliability which was examined in the present article.

In that the norming and validation of psychometric instruments is a very lengthy process, it will take time before MMP3™'s exact structure, reliability and validity can be more fully understood; and the author welcomes researchers, students, and practitioners to apply and examine the MMP3™ in future studies to help facilitate its continued norming, validation and application. The author plans to have the questionnaire translated from English to a number of different languages, which will both facilitate its continued norming and validation in order to continue studying the key contributors to performance as well as potentially expand its applicability.

## AUTHOR CONTRIBUTIONS

RB-O is the author of this paper, which is his "Inaugural Article" as an Associate Editor in the Organizational Psychology Section of Frontiers in Psychology. His professional background and interest focuses on the study, development and application of multifactor models and measures of

performance. Since 1978, he has developed 12 different psychometric instruments designed to assess and develop various aspects of human performance including the Emotional Quotient Inventory™ (EQ-i™). This article describes the Multifactor Measure of Performance™ (MMP™), which was

developed to comprehensively measure and enhance what RB-O identified as key contributors to human performance. The MMP™, the concept it was designed to measure and the research involved in developing it are described in detail.

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**Conflict of Interest Statement:** RB-O is the founder of Bar-On Test Developers LLC and currently directs the R&D at Bar-On Test Developers.

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## APPENDIX

**Appendix A** | The eight categories listed below describe what pre-employment tests, in the 20th edition of the *Mental Measurement Yearbook*, appear to evaluate based on a random sample of 120 of the 359 tests that were examined.

1. Vocational & career interests [11 (9.2%)]
2. Employability & general / specific employment skills needed in various occupations [24 (20.0%)]
3. Cognitive intelligence & academic ability / skills / readiness / achievement [44 (36.7%)]
4. Intra-personal competencies & personality traits [17 (14.2%)]
5. Inter-personal compatibility & communication skills [6 (5.0%)]
6. Managerial & leadership skills [4 (3.3%)]
7. Responsibility / commitment / ethics / integrity / honesty / dependability [10 (8.3%)]
8. Potential for disruptive psychological problems and/or criminal behavior [4 (3.3%)]

*The number of tests found in each category are included in brackets following each of the eight categories.*

**Appendix B** | A comparison of the 26 MMP1<sup>TM</sup> scales below with those retained in the MMP3<sup>TM</sup> [in brackets] indicates that 85% of the original scales were retained based on conducting nine sets Exploratory Factor Analysis.

1. Physical Fitness [retained in the MMP3<sup>TM</sup>]
2. Discomfort Tolerance [retained in the MMP3<sup>TM</sup>]
3. General Cognitive Competence [retained in the MMP3<sup>TM</sup>]
4. Situational Awareness [retained in the MMP3<sup>TM</sup>]
5. Applying Experience [retained in the MMP3<sup>TM</sup>]
6. Flexibility [retained in the MMP3<sup>TM</sup>]
7. Resourcefulness [retained in the MMP3<sup>TM</sup>]
8. Decision-Making [retained in the MMP3<sup>TM</sup>]
9. Action-Planning
10. Rapid Implementation
11. Self-Awareness
12. Self-Control [retained in the MMP3<sup>TM</sup>]
13. General Coping Ability [retained in the MMP3<sup>TM</sup>]
14. Self-Reliance [retained in the MMP3<sup>TM</sup>]
15. Decisiveness [retained in the MMP3<sup>TM</sup>]
16. Courage [retained in the MMP3<sup>TM</sup>]
17. Meaningfulness [retained in the MMP3<sup>TM</sup>]
18. Self-Motivation [retained in the MMP3<sup>TM</sup>]
19. Engagement [retained in the MMP3<sup>TM</sup>]
20. Determination [retained in the MMP3<sup>TM</sup>]
21. Perseverance [retained in the MMP3<sup>TM</sup>]
22. Humility
23. Social-Awareness [retained in the MMP3<sup>TM</sup>]
24. Social Responsibility [retained in the MMP3<sup>TM</sup>]
25. Connectedness [retained in the MMP3<sup>TM</sup>]
26. Well-Being [partly retained in the MMP3<sup>TM</sup>]





# Positive Healthy Organizations: Promoting Well-Being, Meaningfulness, and Sustainability in Organizations

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This contribution deals with the concept of healthy organizations and starts with a definition of healthy organizations and healthy business. In healthy organizations, culture, climate, and practices create an environment conducive to employee health and safety as well as organizational effectiveness (Lowe, 2010). A healthy organization thus leads to a healthy and successful business (De Smet et al., 2007; Grawitch and Ballard, 2016), underlining the strong link between organizational profitability and workers' well-being. Starting from a positive perspective focused on success and excellence, the contribution describes how positive organizational health psychology evolved from occupational health psychology to positive occupational health psychology stressing the importance of a primary preventive approach. The focus is not on deficiency and failure but on a positive organizational attitude that proposes interventions at different levels: individual, group, organization, and inter-organization. Healthy organizations need to find the right balance between their particular situation, sector, and culture, highlighting the importance of well-being and sustainability. This contribution discusses also the sustainability of work-life projects and the meaning of work in healthy organizations, stressing the importance of recognizing, respecting, and using the meaning of work as a key for growth and success. Finally, the contribution discusses new research and intervention opportunities for healthy organizations.

**Keywords:** healthy organizations, healthy business, positive psychology, occupational health psychology, positive organizational health psychology

## INTRODUCTION: HEALTHY ORGANIZATIONS AND HEALTHY BUSINESS

The World Health Organization's (WHO) primary function is to improve working conditions as occupational health is closely associated with public health (World Health Organization, 2007). The WHO is interested in factors impacting workers' health such as risks of disease and injury in the occupational environment, social and individual factors, and access to health services. The WHO proposed a Global Plan of Action on Workers' Health 2008–2017, which was endorsed by the World Health Assembly in 2007 with the following objectives: devising and implementing policy instruments for workers' health, promoting health in the workplace, improving the performance of and access to occupational health services, providing and communicating information for action and practice, and incorporating workers' health into other policies.

Work plays a key role in the health and well-being of workers, and it is important to recognize the negative impact on workers of the current world of work characterized by globalization and technology advances (Sparks et al., 2001). As a consequence of globalization, workers today

experience greater job insecurity as well as the negative effects of the introduction of information technology such as long hours of work at visual display terminals, which can be detrimental to their health (Sparks et al., 2001). Robots and other computer-assisted technologies taking over tasks previously performed by human beings adds to workers' concern about the future of jobs and wages (Acemoglu and Restrepo, 2017; Blustein et al., 2017). Both the psychological and physical well-being of workers is thus under threat. The instability and insecurity in today's world of work calls for the promotion of healthy organizations and healthy business as part of a primary prevention approach (Hage et al., 2007; Kenny and Hage, 2009; Di Fabio and Kenny, 2015, 2016). A major challenge in the 21st century is to create healthier societies by promoting healthy organizations (Di Fabio, 2017; Di Fabio et al., 2017).

In healthy organizations, culture, climate, and good practices create an environment that can promote employee health and safety as well as organizational effectiveness (Lowe, 2010). A healthy organization is conducive to healthy and successful business (De Smet et al., 2007; Grawitch and Ballard, 2016) thus underlining the strong link between organizational profitability and workers' well-being (Raya and Panneerselvam, 2013; Arnoux-Nicolas et al., 2016). Grawitch and Ballard (2016), too, maintain that a healthy organization is not only an organization that makes good profits but an organization that also promotes a healthy business environment through the well-being of workers.

## THE POSITIVE PERSPECTIVE

From a positive psychology point of view (Seligman and Csikszentmihalyi, 2000; Seligman, 2002; Di Fabio, 2016), the four factors in a healthy organization that need to be considered are the individual, the group, the organization, and inter-organizational processes (Henry, 2005).

At the individual level, interventions to improve the psychological health of the employees and the organization as a whole should be introduced. In particular, it is necessary to enrich jobs, improve employees' motivation, provide feedback, and increase employee participation (Judge et al., 2001; Henry, 2005; Di Fabio, 2017). Interventions are aimed at building strengths (Di Fabio, 2014a; Di Fabio and Kenny, 2015), enhancing positive individual resources such as emotional intelligence and resilience (Di Fabio and Saklofske, 2014a; Di Fabio, 2015), and promoting well-being (Di Fabio and Saklofske, 2014b; Di Fabio, 2015; Di Fabio and Kenny, 2015). Interventions aimed at bringing about personal development, confidence, and forgiveness enhance psychological maturity and can help employees interact with each other in a healthier and more productive manner (Judge et al., 2001; Henry, 2005; Di Fabio, 2017).

At the group level, a healthy group is a group that respects its members, takes time to listen to their views, tolerates different styles, and aims for win-win solutions. The focus is on team building (belonging to a team is central to most people's sense of well-being), group training (promotes identifying, accepting, and working with diversity), creative thinking (healthy groups are open to creative challenges from members) (Carter and

West, 1999; Henry, 2005; Di Fabio, 2017), and workplace relational civility (Di Fabio and Gori, 2016) in terms of relational decency, relational culture, and relational readiness for positive interactions with other employees, which can reduce conflict in organizations. Interventions aimed at creating healthy groups can help employees build strong bonds and the social support needed to face the complexities of today's world of work and preserve a sense of well-being (Carter and West, 1999; Henry, 2005; Di Fabio, 2017).

At the organization level, healthy organizations, too, are open to challenges. The focus is on making the organization a more efficient and happy place to work in and more competitive in the global world of work, creating an open culture characterized by sustained creativity and innovation, and promoting an organizational climate that supports positive relationships and leadership styles for the empowerment of employees through autonomy and self-organization (Taylor, 2002; Henry, 2005; Tetrick and Peiró, 2012; Di Fabio, 2017; Di Fabio et al., 2017).

At the inter-organization level, the focus is on making the boundaries of organizations more fluid and improving the relations between organizations. Partnerships, networking, and community involvement are important here (Stacy, 1996; Henry, 2005; Di Fabio, 2017). At this level, it is important to promote partnerships between organizations across the supply chain for their mutual benefit. It is also important to facilitate individual networking of employees within, outside, and across organizations to improve performance and business prospects. Also of importance are community programs that involve employees in some form of community work such as teaching the underprivileged, renovating buildings, etc. (Stacy, 1996; Henry, 2005; Di Fabio, 2017).

## OCCUPATIONAL HEALTH PSYCHOLOGY

The term "occupational health psychology (OHP)" was coined at the University of Hawaii (Raymond et al., 1990) with the focus on healthy workplaces (Quick et al., 1997) where people could produce, serve, grow, be valued, and use their talents and gifts to achieve high performance, high satisfaction, and well-being. Two OHP societies were later established: one in Europe and one in the United States. In 1999, the European Academy of Occupational Health Psychology was founded in Nottingham (United Kingdom) with the aim of applying psychology to occupational health (Cox et al., 2000). In 2004, the Society for Occupational Health Psychology (SHOP) was established in Portland (United States) with the aim of conducting psychological research on the health of workers and their problems in the workplace. Tetrick and Peiró (2012) state that in the mid-1990s OHP introduced a balanced approach to well-being and efficiency with the aim of improving the quality of work-life for workers. OHP's definition of health is consistent with that of the WHO, where health is seen not simply as the absence of illness (Tetrick and Peiró, 2012) but as optimal functioning (Tetrick, 2002; Hofmann and Tetrick, 2003; Tetrick et al., 2005). Tetrick and Peiró (2012) add that OHP extends the conceptualization of safety to include psychosocial factors in

the work environment such as climate, interpersonal relations, co-workers' support, and leadership. They stress the importance of recognizing the value of and integrating a positive approach into the realities of today's work environment (Tetrick and Peiró, 2012).

Occupational health psychology promotes a primary prevention approach (Tetrick and Peiró, 2012), focusing traditionally on the elimination of risks to employees' safety and health (Quick and Tetrick, 2003) and more recently on the promotion of positive experiences, particularly the development of safe and healthy work environments (Kelloway et al., 2008).

## POSITIVE ORGANIZATIONAL HEALTH PSYCHOLOGY

A positive primary preventive approach (Di Fabio and Kenny, 2016; Di Fabio et al., 2016) can be fostered in organizational contexts based on efforts to increase employees' resources (Seligman, 2002; Di Fabio et al., 2014, 2016). Primary prevention (Caplan, 1964) stresses the importance of preventing the development of a problem before it starts and of promoting psychological well-being. The focus is thus on building the strengths of employees/workers.

Positive organizational health psychology (Di Fabio, 2017) developed from a positive primary preventive perspective (Di Fabio and Kenny, 2016; Di Fabio et al., 2016) with the focus on enhancing and promoting resources and talents with interventions at the four levels discussed earlier: the individual, the group, the organization, and the inter-organization level. According to this perspective, healthy organizations need to create the right balance in their particular situation, sector, and culture, highlighting the importance of well-being and sustainability (Di Fabio, 2017). The challenge facing us today is to promote a healthier society by building healthy organizations with the focus on well-being from a cross-cultural perspective (Di Fabio, 2017).

The psychology of sustainability (Di Fabio, 2017) covers the issue of positive sustainable organizational development in a culturally diverse world (Akay et al., 2017; Di Fabio, 2017). Here the attention is on both hedonic well-being (Watson et al., 1988) and eudaimonic well-being (Ryan and Deci, 2001; Waterman et al., 2010). Hedonic well-being comprises an affective evaluation in terms of positive and negative affects (Watson et al., 1988) and a cognitive evaluation in terms of life satisfaction (Diener et al., 1985). Eudaimonic well-being concerns optimal functioning and self-realization (Ryan and Deci, 2001), life meaning and purposefulness (Waterman et al., 2010), and positive functioning (Ryff, 1989). Because meaningfulness is integral to sustainability (Di Fabio and Blustein, 2016), employees need to experience hedonic well-being and especially eudaimonic well-being in order to recognize the deepest meanings and authentic aspects of the Self, which can lead to a real sense of accomplishment and full self-realization as major forms of well-being. Meaningfulness represents the intrinsic motivational energy that promotes real sustainability for employees and their projects, performances, developments, and choices (Di Fabio, 2017).

Disabato et al. (2016) study of Diener's (1984) subjective well-being model revealed a strong relationship between hedonic well-being and happiness, pleasure, and engagement, while Ryff's (1989) psychological well-being model posits a strong relationship between hope, life meaning, and determination (goal-directed behavior). Both hedonic and eudaimonic well-being reveal similar relationships with curiosity and gratitude.

Positive organizational health psychology calls for an organizational approach centered on enhancing resources and building strengths and not on deficiency and failure from a primary prevention point of view (Hage et al., 2007; Kenny and Hage, 2009; Di Fabio and Kenny, 2015, 2016). It thus calls for early interventions aimed at increasing both the hedonic and eudaimonic well-being of workers at different levels (individual, group, organization, and inter-organization) to promote healthy organizations.

## SUSTAINABILITY OF WORK-LIFE PROJECTS AND MEANING FOR HEALTHY ORGANIZATIONS

The concept of the sustainability of work-life projects in terms of coherence, direction, significance, and belonging was developed as part of promoting well-being and healthy organizations (Schnell et al., 2013; Di Fabio, 2017). Here it is important to stress the shift from a motivational paradigm to a meaning paradigm (Di Fabio and Blustein, 2016; Di Fabio, 2017). A motivational paradigm concerns motivation and highlights intrinsic motivation in terms of doing a job to gain satisfaction; extrinsic motivation in terms of doing a job for reward or to avoid punishment; and lack of motivation in terms of lack of perception of the link between behavior and its consequences in the workplace (Tremblay et al., 2009; Deci and Ryan, 2010). The meaning paradigm (Di Fabio and Blustein, 2016) goes further: it posits the centrality of meaning in understanding how people can establish meaningful lives and meaningful work experiences, and links the sustainability of life-work projects to meaningful construction in their lives. The meaning paradigm is thus key to the sustainability, growth, success, and health of organizations (Di Fabio, 2017). Positive organizational narratives are essential for ensuring sustainable development in organizations (Di Fabio, 2017). Such narratives often appear complex and confusing, but they can be transformed into coherent stories that produce meaning, hope, possibilities, and success for healthy organizations (Di Fabio, 2017). These narratives can also be linked to the culture of each employee thus introducing a new positive perspective in a diversity management framework (Cox, 2001) where the organizational culture is transformed from a culture oriented to the majority to a culture that accommodates different value systems that impact on the work environment. This promotes the recognition of diversity as an opportunity to increase performance and new points of view for a healthy business.

The importance of a *quali + quanti* approach (Di Fabio and Maree, 2013) is that details of meaning are used to help construct and implement optimal stories starting with concrete

real-life work situations and ending with a focus on relationships, meaning, and details of meaning (Blustein, 2011, 2013; Di Fabio and Blustein, 2016; Di Fabio, 2017).

The “storied self” (Savickas, 2005, 2011) has developed from three different perspectives (Di Fabio, 2017). The first perspective “from facts” is based on grounded reflexivity (Guichard, 2004, 2005; Di Fabio, 2014b; Di Fabio and Maree, 2016), which is a process contained in the formula: “reflexivity in, on, for” as reflexivity is a dynamic and continuous process of self-awareness (Finlay and Gough, 2003; Guichard, 2004, 2005; Maree, 2013). The three levels of reflexivity are (Maree, 2013): reflection-in-action, that is, reflection on certain issues during the action or while the person acts; reflection-on-action, that is, retrospective thought, thought after an action or an event; reflection-for-action, that is, reflection before a particular action. Reflectivity refers thus to the capacity to analyze the present and to look at the past, individuating significant life themes of use in constructing a bridge toward the future (Di Fabio and Maree, 2016).

The second perspective “from perception of the facts” involves considering narrative identity (Guichard, 2004, 2010; Savickas, 2011, 2015), which is based on the concepts of Self as story, narratability, and biographicity (Guichard, 2010; Savickas, 2011). Through the stories of their different life experiences and their future plans, people can give meaning to their lives, develop their own identities and their own Self, and give meaning to their existence (Savickas, 2011). Narrative identity is thus “a person’s internalized and evolving life story, integrating the reconstructed past and imagined future to provide life with some degree of unity and purpose” (McAdams and McLean, 2013, p. 233). Better adapted people tend to tell stories in which they find redemptive meaning in suffering and adversity and construct life stories that feature themes of personal agency and exploration (McAdams and McLean, 2013). They tend also to achieve higher levels of mental health, well-being, and maturity (McAdams and McLean, 2013). In the narrative process, it is therefore important to facilitate the emergence of positive narratives, transforming negative stories about employees and about organizations into positive stories that enable employees to construct new ways to build their own new positive future reality.

The third perspective “from success experience” covers narrative success (Guichard, 2010; Savickas, 2011; Di Fabio, 2016) and narrative details of meaning (Di Fabio, 2017) with the emphasis on experiences of success and the achievement of success through relationships involving the worker, the team, and the organization (Di Fabio, 2017). By relating stories of success, employees can focus on positive experiences regarding their performance resulting in positive energizing psychological effects in terms of self-esteem and self-efficacy. They can then also more easily face new challenges by recognizing personal positive resources to construct new chapters of their successful lives thereby enhancing their well-being.

It is important to act timeously to strengthen the worker, the team, and the organization by focusing on positive work experiences in today’s changeable and competitive market place (Di Fabio, 2017). Organizational practices aimed at achieving positive work experiences and positive psychological narratives at

work are a key part of a primary prevention approach (Di Fabio, 2017).

## CONCLUSION

Positive healthy organizations are based on building resources and strengths with success as the criterion. A positive approach is adopted toward individuals, groups, and organizations as part of an early primary prevention intervention. The innovation of focusing on experiences of success in relationships between workers, teams, and organizations (Di Fabio, 2017) could open new opportunities for research and intervention. In fact, such relationships could be a central feature of healthy organizations (Blustein, 2006, 2011) and of new ways of conceptualizing organizational relationality. This refers not only to prosocial organizational behavior, organizational citizenship behavior, organizational support, organizational welfare, but also to the new construct of workplace relational civility (Di Fabio and Gori, 2016) that includes relational decency, relational culture, and relational readiness. Also, some current innovative leadership styles can make a significant contribution to healthy organizations (Clark, 2012; Hoffmeister et al., 2014). Ethical (Gallagher and Tschudin, 2010), sustainable (Hargreaves and Fink, 2004), and servant leadership (Ehrhart, 2004) can promote the development of healthy organizations. Ethical leadership aspires to strive for ethical goals and to empower members of the organization, emphasizing employees’ strengths rather than their weaknesses (Gallagher and Tschudin, 2010). Sustainable leadership refers to the shared responsibility not to exhaust the organization’s human and financial resources and to restrict social and environmental damage as far as possible (Hargreaves and Fink, 2004). And servant leadership refers to the premium placed on the personal growth and well-being of subordinates in the organization (Greenleaf, 2002). These leadership styles focus on promoting the resources, talents, and potential of employees thereby enabling them to realize themselves fully and achieve well-being as part of healthy organizations.

Recently, the concept of health-promoting leadership (Jiménez et al., 2016) was developed as a leadership style for creating conditions that enhance employee health in a healthy work environment. A new awareness is needed in organizational contexts of the value of developing early interventions and new approaches from a primary preventive perspective to foster healthy work environments. Enhancing the resources, strengths, and talents of workers and groups is the best way to achieve well-being and healthy workplaces. This calls for acknowledging the importance of relationships and meaning (Blustein, 2006, 2011, 2013; Di Fabio and Blustein, 2016) in constructing positive organizational narratives and thereby promoting healthy organizations.

## AUTHOR CONTRIBUTIONS

ADF ideated the structure, analyzed the literature, and wrote the manuscript.



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# The More, the Better?! Multiple vs. Single Jobholders' Job Satisfaction as a Matter of Lacked Information

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In recent decades, the working world has changed dramatically and rising demands on flexibility make the coordination of personal and professional life more difficult. Therefore, it is important that the incumbents are in possession of all necessary information concerning their job. This might be a key issue to remain satisfied. Simultaneously, atypical forms of employment have substantially increased in the labor market; one such form is holding more than one job. While the motives might differ from needing an additional income to broadening job opportunities, practicing several jobs requires coordination and thus, being informed. Building on research regarding organizational constraints and role ambiguity, we hypothesize that the paucity of information is negatively related to (dimensions of) job satisfaction. This effect should be stronger for multiple as compared to single jobholders; specifically when considering the job satisfaction with the social climate, given that being informed by others is an important factor in the coordination of several jobs. Data taken from the BiBB/BAuA-Employment-Survey provide a sample of 17,782 German employees (54% women), including 1,084 multiple jobholders (59% women). Job satisfaction was measured as employees global satisfaction and their satisfaction with facets dimensions: the social climate, structural working conditions, personal growth opportunities, and material incentives they receive for their work. Paucity of information was measured by the frequency of lacked information. Our study indicated that paucity of information was negatively related to both, global and all facets dimensions of job satisfaction. Multiple regression analyses further revealed interaction effects of paucity of information and form of employment. Specifically, the negative correlation of paucity of information with global as well as satisfaction with the social climate was stronger for employees' holding more than one job. These results were independent of age, gender, organizational tenure, working hours, socioeconomic occupational status, as well as important working conditions (workload and autonomy). Incumbents with less paucity of necessary job-related information are more satisfied, especially when they hold multiple jobs. Supervisors and colleagues are advised to provide all necessary information and to ensure that employees retain it.

**Keywords:** multiple jobholders, information, job satisfaction, atypical employment, work design

## INTRODUCTION

Nowadays, intensification of work and raising demands are common consequences for the working population (Kompier, 2006). New technologies, especially new communication technologies, have led to an increasing complexity and diversity of tasks in recent years (Neubach and Schmidt, 2006). Therefore, employees must be able to manage and coordinate a great deal of information. Communication (containing the aspect of providing information) is known to be an important factor shaping persons' health, attitudes and behavior (Pincus, 1986; Langan-Fox, 2002). Moreover, atypical employment forms are a growing global phenomenon (Keller and Seifert, 2013). It is associated with flexibility requirements – in particular, when employees hold more than one job. Do multiple jobbers differ from single jobholders in the way that information might be even more important for them as compared to single jobbers?

Overall, balancing out different personal and professional life domains became an important topic (Lunau et al., 2014; Nohe et al., 2015). To prevent conflicts between life domains or contexts, especially, strategies that help employees to coordinate their responsibilities, activities, and obligations are needed (Voydanoff, 2005; Van Dyne et al., 2007). Organizations generate much information that is not generally accessible to every employee although some of these pieces of information are necessary to fulfill the task (Langan-Fox, 2002). As an important aspect of organizational support, providing information is linked to commitment and performance (e.g., Bishop et al., 2000; Cortini, 2016; Cortini et al., 2016). Accurate information about one's performance and behavior facilitates coordination by effectively setting behavior altering goals for oneself (Manz, 1986; Manz and Neck, 2004). In contrast, a lack of necessary information aggravates coordination. Adverse work conditions such as lack of information are called job stressors as they increase the likelihood of employees to experience stress (Beehr and Franz, 2008). Consequently, we undertook this research to study employee reactions when they perceive a paucity of information; that is when they have incomplete, obsolete, or poorly timed information.

Research on the lack of information as a stressor has mainly focused on medical teams (Hunziker et al., 2010). For example, medical teams tend to discuss shared information but not unshared information (Larson et al., 1996). Unfortunately, necessary information is not always available (on time). However, efficient communication is an important factor among team members (Kurmann et al., 2012) that goes beyond medical teams. As an aspect of performance- or organizational constraints, the paucity of information prevents employees from translating ability and effort into job performance (Peters and O'Connor, 1980; Spector and Jex, 1998). Imagine a scenario in which John, a secretary, needs information from a manager to complete a form, but the manager is unavailable. Although, John has the skills, abilities and capacities to carry out this task, the paucity of information makes the accomplishment more difficult, if not impossible. In addition, paucity of information is included in the concept of role ambiguity by dealing with unclear expectations (Katz and Kahn, 1978); for instance, due to a lack of feedback.

Thus, paucity of information could not only be seen as an obstacle of task regulation, but also as regulation uncertainty referring to uncertainty about how to reach the goal (Sonnentag and Frese, 2012). Organizational constraints (Pindek and Spector, 2016) and role ambiguity (Örtqvist and Wincent, 2006; Fried et al., 2008; Eatough et al., 2011) are both known to be related to impaired job satisfaction. We therefore hypothesize that paucity of information will be negatively related to job satisfaction (Hypothesis 1).

Specifically, receiving too little information to perform well should affect one's satisfaction with the information system (i.e., colleagues or supervisors) as well as with structural conditions hindering transmission of information (Churchill et al., 1976). Moreover, as the paucity of information hinders goal attainment, it should affect the satisfaction with personal gains, in sense of personal growth opportunities (e.g., as skill utilization is supposed to be blocked) as well as material incentives one could have had reached (Peters and O'Connor, 1980). Thus, the paucity of information will be negatively related to:

- (H1a) Satisfaction with the social climate at work referring to being included and connected to colleagues and supervisor (satisfaction with the social climate),
- (H1b) Satisfaction with structural working conditions (i.e., the working materials, physical conditions, working hours) related to the context of the task that has to be fulfilled (satisfaction with structural conditions),
- (H1c) Satisfaction with developmental experiences that facilitate the growth in needed skills (satisfaction with growth opportunities), and
- (H1d) Satisfaction with the material incentives (i.e., with respect to career opportunities and income) a person receives at work (satisfaction with material incentives).

Research on multiple jobbers is limited (Zickar et al., 2004; Marucci-Wellman et al., 2016) although every twentieth German employee holds more than one paid job (German Federal Statistical Office, 2015). Holding multiple jobs is known to affect work-life balance (McClintock et al., 2004; Sliter and Boyd, 2014). In general, long working hours or working overtime are at the cost of recovery (Geurts, 2014). Compared with single jobbers, multiple jobbers spend more time working (McClintock et al., 2004; Sliter and Boyd, 2014), endure longer working hours or overtime work. Beyond the quantitative workload, multiple jobbers must expend additional effort in coordinating and balancing different personal and professional life domains (McClintock et al., 2004; Olos and Hoff, 2007). Recall the scenario of John, the secretary, struggling with a lack of information. Perhaps the solution is to wait until the manager is available, or to ask others who might have answers, or to search for documents including the missing information. Whatever solution is selected, time is invested. Such solutions are particularly difficult when coordinating more than one job. Working overtime in one's first job to accomplish a task might be impossible without causing negative consequences for the second job. Based on current studies we assume that multiple job holding and paucity of information intensify one another's adverse effects (De Cuyper



and De Witte, 2005; Virtanen et al., 2011). Thus, we expect a stronger association between paucity of information and job satisfaction for multiple as compared to single jobbers (Hypothesis 2).

Information transmission is done (either directly or indirectly) by communication (Langan-Fox, 2002). Recent research on instrumental support show that supervisor support helps to coordinate between different life domains (Tucker et al., 2016). Task assistance (i.e., to help the person to get the task done) as a part of instrumental support has been most strongly associated with job satisfaction (Colbert et al., 2016). Giving information could even be seen as some kind of immaterial reward, if it is shared exclusively during small groups (Van Yperen, 1998). Moreover, social support – such as giving information to manage a task – provides an inherent social message about how the person is seen by (significant) others (Cobb, 1976; Semmer et al., 2007). Instrumental social support (i.e., by assisting with problem solving through giving information) is often valued for the inherent expression of appreciation (e.g., Semmer et al., 2008). In contrast, the paucity of necessary information might be seen as a sign of disrespect threatening the self (cf. stress as offense to self; Semmer et al., 2007). If the information is essential to complete tasks, employees will perceive that the transmitter, whether supervisor or colleagues, is responsible for providing the information (Tschan et al., 2009). Tschan et al. (2009) even point to the risk of illusory transactive memory, i.e., that group members expect experts who hold important information to be aware to inform them, if necessary leading to the risk that group members do not seek for additional information themselves. In general, providing support is known to increase a person's perceived control over his or her environment, helping the person to coordinate different obligations (Greenberger and Strasser, 1986; Thompson and Protas, 2006). Especially in case of uncertain conditions, employees rely on supervisors and colleagues with respect to information seeking, such as in case of organizational change (Van der Voet et al., 2014; Tanner and Otto, 2016) or being a newcomer in the organization (Wolfe Morrison, 1993). Similarly, spending additional effort in information seeking activities is particularly difficult when coordinating more than one job. While there might be no difference in the attribution to structural conditions, growth opportunities or material incentives, if necessary information is not available (on time) to accomplish the task, especially multiple jobbers might attribute this lack of information to colleagues and supervisors who should inform them. Considering that holding multiple jobs requires additional coordination efforts, multiple jobbers should show a more negative association between the paucity of information and satisfaction with the social climate (H2a).

## MATERIALS AND METHODS

### Participants and Procedure

Data for the current analyses refer to the BiBB/BAuA Employment Survey of the Working Population on Qualification and Working Conditions in Germany in 2012. This

representative survey was conducted by the Federal Institute for Vocational Education (BIBB) and the German Federal Institute for Occupational Safety and Health (BAuA). Altogether 20,036 volunteers above 15 years of age who worked at least 10 h per week completed a highly standardized interview by trained interviewers on the phone (Rohrbach-Schmidt and Hall, 2013).

Interviewers asked participants whether they had one or more gainful occupations to differentiate single and multiple jobbers. Afterward, participants were asked to report which occupational activity they currently pursued to be denoted as main activity according to the time they spend in this activity. All following questions about working conditions and context were focused on this main activity. As dependent employees and business founders might differ in organizational information processes, we focused on main activities within a dependent employment relationship. Data of 35 participants were excluded due to missing information with respect to employment status. To avoid potentially confounding effects of the employment status, we excluded 71 family workers and 2,129 self-employed persons (including free-lance workers and independent contractors). Moreover, we excluded 19 student research assistants/ student employees. The final sample thus consisted of 17,782 participants (53.87% women), including 3,142 blue collar workers, 13,075 white collar workers, 65 persons who were unable to decide between those two categories, and 1,500 civil servants. Among the total participants, 1,084 (6.1%) were multiple jobbers (59.23% women). Participants overall had a mean age of 45.61 years ( $SD = 10.57$ ): single jobbers had a mean age of 45.71 years ( $SD = 10.56$ ); multiple jobbers had a mean age of 43.97 (10.56).

## Measures

### Job Satisfaction

Job satisfaction was measured both by single-item measure of global job satisfaction and by employees' satisfaction with various facets of his/her job, as they are argued to be conceptually different (Scarpello and Campbell, 1983; Faragher et al., 2005). Participants were asked how satisfied they are regarding various aspects of their main occupational activity and, afterward, about their global job satisfaction ("And now, as an overall summary: How satisfied are you with your entire occupational activity?"). Single-item measures of global job satisfaction are as reliable and valid as measures containing different facets (Wanous et al., 1997).

Each facet was measured by a single item. Confirmatory factor analysis was used to classify facets into higher-order dimensions (see below): (1) satisfaction with rather structural aspects of the task (working hours, physical working conditions and work equipment, including furniture and software; three items), (2) satisfaction with manifest aspects referring to material incentives (income and career opportunities; two items;  $r = 0.36$ ,  $p < 0.001$ ) as well as satisfaction with psycho-social functions – (3) satisfaction with the social climate (including the working climate and the direct supervisor; two items;  $r = 0.55$ ,  $p < 0.001$ ) and (4) satisfaction with developmental experiences that facilitate growth (the opportunities to apply skills, the opportunities for continuing training and learning and the type and content of

work; three items). The response scale ranged from 1 (not satisfied) to 4 (very satisfied). Cronbach's alpha was 0.55 with respect to satisfaction with structural working conditions and 0.71 for satisfaction with personal growth.

To validate the measure, we compared the assumed four-factor solution with a global one-factor job satisfaction model in which all items were modeled to load on the global factor. The confirmatory factor analysis including the four factors described above resulted in an acceptable fit for the multi-factor solution. The chi-squared goodness-of-fit index ( $\chi^2$ ) failed to indicate a good fit between the observed covariance matrix and the hypothesized model [ $\chi^2(29,15,410) = 23,88.83$ ,  $p < 0.001$ ], probably because of the large sample size. The validity of a model must be assessed by more than one index (Tanaka, 1993). The root mean square error of approximation (RMSEA) refers to the discrepancy per degree of freedom for the model. The obtained value was 0.07, an appropriate fit as its value was lower than 0.08 (Browne and Cudeck, 1993). The adjusted goodness-of-fit index (AGFI) explains the overall variation of the proposed model. The value was 0.94 and thus exceeded 0.90, constituting a good fit (Jöreskog and Sörbom, 1993). In addition, the standardized root mean square residual (SRMR; i.e., a measure of the average of the fitted residuals) was 0.04, presenting an excellent fit (Jöreskog and Sörbom, 1993). In summary, the indices indicated a good fit between the data and our constructs, validating our measures. The second model was composed of a general factor. The confirmatory factor analysis failed to support the validity of the measures; the fit indices were  $\chi^2(35,15410) = 6906.67$ ,  $p < 0.001$ ; RMSEA was 0.11; AGFI was 0.87. Only the value of SRMR was 0.06 representing an acceptable fit. Consequently, the first model composed of various factors was a more appropriate fit than the global one-factor model.

### Paucity of Information

Paucity of information was measured by a single item: "In your workplace, how often do you lack the information you need to perform your work correctly?" The response scale ranged from 1 (never) to 4 (often).

### Control Variables

The current study aims to demonstrate the importance of a paucity of information controlling for a set of context and person variables as well as working conditions related to job satisfaction. Besides gender and age of a person, the organizational context might affect a person's job satisfaction. We therefore controlled for organizational tenure, working hours, and the International Socio-Economic Index of occupational status (ISEI; Ganzeboom et al., 1992) of the main activity. Organizational tenure reflects the work experience related to the main activity. Work experience is known to be positively related to job knowledge (Schmidt et al., 1986) and facilitates job crafting (Niessen et al., 2016). Both – age and tenure – tend to be positively related to job satisfaction (e.g., Ng and Feldman, 2010; Costanza et al., 2012). Participants were asked to report their job experience (in years) within the organization of the main activity. In addition, we controlled for working hours of the main activity as they affect the duration that one is exposed to a (stressful) working situation.

Moreover, employees might differ in their job satisfaction due to their socio-economic occupational status. Existing studies show, that comparatively less-educated workers tend to have inferior working conditions, low income levels, and job insecurity (Kalleberg et al., 2000; Zytionoglu and Muteshi, 2000). The ISEI is an objective measure for socio-economic status based on the International Standard Classification of Occupations (ISCO-88). It combines weighted averages of the income and education of incumbents of each classified occupation (for detailed information see: Ganzeboom et al., 1992).

Moreover, we controlled for workload and autonomy as central working conditions (Karasek, 1979) that are known to be related to job satisfaction (Van der Doef and Maes, 1999). As task-related stressor, workload hinders the fulfillment of the task (Sonnentag and Frese, 2012). Autonomy is typically conceptualized as a key work resource helping to coordinate demanding work schedules (Rau and Hyland, 2002). Workload and autonomy were each assessed by single items ("How often does it happen in your occupational activity . . ."; workload: "that you have to work under strong pressure of time or performance?"; autonomy: "that you can plan and schedule your work on your own?"). The response scales ranged from 1 (never) to 4 (often).

## Statistical Analyses

We conducted hierarchical regression analyses including variables in three different blocks. In step one, control variables (including context and person variables as well as working conditions) were entered. Second, we entered the paucity of information and holding multiple jobs (main effect model). In step three, we entered the interaction term (interaction effect model). All predictor variables were centered at their grand mean to facilitate the interpretation of effects (Aiken et al., 1991). To confirm our first hypothesis (H1, H1a-d), paucity of information should have a significant main effect on job satisfaction. To confirm our interaction hypothesis (H2, H2a), the interaction term must be significant, and the pattern of the simple slopes must reveal stronger negative effects for multiple jobbers. We calculated simple slope tests using an online tool by Preacher, Curran, and Bauer (Preacher et al., 2006). Simple slopes involve the regression equation for the level of the paucity of information depending on the form of employment (multiple or single jobbers) and test whether the respective slope is different from zero.

## RESULTS

### Descriptive Results

Table 1 shows the descriptive statistics. As expected, the paucity of information was negatively correlated with general job satisfaction and with all dimensions of job satisfaction. Altogether, 6% of the participants reported to hold more than one job. Interestingly, holding more than one job was unrelated to paucity of information. However, employees who held multiple jobs reported less satisfaction with their jobs in general, their personal growth opportunities, and their material incentives. In addition, all control variables were significantly associated

**TABLE 1 |** Means (M), Standard Deviations (SD), and Zero-Order Correlations of the Study Variables.

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
(1) Global job satisfaction	3.18	0.59	—												
<b>Dimensions of job satisfaction</b>															
(2) Social climate	3.12	0.67	0.47**	—											
(3) Structural conditions	2.94	0.51	0.47**	0.40**	—										
(4) Growth opportunities	3.07	0.53	0.56**	0.42**	0.43**	—									
(5) Material incentives	2.70	0.66	0.43**	0.29**	0.38**	0.43**	—								
(6) Paucity of information	2.26	0.90	−0.24**	−0.32**	−0.24**	−0.21**	−0.17**	—							
(7) Multiple jobs <sup>a</sup>	0.06		−0.03**	0.00	−0.01	−0.02**	−0.06**	−0.01	—						
<b>Context variables</b>															
(8) Tenure (years)	14.21	11.17	0.03**	−0.08**	0.01	0.05**	0.12**	0.02**	−0.08**	—					
(9) Working hours (week)	38.05	11.20	−0.02*	−0.08**	−0.10**	0.09**	0.05**	0.13**	−0.08**	0.07**	—				
(10) ISEI	47.06	15.19	0.08**	0.03**	0.13**	0.15**	0.13**	0.06**	−0.02*	0.08**	0.16**	—			
<b>Person variables</b>															
(11) Gender <sup>b</sup>	0.46		−0.01	−0.01	0.03**	0.02*	0.05**	0.07**	−0.03**	0.05**	0.39**	−0.01	—		
(12) Age	45.61	10.57	0.01	−0.06**	−0.02*	0.01	0.03**	−0.03**	−0.04**	0.50**	−0.03**	0.01	−0.03**	—	
<b>Working conditions</b>															
(13) Workload	3.36	0.81	−0.10**	−0.14**	−0.16**	0.00	−0.06**	0.22**	−0.01	0.07**	0.25**	0.16**	0.05**	−0.01	—
(14) Autonomy	3.54	0.89	0.13**	0.09**	0.16**	0.19**	0.13**	0.02**	0.01	0.09**	0.09**	0.24**	−0.00	0.04**	0.09**

Sample size:  $N \leq 17,782$  employees. <sup>a</sup>0 = no, 1 = yes, <sup>b</sup>0 = woman, 1 = man. \* $p \leq 0.05$ , \*\* $p \leq 0.01$  (2-tailed).

with job satisfaction in general and/or satisfaction with job dimensions. Specifically, general job satisfaction was related to all context and working conditions but unrelated to age and gender. Further exceptions comprised tenure being unrelated to satisfaction with structural conditions, workload and age with respect to satisfaction with growth opportunities, and gender being unrelated to satisfaction with the social climate.

## Test of Hypotheses

**Table 2** shows results of the regression analyses. In the main effect model, we examined the effect of paucity of information on job satisfaction, controlling for personal and context variables as well as workload and job autonomy as important working conditions. Paucity of information was negatively associated with general job satisfaction and with all dimensions of job satisfaction, confirming H1 and H1a to H1d. In line with Hypothesis 2, paucity of information and multiple-job holding significantly interacted to predict global job satisfaction. The interaction effect was also significant with respect to satisfaction with the social climate (H2a).

According to simple slope tests, within the scope of global job satisfaction, the association between the paucity of information and satisfaction was stronger for multiple ( $b = -0.201$ ,  $p < 0.01$ ) as compared to single jobbers ( $b = -0.157$ ,  $p < 0.01$ ). A similar pattern was found with respect to job satisfaction with the social climate (multiple jobbers:  $b = -0.275$ ,  $p < 0.01$ ; single jobbers:  $b = -0.227$ ,  $p < 0.01$ ). This pattern aligns with Hypothesis 2 and Hypothesis 2a (**Figures 1, 2**). In line with statistical tradition (Heinrichs et al., 2003), we chose values of 1 SD below and above the sample mean.

## Additional Analyses

To rule out the possibility that our findings were caused by the amount of time employees spent at their main occupational activity and that lower working hours and not multiple jobs shape the relation of paucity of information and job satisfaction, we examined working hours to moderate the negative association between the paucity of information and job (dimensions) satisfaction. No significant interaction effect with respect to global job satisfaction ( $b = 0.000$ ,  $p = 0.907$ ) and to satisfaction with the social climate ( $b = -0.001$ ,  $p = 0.208$ ) occurred. In addition, no significant interaction occurred with respect to satisfaction with material incentives and growth opportunities, but with respect to structural working conditions ( $b = -0.002$ ,  $p < 0.01$ ).

## DISCUSSION

### Interpretation of Results

In this study, we used research on organizational constraints and role ambiguity to build our proposals that paucity of information is negatively associated with global job satisfaction and job dimensions satisfaction. These associations were assumed to be stronger for multiple compared to single jobbers; especially with respect to satisfaction with the social working climate. Based on a representative sample of 17,782 German employees, we

**TABLE 2 |** Summary of multiple regression analysis predicting global job satisfaction and job dimensions satisfaction.

Step	Variable	Global job satisfaction			Satisfaction with the social climate			Satisfaction with structural conditions		
		<i>B</i> (final)	<i>SE<sub>B</sub></i>	<i>t</i>	<i>B</i> (final)	<i>SE<sub>B</sub></i>	<i>t</i>	<i>B</i> (final)	<i>SE<sub>B</sub></i>	<i>t</i>
1	<b>Context variables</b>									
	Tenure (years)	0.001	0.000	3.01**	−0.003	0.001	−6.68**	0.001	0.000	2.14**
	Working hours (per week)	0.000	0.000	0.80	−0.004	0.001	−7.94**	−0.006	0.000	−14.91**
	ISEI	0.003	0.000	8.52**	0.002	0.000	5.02**	0.005	0.000	18.31**
	<b>Person variables</b>									
	Gender <sup>a</sup>	0.004	0.010	0.42	0.034	0.011	3.09**	0.086	0.008	10.55**
	Age	−0.001	0.000	−1.70	−0.003	0.001	−5.32**	−0.002	0.000	−4.38**
	<b>Working conditions</b>									
	Workload	−0.090	0.006	−15.97**	−0.114	0.006	−17.68**	−0.107	0.005	−22.42**
	Autonomy	0.085	0.005	16.61**	0.083	0.006	14.30**	0.089	0.004	20.53**
2	<b>Main effect model</b>									
	Paucity of information	−0.154	0.005	−31.65**	−0.230	0.005	−42.28**	−0.122	0.004	−29.43**
	Multiple jobs <sup>b</sup>	−0.071	0.018	−3.91**	−0.035	0.020	−1.75	−0.042	0.015	−2.70**
3	<b>Interaction effect model</b>									
	Interaction	−0.044	0.019	−2.27*	−0.048	0.022	−2.24*	−0.001	0.016	−0.091
	<i>R</i> <sup>2</sup> final model (Adj <i>R</i> <sup>2</sup> )	0.090** (0.089)			0.133** (0.133)			0.129** (0.129)		
Step	Variable	Satisfaction with growth opportunities			Satisfaction with material incentives					
		<i>B</i> (final)	<i>SE<sub>B</sub></i>	<i>t</i>	<i>B</i> (final)	<i>SE<sub>B</sub></i>	<i>t</i>			
1	<b>Context variables</b>									
	Tenure (years)	0.002	0.000	3.41**	0.008	0.001	15.27**			
	Working hours (per week)	0.003	0.000	8.41**	0.001	0.000	2.91**			
	ISEI	0.004	0.000	13.65**	0.005	0.000	14.03**			
	<b>Person variables</b>									
	Gender <sup>a</sup>	−0.012	0.009	−1.42	0.046	0.011	4.28**			
	Age	−0.001	0.000	−2.10**	−0.003	0.001	−5.53**			
	<b>Working conditions</b>									
	Workload	−0.032	0.005	−6.24**	−0.082	0.006	−13.14**			
	Autonomy	0.095	0.005	20.72**	0.074	0.006	13.09**			
2	<b>Main effect model</b>									
	Paucity of information	−0.137	0.004	−31.15**	−0.132	0.005	−24.13**			
	Multiple jobs <sup>b</sup>	−0.034	0.016	−2.09*	−0.134	0.020	−6.62**			
3	<b>Interaction effect model</b>									
	Interaction	−0.021	0.017	−1.22	−0.022	0.022	−1.03			
	<i>R</i> <sup>2</sup> final model (Adj <i>R</i> <sup>2</sup> )	0.104** (0.103)			0.084** (0.084)					

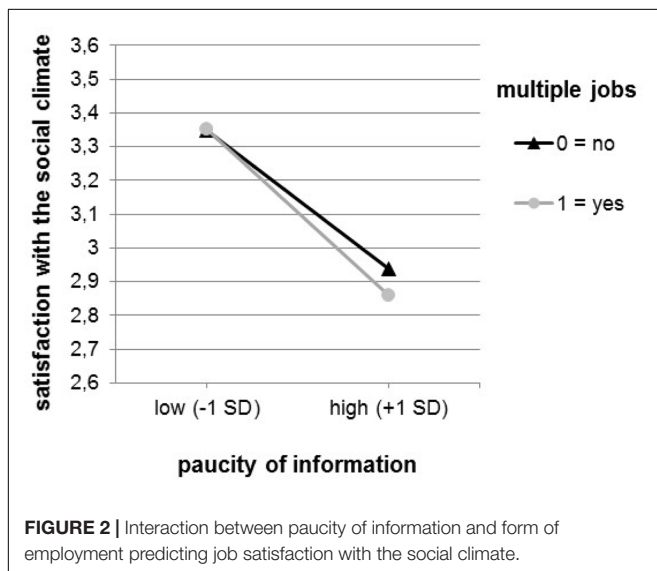
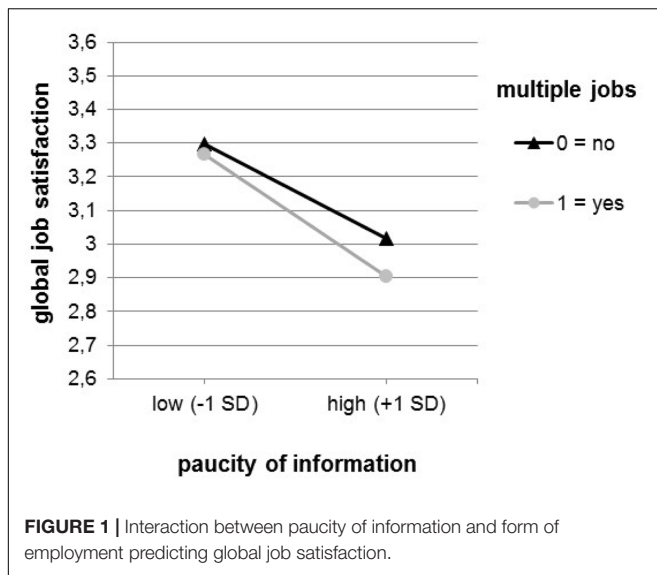
Sample size:  $N \leq 17,782$  employees. *B*, unstandardized regression coefficient, *SE<sub>B</sub>*, standard error, *t* = *t*-value. All predictors were centered at their mean. <sup>a</sup>0 = woman, 1 = man, <sup>b</sup>0 = no, 1 = yes. \* $p \leq 0.05$ ; \*\* $p \leq 0.01$  (2-tailed).

found the paucity of information to be negatively related to job satisfaction in general as well as with respect to the dimensions of material incentives, structural conditions, growth opportunities, and satisfaction with the social climate.

One of the most frequently studied outcomes of job stressors is job satisfaction (Dormann and Zapf, 2002; Faragher et al., 2005; Pindek and Spector, 2016). It is seen as a component of psychological well-being (Diener et al., 2003) referring to the extent to which a person likes or dislikes his or her job (Spector, 1997). Beside material incentives, work or a job also

allows social contacts and appreciation, gives structure, maintains and advances our skills, and is part of our identity (Jahoda, 1983; Semmer and Meier, 2014). Occupational success is bound to the fulfillment of one's working task to the extent that this fulfillment allows the accomplishment of valued goals (c.f. Grebner et al., 2010). Paucity of information hinders employees to accomplish their tasks (organizational constraints), as well as it leads to uncertainty about how to fulfill the task (role ambiguity) which in turn impairs job satisfaction (Örtqvist and Wincent, 2006; Fried et al., 2008; Eatough et al., 2011;





Pindek and Spector, 2016). Considering that the paucity of information hinders the employee to fulfill the task it also hinders the person to accomplish valued goals in sense of personal growth opportunities as well as material incentives as well as leading to frustration (Peters and O'Connor, 1980). In line with these considerations, we found the paucity of information to be negatively related to job satisfaction in general as well as to all dimensions of it. Especially in a fast changing environment, managing and coordination information seems to be an important challenge. Moreover, aspects of working conditions (such as a supportive climate or the paucity of information) or even tasks that have to be fulfilled might appear in a different light due to their inherent social message (cf., Semmer et al., 2007). Appreciation is an important element of social support (Semmer et al., 2007) referring to the perception “that one is worthwhile, capable, and a valued member of a

group of individuals” (Sarason et al., 1996, p. 21). In other words, providing support (e.g., in terms of giving information) reveals that these colleagues and supervisor care about the employee. It might increase the sense of control and the employee might feel obligated to reciprocate. Thus, social support is positively related to employees’ commitment and performance (Bishop et al., 2000; Allen and Shanock, 2013; Cortini, 2016; Cortini et al., 2016). Supporting the person to fulfill the task was found to be most strongly associated with job satisfaction (Colbert et al., 2016). In contrast, behavior or assigned tasks that indicate disrespect or lack of appreciation as its social message constitutes a threat to the person by offending the self (e.g., Semmer et al., 2007). Recall again the scenario of John, searching for information that should be already there. This might be seen as an unnecessary task that would not exist, if things were organized differently. Perhaps he thought this task should be done by someone else because it does not correspond to his occupational role (i.e., an unreasonable task). Previous research found such illegitimate tasks to be related to stress-related behavioral (e.g., counterproductive work behavior; Semmer et al., 2010) and cognitive-emotional (e.g., lower job satisfaction; Stocker et al., 2010; Björk et al., 2013; Eatough et al., 2015) changes. Thus, providing adequate information might become of particular importance in the sense of goal attainment, organizational support, and legitimacy of task assignment. It constitutes a positive step toward employee commitment, performance and satisfaction. According to our results, the paucity of information seems to be practically significant over and above workload and autonomy that are known to be important working conditions related to job satisfaction (Van der Doef and Maes, 1999). It must, however, be critically stated that as long as the person succeeds in the task, the paucity of information could also be linked to a sense of pride and satisfaction: John might be proud of managing the task without proper information. It would be advisable for future research to focus on daily events of lacked information and job satisfaction taking into account if the person successfully accomplished the task.

Work is a major cause of stress for many people in a stressful world. For jobholders who must coordinate multiple jobs, to be aware of needed information seems to be especially important. In line with our expectations, we found multiple jobbers more likely to be less or not satisfied with their job in general as well as with the social climate when they perceived a lack of information. One core element of adequate information processes is the interaction with supervisors and colleagues and the embeddedness in work-related social networks. It is plausible that employees holding multiple jobs have less time to seek out information, but concentrate on the specific task (cf., Wolfe Morrison, 1993). If necessary task-related information is not given, employees might rely on their colleagues or supervisor to inform them (Tschan et al., 2009). Transmission of information represents a central management duty – especially under conditions of uncertainty. As uncertainty associated with change is often based on missing or, respectively, failed communication, communication is a main concern in the research of change management and implementation (for an overview see Grant and Marshak, 2011). Particularly in times of organizational

change, supervisors play a central role in communicating visions, transmission of goals and norms to employees, and providing a mutual high quality communication (e.g., Van der Voet et al., 2014; Tanner and Otto, 2016). In addition, research on semi-autonomous teams indicates that informal communication among colleagues could compensate for inefficient information systems (Morgeson et al., 2006). As mentioned above, social support (e.g., by providing information) is known to increase a persons' perceived control over their environment (Greenberger and Strasser, 1986; Thompson and Prottas, 2006). In contrast, employees are less satisfied with the social working climate when they lack information, especially multiple jobbers who need control to coordinate more than one job. A recent meta-analysis showed that contingent workers, another type of atypical workers, had lower job satisfaction than permanent workers (Wilkin, 2013). Even if multiple jobbers receive salaries similar to those of some colleagues holding single jobs, they react similarly to contingent workers in that they might feel less identified and integrated because of switching between different professional lives. Future research should consider social integration as a core component in studying multiple jobbers. A lack of social embeddedness – especially when help (in terms of providing information) is needed – might impair satisfying social contacts and appreciation. However, the results show no difference between multiple jobbers and employees with one job regarding the effect of paucity of information on satisfaction with rather structural aspects of the task, with manifest aspects referring to material incentives and with developmental experiences that facilitate the growth. Recall that individuals may have various motives for working at several jobs, including economic needs or desires to broaden job opportunities. Motives might then affect reactions to the paucity of information and aspects of job satisfaction. Therefore, future studies should include the heterogeneous nature of multiple jobbers in the analyses.

Interaction effects did not depend on how much time employees spent at work (or more specific: in their main occupational activity) and in the organization of the main occupational activity. Previous research on part-time work suggests that spending less time in a work place might lead to being less included in the team and getting less challenging tasks (e.g., Rauchert et al., 2016). However, our additional analyses showed that effects on employees' satisfaction in general and with the social climate could not be reduced to spending less time at the main occupational activity. Working hours did not enhance the effect of the paucity of information on job satisfaction in general or with the social context.

## Strengths and Limitations

This is the first study examining the paucity of information within the scope of holding multiple jobs. The data are based on a representative sample of German employees. Although effects are small, the paucity of information was found to be practically significant with respect to job satisfaction over and above workload and autonomy as important working conditions. However, there are some limitations to our study that should be acknowledged. First, results of cross-sectional studies do allow many alternative explanations of the observed effects,

as reverse causation cannot be precluded (Zapf et al., 1996). Consequently, future research should replicate effects using a longitudinal design. Second, all measures were based on self-reports of participants, raising the risk of overestimating results due to common method biases (Podsakoff et al., 2003; but see also Semmer et al., 1996; Spector, 2006). Related to this shortcoming, the influence of trait negative affectivity on job stressors and work attitudes has been discussed in the literature several times (Semmer et al., 1996; Spector, 2006); however, it could not explain differences in well-being between different jobs (Schaubroeck et al., 1998). Third, we studied variables only in relation to the self-prescribed main job, which should be most relevant to perceived stress and job satisfaction (Zickar et al., 2004). However, multiple job holding provides an alternative source of valuable work related outcomes. For example, the primary and secondary jobs could have combined work characteristics that affect job satisfaction in the primary job (Betts, 2002). Future studies should account for aspects of all jobs of the incumbents. Moreover, we used a single item to assess the paucity of information. Although single item measures are known to be valid measures (Wanous et al., 1997; DeSalvo et al., 2006), based on the conceptualization of organizational constraints and role ambiguity, task-related information might be a rather broad concept (e.g., including know-how and feedback) that needs to be explored in more detail. Future research should also be aware that too much information might confound task focus and impair well-being.

## Practical Implications

This study adds to the limited research on multiple jobbers and the paucity of information. Our results indicate that the perception of a paucity of information is negatively related to job satisfaction, especially for multiple as compared to single jobbers. Job satisfaction is known to be associated with performance, work behavior and mental health (Faragher et al., 2005; Fried et al., 2008). Thus, dissatisfaction might lead to severe consequences for both person and organization. Taking into account the rise of new (communication) technologies (e.g., Kompier, 2006) the paucity of information seems to be an important, however, widely neglected topic in modern society. The findings have practical implications: They underline the importance of providing adequate information to employees in general, not only performance feedback but also all information needed to accomplish tasks. Employees expect their supervisors and colleagues to provide them with necessary information (Tschan et al., 2009). Multiple jobbers who lack information are especially likely to be less satisfied with the workplace social climate. In general, organizations should create a communication climate that is characterized by trust, transparency and openness. A transparent information system integrated into this climate could help to find the right source of information in case the person is aware that some information is missing. Supervisors as well as colleagues should also be sensitive to provide all necessary information and to double-check that the given information could be remembered. Effective leadership particularly requires skillful communication. Hence, especially supervisors should be trained to be good communicators. In particular, quantitative

information places such a high load on working memory that it requires repeated updating to ensure accuracy; thus strategies such as providing explicitly encoded information might enhance the accuracy of information transmission. Strategies like providing information explicitly encoded as to be transmitted – for instance, “John, please note the third update on XY, as constituted on 1 January 2017” instead of “Once again, we talked about an update on XY today” – might increase the accuracy of the information transmission process (Morris et al., 1977; Bogenstätter et al., 2009). A clearer information transmission process could enable employees to better coordinate their duties. In sum, employees, especially multiple jobbers, will have more job satisfaction if they receive all necessary job-related information.

## ETHICS STATEMENT

The study was performed according to requirements: participants were informed of their rights and guaranteed anonymity. All

participants gave informed consent in accordance with the Declaration of Helsinki.

## AUTHOR CONTRIBUTIONS

LH and MK developed the concept. KO, BF, and MK structured the ideas and MK did the analyses and wrote the first draft. All authors read and approved the final manuscript.

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