POSITIVE PSYCHOLOGICAL INTERVENTIONS BEYOND WEIRD CONTEXTS: HOW, WHEN, AND WHY THEY WORK

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Editorial: Positive psychological interventions: How, when and why they work: Beyond WEIRD contexts

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Editorial on the Research Topic
Positive psychological interventions beyond weird contexts: How, when, and why they work

Introduction

Since the concept of "positive psychology" was put forward in 1998 (Seligman, 2002), the corresponding intervention field has also developed, effectively transforming theory into a dynamic set of pathways to support individual and community wellbeing efforts. Positive psychological interventions (PPIs) is the general term for a series of practical application activities designed to strengthen "positive resources" (van Zyl et al., 2017; Ng and Ong, 2022). PPIs offer a unique perspective in the applied psychological space (van Zyl and Rothmann, 2022). Traditionally, applications of applied psychology were designed to address deficits and manage symptoms to help individuals and communities rebound from adversity and recover from injury (Seligman and Csikszentmihalyi, 2000). However, such approaches are limiting; they characterize individuals and communities

primarily through their deficits and symptoms (van Zyl et al., 2020a; Richter et al., 2021). To combat these limitations, PPIs are designed around the identification and utilization of personal strengths as a means to facilitate personal growth, community functioning and organizational thriving (van Zyl and Rothmann, 2021; van Zyl and Salanova, 2022).

These PPIs are shown to have significant short- and medium-term effects which increased their popularity in practice (Jorgensen-Graupner and van Zyl, 2019; Krifa et al., 2021; Van Zyl et al., 2021). Resultantly, an ever-increasing array of PPIs are developed and validated to facilitate positive emotional experiences (e.g., Quoidbach et al., 2015), character strengths (e.g., Chérif et al., 2021), and community functioning/wellbeing (e.g., Shankland and Rosset, 2017). Moreover, given the increased interest in developing wide arrays of PPIs, researchers are becoming increasingly interested in the effectiveness of these interventions in different contexts, communities and cultures (van Zyl et al., 2020b; Duan et al., 2022). Despite these gains, the field must continually move in a more inclusive and socially just direction to ensure all communities have access to effective, reliable, and culturally responsive PPIs (Pedrotti et al., 2021).

At the present, PPIs are criticized for being a Western-, Educated-, Industrialized-, Rich- and Democratic- (WEIRD) enterprise, neglecting under-privileged, under-represented, and under-served groups' experiences and expressions of strength, while also ignoring the cultural origins of the positive states, traits, and behaviors PPIs aim to improve (Hendriks et al., 2019; Stander and van Zyl, 2019; Worthington and Van Zyl, 2021). Lack of cultural representation in positive psychology is a well-established pattern within the literature (Donaldson et al., 2021; van Zyl and Rothmann, 2022). For instance, <1% (0.42%) of all strength-based and PPI articles include representation from Lesbian, Gay, Bisexual, Transgender, and Queer+ (LGBTQ+) individuals and communities (Vaughan et al., 2014). This trend is a microcosm of a bigger issue, where a recent bibliographic analysis reveals ∼0.02% of randomized clinical trials on PPIs consider Non-WEIRD contexts (Hendriks et al., 2019). Moreover, effects highlighting the efficacy of some PPIs established through westernized and well-resourced countries are weaker when such PPIs are evaluated in under-served and culturally diverse communities across the world (e.g., Khanna and Singh, 2019).

Despite emerging guidelines regarding how PPIs can be adapted to different cultural contexts (Schick et al., 2021), research exploring the intersection between PPIs and non-WEIRD cultural identities is tentative, incomplete, and disjointed (Rao and Donaldson, 2015), leading others to question "If," "When," "How," and "Why" PPIs work in non-WEIRD contexts. To address these questions, we collected a series of articles to provide more inclusive and socially just methods of evaluating PPIs in different cultural contexts. We believe such work will be critical in identifying unique insights into how PPIs can be framed, constructed, and evaluated to change the dialogue behind how positive psychological theory and applications can support culturally affirmative action across diverse geographic locations, lived experiences, values, and cultural identities. The collected works ($N = 9$) in this Research Topic are summarized in Table 1. Each work is allocated to a specific section depending upon the type of question being evaluated. Notably, the works address one of three questions: whether PPIs are effective in non-WEIRD contexts (IF)?, what are the diverse contexts by which PPIs work (WHEN)?, and what are the unique methodological factors and conditions required to ensure PPIs yield beneficial results in diverse samples (HOW/WHY)?

If PPIs work in non-weird contexts

This section contains articles investigating the effectiveness of traditional PPIs in non-WEIRD and diverse populations, including under-served, disadvantaged, cross-cultural, or multicultural groups of people. Articles in this section provide theoretical perspectives supporting or critically evaluating relevant positive psychological theories, methods, concepts and constructs underpinning traditional PPI approaches. In total, this section contains four articles, each of which is designed to evaluate the efficacy of specific PPIs or PPI-related approaches and oriented toward how such approaches positively impact specific outcomes in diverse samples of non-WEIRD groups.

In the first article, Donaldson et al. employed the exemplar method to determine whether PPIs positively impact wellbeing. A secondary goal was to use the same approach to identify the most promising method by which PPIs promote wellbeing in WEIRD and non-WEIRD groups. Twenty-five meta-analyses and 42 content review papers were included in the investigation. Of the papers reviewed, only 23-high-quality studies were identified. Within these studies, PPIs positively affected wellbeing outcomes, with most papers indicating a small to moderate effect size. Effect size estimates varied based on different sets of moderating factors, including program format, program type, program duration, age/gender/clinical status of participants, and country in which the study took place. Relevant to the aims of this edited series, larger effect sizes were noted for studies conducted in non-Western countries. However, non-Western studies were also more likely to be rated as lower in design quality. As a secondary component, the research team also identified 14 promising PPIs through an evaluation of the highest quality RCTs. From these 14 intervention, 4 were considered exemplar and deemed most fruitful to be employed with diverse individuals and communities during the global pandemic. These 4 exemplar PPI programs were all multi-component in nature (often addressing strengths, gratitude, positive relationships, positive emotions, and mindfulness) and produced moderate to large changes in wellbeing metrics.

TABLE 1 Summary of contributions to the Research Topic.

No	Author	Title	Purpose	Views	Citations
1	Donaldson et al.	*Following the Science to Generate Well-Being: Using the Highest-Quality Experimental Evidence to Design Interventions*	While much of the wellbeing literature is based on descriptive and correlational studies, this paper evaluates a growing body of causal evidence from high-quality randomized controlled trials (RCTs) that test the efficacy of positive psychology interventions (PPIs). This systematic review analyzed the findings from 25 meta-analyses, 42 review papers, and the high-quality RCTs of PPIs designed to generate wellbeing that were included within those studies.	3,097	3
2	Beyebach et al.	*Bibliometric Differences Between WEIRD and Non-WEIRD Countries in the Outcome Research on Solution-Focused Brief Therapy*	The aim of this study was to examine the development of outcome research on SFBT and to determine whether it is predominantly carried out in Western, Educated, Industrialized, Rich and Democratic (WEIRD) countries.	2,426	3
3	Chamorro-Garrido et al.	*Autobiographical Memory, Gratitude, Forgiveness and Sense of Humor: An Intervention in Older Adults*	The objective of this study was to verify whether an intervention based on Autobiographical Memory, Forgiveness, Gratitude, and Sense of humor would increase quality of life in institutionalized older adults.	12,228	0
4	Torkhani et al.	*Improving Health of People With Multiple Sclerosis From a Multicenter Randomized Controlled Study in Parallel Groups: Preliminary Results on the Efficacy of a Mindfulness Intervention and Intention Implementation Associated With a Physical Activity Program*	The objective of this study is to investigate the efficacy of psychological Interventions—Mindfulness or Implementation Intention—associated with a Physical Activity program, delivered *via* internet, in reducing Multiple Sclerosis symptoms.	1,104	0
5	Calcagni et al.	*Differential Effects of Mindfulness-Based Intervention Programs at Work on Psychological Wellbeing and Work Engagement*	The purpose of the paper was to determine the effectiveness of two different mindfulness-based interventions to explore the differential effects on different facets of mindfulness, dimensions of psychological wellbeing, work engagement, performance, and stress of a participant.	1,941	1
6	Klibert et al.	*Savoring Interventions Increase Positive Emotions After a Social-Evaluative Hassle*	The purpose of the current research was to examine whether different savoring interventions could increase important coping resources (i.e., positive emotions) in response to a social-evaluative hassle.	952	0
7	Basurrah et al.	*Positive Psychology Interventions as an Opportunity in Arab Countries to Promoting Well-Being*	This opinion paper aimed to explore the opportunities for positive psychological intervention in Arab countries. Specifically, it reflected upon the importance of positive psychological approaches to facilitate wellbeing in these contexts	1,195	0

(Continued)

TABLE 1 (Continued)

No	Author	Title	Purpose	Views	Citations
8	Botha et al.	*Flourishing Beyond Borders: Facilitating the Well-Being of Accompanying Expatriate Partners*	The objective for the current study was firstly to ascertain why accompanying expatriate partners (AEPs) thought strengths of Gratitude, Curiosity and Hope featured so prominently in the model. Secondly, the study aimed to determine how these participants would, from their experience in working with AEPs, enhance these strengths and AEPs' resilience in therapy, and ultimately facilitate greater wellbeing and successful adjustment abroad.	693	1
9	Pienaar et al.	*Peer Helpers' Experience of Participation in an Adventure-Based Experiential Learning Program: A Grit Perspective*	The aim of this study was to explore and describe a group of peer helpers' subjective experiences of their participation in an adventure-based experiential learning program, with a focus on how these experiences related to the concept of grit.	687	0

Moreover, 75% of the exemplar programs produced these effects with vulnerable and under-served populations. In conclusion, Donaldson et al. asserted PPIs are effective in producing positive changes in wellbeing indices. They also provided unique clinical insights into how wellbeing can be enhanced through different professional services (e.g., psychotherapy). Finally, the research team addressed methodological flaws in RCTs examining the effectiveness of PPIs in non-WEIRD contexts and furnished a set of guidelines to help researchers determine how multi-component PPIs can be adapted to fit the identities, values, and lived experiences among individuals and communities residing in non-WEIRD countries.

Next, Beyebach et al. examined the development of Solution Focused Brief Therapy (SFBT) outcome research and cross-national trends in the production of such research. SFBT is a cost-efficient and effective model employed to resolve interactional problems. The approach relies heavily on helping individuals and groups access and use culturally salient strengths and resources to overcome obstacles in problem resolution, thus, making it a highly compatible approach to PPIs. Using a bibliometric methodology, the research team extracted 365 articles from 12 WEIRD and 21 non-WEIRD countries and determined geographic differences in the production of SFBT outcome science. Results highlighted SFBT as a global approach; research supports its effectiveness cross-culturally and with diverse populations. In recent years, non-WEIRD countries are producing double the amount of SFBT outcome research when compared to WEIRD countries. In addition, non-WEIRD countries are engaging in more RCTs compared to WEIRD countries (63% compared to 37%). These results are encouraging and suggest strength-based models and positive psychological principles are advancing in under-served and cross-cultural contexts. The research team concludes the article by outlining culturally relevant directions by which SFBT and other PPIs can be extended to meet the diverse needs of children, communities, and organizational directives in WEIRD and non-WEIRD spaces.

The third study in this section evaluated whether a multicomponent PPI could positively impact different wellbeing indices in a sample of older adults residing in an inpatient unit. Using a quasi-experimental design, Chamorro-Garrido et al. constructed an 11-week intervention focused on building autobiographical memory functioning and increasing access to different psychological strengths, including forgiveness, gratitude, and humor. Participating older adults were randomly assigned to experimental, placebo, and control groups. Results indicate the multicomponent PPI was effective in producing increases in subjective happiness, life satisfaction, and specific facets of wellbeing and decreases in depression from baseline to post-completion. Moreover, gains in these areas were maintained over a 12-month time span. As a result, these findings highlight multicomponent PPIs as an important resource in supporting a higher quality of life for older adults residing in an inpatient unit, which is a particularly under-researched and vulnerable population.

In the final article in this section, Torkhani et al. investigated the effectiveness of two PPI-integrated physical activity programs, Mindfulness and Implementation Intention, in reducing multiple sclerosis (MS) symptoms among Parisian adults enrolled in outpatient healthcare services. Notable and

differentiated within-group differences were detected for each PPI-integrated program. For instance, participants randomly assigned to the Integrated Implementation Intention group reported decreases in all three subcomponents (physical, cognitive, psychosocial) of fatigue, whereas individuals assigned to the Integrated Mindfulness group only reported significant decreases in the physical domain of fatigue. These results highlight some differential patterns in how specific PPI-integrated physical activity programs may alleviate MS symptoms. Considering individuals diagnosed with MS represent a severely neglected population within the PPI literature, this study provides the field with a set of unique and integrated pathways by which PPIs can affect different health-based outcomes.

In total, these four articles help answer the question of whether specific PPIs are effective in increasing wellbeing outcomes and minimizing distress-related to different medical based conditions in under-served, under-researched, and different cultural groups. Moreover, each study leveraged findings to produce key insights into how researchers should methodologically evaluate PPIs and frame PPI programs to increase accessibility and utility in applied work with WEIRD and non-WEIRD populations.

When do PPIs work in non-weird contexts

This second section of articles focus on elucidating the conditions and contexts by which PPIs are effective in producing positive social, psychological, and health-based outcomes. These articles reflect upon the methods, intervention content, circumstance, and cultural contexts considered in making PPIs work for diverse groups of individuals living in different environmental systems. Based on these criteria, each article aims to cultivate a more complete picture of what is required to develop, design, implement, and evaluate PPIs for non-WEIRD individuals, communities, and organizations.

The first article articulates differential effects in how diverse Mindfulness-Based Interventions contribute to changes in mindfulness, subjective wellbeing, and work engagement/performance outcomes in the Spanish industrial (i.e., managers, administrative staff) workforce. Calcagni et al. evaluated the effects of two Mindfulness-Based Interventions, varying on duration (brief vs. standard length) and format (customized vs. standardized), using an experimental design. The results indicate both programs contributed to heighten levels of positive psychological resources and work engagement/performance outcomes and diminished levels of stress. However, differential effects between the two Mindfulness-Based Interventions were also detected on specific outcomes. For instance, lengthier and standardized mindfulness programs produced greater reported gains in specific mindfulness skills (i.e., non-reactivity) when compared to the briefer and customized mindfulness programs. Alternatively, the customized program appeared more effective in increasing reports of environmental mastery, a key facet of wellbeing, when compared to the longer, standardized program. These differential effects highlight the conditions by which diverse "white collar" workers may benefit the most from mindfulness-based programming.

In the next article, Klibert et al. explored an under-researched set of conditions by which PPIs could bolster positive emotional functioning. Notably, they evaluated whether different savoring interventions, practices designed to generate, maintain, and extend positive emotional experiences through mindful appreciation, could increase positive emotions after the experience of a social-evaluative hassle. This line of examination is unique as most research examines the influence of positive emotional upregulation strategies outside the context of stress and daily hassles. Within an experimental design, the research team evaluated the effects of three savoring interventions and two control conditions. Results highlighted some differential effects. Importantly, the savoring through the moment intervention, was especially effective in minimizing reports of stress and increasing positive emotional experiences when compared to the other conditions. These findings are key as they highlight how specific savoring interventions, mindfully acknowledging and extending positive emotions in the present, may be utilized to support positive coping efforts through strength-based processes. The research team concluded by offering insights into how savoring the moment interventions are a part of a larger and more inclusive method of building resilience in adverse circumstances and how such methods can be adapted to help under-served, marginalized, and vulnerable populations residing in non-WEIRD environments.

Uniquely, Basurrah et al. offered a theoretical review regarding how PPIs can be adapted and utilized to support holistic recovery, quality of life, and wellbeing efforts among individuals residing in Arab countries. Currently, the evaluation of PPIs in Arab specific samples is limited and the field of positive psychology is still in its infancy within these associated countries. The authors used relevant literature to support culturally salient pathways by which PPIs can benefit Arab individuals, communities, and organizations. Specifically, the authors highlight some unique conditions by which researchers should develop and evaluate PPIs. Spiritual traditions, interdependent cultural concepts (e.g., collectivistic beliefs), and family values (e.g., honor, loyalty) are a few cultural considerations to be respected in the development of PPI programs for diverse Arab populations. The authors conclude, if these cultural considerations take a formative role in how PPIs are developed, there is great promise in how PPI programs offset mental health stigma, prevent mental health difficulties, and promote wellbeing in Arab nations.

Although PPIs are generally effective in promoting wellbeing and reducing mental health symptoms, the conditions by which they exact these changes are not well-understood, especially in non-WEIRD populations. These studies address this gap by providing insights into how unique compositions of PPIs can be adapted to meet the needs of diverse individuals, communities, and organizations, especially those located in non-WEIRD environments.

How/why do PPIs work in non-weird contexts

The final section in this edited volume explores *why* PPIs fail in producing positive outcomes in non-WEIRD contexts. Articles enumerate and address how content-related phenomena, methodological factors, and evaluation methods can be adapted to ensure PPIs yield desired results in diverse populations. This section also emphasizes *how* PPIs affect changes in positive states, traits, cognitions, and behaviors for individuals, communities, and organization residing in non-WEIRD areas. Insights obtained from these articles offer opportunities to shape the process by which PPIs are developed and implemented and set up guidelines to support creative and culturally relevant growth in different facets of wellbeing across different professional arenas (e.g., research, clinical work, policy development).

The first study in this section explored strength-based processes of expatriate partners (spouses, dependents, kin) residing in South Africa using a unique methodology. Notably, Botha et al. constructed a multicomponent and mixed-method study to evaluate new models explaining how character strengths (i.e., hope, gratitude, curiosity) and positive emotional processes (i.e., resilience) contribute to wellbeing within this under-studied population. This study represents the final phase of the project and reflects upon cultural competent psychologists' qualitative perspectives regarding the model developed in previous phases of the project and applied methods used to enhance wellbeing. Narratives were coded for specific themes to organize and guide the development of future PPIs for the partners of expatriates. Results produced four primary and eight sub-themes from the data. These themes outlined how expatriate partners cultivate strengths and resilience and how such mechanisms are connected to wellbeing. Moreover, the research team organized themes in a way that provides clear and culturally competent methods of integrating PPI work into different behavioral healthcare services. The process of assessing client context, setting realistic and culturally responsive goals, working through specific PPI structures (conducting interventions through different time frames), and marshaling external support for the use of strengths and resilience are elaborated upon in great depth. Overall, this study provides a unique roadmap by which applied psychological professionals can collaboratively work alongside the partners of expatriates to support their wellbeing.

Next, Pienaar et al. explored the benefits of participating in a peer helper, adventure-based experiential learning program. Specifically, their study evaluated the qualitative perspectives of 26 South African peer helpers, university students who are trained and supervised in providing interpersonal support for their peers, on how participating in an adventure-based experiential learning program promotes self-growth and grit. Participant narratives (daily reflective diaries and recorded focus group interviews) were collected and evaluated through a thematic content analysis. Analysis resulted in three overarching themes: intrapersonal aspects of grit (e.g., courage), interpersonal aspects of grit (e.g., sense of community), and transpersonal aspects of grit (e.g., continuous growth). Based on the totality of the qualitative review, the adventure-based experiential learning program appeared to be useful in helping peer-helpers grow from a strength-based perspective. Importantly, the rich data provided unique perspectives for how peer-helpers enhance different elements of grit and how grit can be connected to larger facets of wellbeing and life satisfaction.

These two pieces of research describe how the mechanisms of PPIs work in non-WEIRD contexts, by constructing a model to explore the associations between constructs or describing the mechanism on various levels, to explain how or why the PPIs work.

Future research

The articles in this Research Topic aimed to answer questions regarding "If," "When," "How," and "Why" PPIs work in non-WEIRD contexts. Associated articles were positioned across various academic fields embracing a broad range of themes related to positive psychological health and wellbeing of diverse, under-studied, and vulnerable samples of individuals residing in different parts of the world. Overall, works associated with this Research Topic clearly indicate PPIs are not exclusively WEIRD. Instead, PPIs can be framed through culturally competent and responsive lenses to support individual, community, and organization wellbeing across numerous non-WEIRD contexts. This collection of review and empirical articles provide meaningful insights, perspectives, and guidelines to support the growth of PPIs in non-WEIRD contexts. Notably, these articles offer unique roadmaps describing how strengths and positive emotional experiences are developed and connect to different facets of wellbeing. Moreover, findings generated through these articles give pertinent details about how current PPIs can be adapted and framed to suit the needs of those residing in non-WEIRD environments.

Despite the advances generated through these studies, more work is needed to grow the field of positive psychology in non-WEIRD spaces. For instance, findings from these studies indicate RCTs from non-WEIRD countries were of moderate or low quality, a problem which clearly needs to be addressed. Associated articles outline unique methodological and content (e.g., expanded sample size, long-term follow-up measurements, use of objective/behavioral measures) recommendations to support better research practices for behavioral scientists in non-WEIRD countries. Moreover, the articles exclaim the need to conduct PPI research in under-served and under-studied communities and organizations, including child protection agencies, gender and sexual identity affirming centers, and institutions serving individuals from lower socioeconomic backgrounds, and how different platforms (e.g., online) can increase access to PPI programs within these communities and organizations. Overall, the studies associated with this edited volume speak to the potential of PPIs to bolster recovery and wellbeing efforts in diverse, non-WEIRD populations. However, the field needs to be intentional about building stronger empirical work and developing culturally responsive programs to move pertinent initiatives forward.

Author contributions

WD and YL drafted the first version of the editorial. JK and LvZ made substantial contributions to the reformulation of the first draft. All authors provided conceptual input and approved the final draft.

Conflict of interest

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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Differential Effects of Mindfulness-Based Intervention Programs at Work on Psychological Wellbeing and Work Engagement

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Two different mindfulness-based interventions were deployed in a sample of white-collar workers to explore the differential effects on different facets of mindfulness, dimensions of psychological wellbeing, work engagement, performance, and stress of a participant. A total of 28 participants completed one of the different programs, and their results were compared between groups and against 27 participants randomly allocated to a waiting list control group. Results suggest both mindfulness intervention programs were successful at increasing the levels of psychological wellbeing, work engagement, and performance of the participants, as well as decreasing their levels of stress. Significant differences were found between the two programs in all outcome variables. Results suggest that brief and customized mindfulness interventions at work are as successful as lengthier programs.

Keywords: mindfulness at work, psychological wellbeing, work engagement, performance, stress, intervention

INTRODUCTION

Mindfulness is defined as an inherent ability of the human mind to pay attention to present moment experiences adopting an attitude characterized by curiosity, openness, and acceptance (Bishop et al., 2004). Different theoretical models of mindfulness propose it is composed of different elements or "facets" that can be developed as skills through systematic training deployed in the format of mindfulness-based interventions (MBIs) (Carmody and Baer, 2008; Creswell, 2017; Lindsay et al., 2018a,b; Lindsay and Creswell, 2019; Sansó et al., 2019). Workplace-delivered MBI programs are increasingly showing to be an effective strategy to help employees manage stress and improve their mental health (Eby et al., 2016; Bartlett et al., 2019). The majority of published studies on MBIs at work focuses on decreasing stress and mental health-related outcomes such as anxiety, psychological distress, and burnout (Lomas et al., 2017), and the systematization of the available data initially supports this claim (Heckenberg et al., 2018). As well, mindfulness seems to have an impact both on physiological and psychological pathways that explain these effects (Chiesa et al., 2011; Lao et al., 2016). Overall, it seems to be a promising strategy to address a wide

array of problems that arise from the characteristics of many of the jobs and workplaces of today (Good et al., 2016).

However, the available knowledge on MBIs at work is limited in at least three crucial aspects. First, most of the MBI evaluation studies in a work-related setting focus mainly on healthcare workers (Bartlett et al., 2019). Due to the nature of their work, they experience high levels of job demands and increasing levels of psychosocial risks that lead to conditions such as depressive symptoms, compassion fatigue, and burnout (Pisljar et al., 2011; Gleichgerrcht and Decety, 2014; Alexandrova-Karamanova et al., 2016; Parola et al., 2017). This scenario makes healthcare workers ideal candidates to test the alleged effects of MBIs; particularly more so in this moment in time when healthcare systems worldwide are under greater levels of pressure than ever. Unfortunately, this bias has produced a lack of studies focusing on different working populations, such as white-collar workers. The term "white-collar" worker was coined during the 1930s in the US reflecting the usual attire (white shirt and tie) of individuals in professional occupations that required a higher level of education than traditional manual labor. Traditionally, white-collar workers consider job occupations dedicated to performing managerial, professional, or administrative work. Different occupations included in this broad category are executive management, management consulting, human resources, information technology, research, and technology among many others (Van Horn and Schaffner, 2003). White-collar workers comprise the majority of the workforce in services-driven economies (EUROSTAT, 2017; U.S Bureau of Labor Statistics, 2019). They are also exposed to significant levels of job demands and psychosocial risks due to the preeminently mental rather than physical effort associated with the characteristics of their work (Bridger and Brasher, 2011; Fila et al., 2017). Thus, they are also good candidates to benefit from MBIs at work. Services-based organizations may benefit from it in the form of increased performance and productivity, and decreased levels of stress-derived health complications in their workforce.

A second limitation has to do with the relatively small number of studies inquiring about outcomes related to mental health that go beyond the simple reduction of negative aspects of human experience such as stress, depression, and anxiety. Mental health is not only related to the absence of disease but also the presence of wellbeing (WHO, 2005). When it comes to MBIs, it is necessary to adopt a more holistic perspective of mental health the includes "non-clinical" approaches such as psychological wellbeing and work engagement (Ivtzan et al., 2016). Psychological wellbeing is a multidimensional construct that englobes different aspects of life, such as meaning, relations, and personal growth (Ryff and Singer, 2008). These aspects are represented by specific domains or "dimensions" that are distinct from one another but taken together reflect the different elements that make up a "good life" (van Dierendonck et al., 2007). Along a similar line, work engagement poses a work-specific approach to psychological wellbeing that is characterized by high levels of energy and willingness to invest effort in the work of the individual, experiencing a sense of enthusiasm, pride, and challenge, and being fully concentrated and happily engrossed in the work of the individual (Schaufeli et al., 2002). Although a distinct construct on its own (Schaufeli and Salanova, 2011), work engagement could be considered a domain-specific measure of psychological wellbeing. As well, it reflects the eudaimonic component of psychological wellbeing in the sense that it is related to sustained effort, motivation, and optimal functioning (Straume and Vittersø, 2014). Psychological wellbeing and work engagement are not only relevant in terms of health but also regarded as critical aspects to attain a better performance both at the individual (Lyubomirsky et al., 2005; Zelenski et al., 2008) and organizational levels (Taris and Schreurs, 2009; Salanova et al., 2012; Salanova and Llorens, 2016).

A third limitation of work-related MBIs literature has to do with the scarcity of measurements of performance and productivity. Mindfulness has been positively associated with different improvements in cognitive ability and emotional regulation as possible pathways to improve performance (Chiesa et al., 2011; Holzel et al., 2011). As well as with specific work-related concepts such as sunken cost bias (Hafenbrack et al., 2014). Preliminary evidence suggests there might be a positive effect of mindfulness on performance but more research on this relation is needed in order to clarify the benefits of MBIs in regard to this element (Good et al., 2016; Kersemaekers et al., 2018).

Taken together, the three distinct limitations mentioned above make a strong case for the development and evaluation of MBIs deployed at work that focus on different samples beyond healthcare workers, that include measurements of well-being both with a broad perspective and contextual specificity, and that incorporate to the very least some measure of performance.

Finally, it is necessary to stress the fact that there is a wide variety of different MBIs available ranging from fully standardized programs (Kabat-Zinn, 2013) to full-on customizations (Wolever et al., 2012). This poses an important dilemma when choosing what type of MBI protocols to deploy, and striking a balance between commitment to established guidelines and customization to improve adherence and success becomes a challenge on its own. Callings for refinement in MBI intervention research point out the value of utilizing standardized intervention protocols when possible while at the same advocating for the development of specific MBI protocols adapted to specific workplace characteristics and needs of the worker (Lomas et al., 2017). In this sense, there is a significant gap related to the evaluation of differential effects between established MBI programs compared to customized MBI versions developed for specific contexts and populations.

In light of the established gaps existing in regard to the MBIs at work literature, we propose the present study. The aim is to test the differential effects of two types of MBIs at work. More specifically to compare a customized, and brief work-specific MBI program with a longer duration MBI program based on the MBCT (Segal et al., 2001) and self-compassion (Neff, 2003; Barnard and Curry, 2011) in a white-collar worker population, looking at the potential differences on the effects of participants' levels of mindfulness, psychological wellbeing, work engagement, stress, and performance.

Considering the existing literature on MBIs at work, and their positive impact on levels of mindfulness, different

measures of wellbeing (i.e., subjective psychological wellbeing, work engagement, and job satisfaction among others; Lomas et al., 2017), performance (Coo and Salanova, 2018), and diminishing stress (Bartlett et al., 2019), we propose the following hypotheses.

Hypotheses

*H*1: Both MBI programs (i.e., MSCBI and MPSM) will increase the levels of different facets of mindfulness (i.e., acting with awareness) of participants in comparison with participants in the control group.
*H*2: Both MBI programs (i.e., MSCBI and MPSM) will increase the levels of different dimensions psychological well-being (i.e., environmental mastery) and work engagement (i.e., vigor) of participants in comparison with participants in the control group.
*H*3: The MBCT-based program (MSCBI) will be more effective at increasing the levels of different faces of mindfulness of participants and diminishing their levels of stress.
*H*4: The MBI work-specific program (MPSM) will be more effective at increasing the levels of different dimensions of work engagement (i.e., vigor) and performance (i.e., in-role performance) of participants.

MATERIALS AND METHODS

Participants and Procedure

Workers from two different organizations (Organization A and Organization B) in the industrial production area were invited to participate in distinct MBI programs as workplace initiatives to manage stress and enhance wellbeing. More specifically, workers from management and back-office areas were the target group invited to participate fitting the "white-collar" category described above. All of them performed either administrative, operations or, managerial desk-bound duties, and 30% held management positions with teams under their supervision. Recruited participants were screened for pre-existing conditions such as ongoing psychiatric treatments, depression, and anxiety, in which case they were advised to consult with their therapists whether participation in the activity was advised. Afterward, participants were distributed between either an intervention or waiting-list control group following a randomization procedure. Participants allocated to the waiting-list control group took part in the different intervention programs once the first intervention group and data collection process were finished. Participation was voluntary and no compensation was offered upon the enlistment or completion of the program.

Both participating organizations were based in Spain, were large in size with more than 250 workers each, yielding 50€ million or more annually in net revenue. Organization A was a company dedicated to manufacturing and distribution of construction materials and supplies on a large scale. Organization B was a company dedicated to engineering and manufacturing supplies for the automobile industry.

For Organization A, participants answered a paper-based questionnaire prior to the beginning of the intervention program and 1 week after the last training session. For Organization B, participants were asked to answer an online questionnaire distributed *via* e-mail previous to the beginning of the intervention programs, and 1 week after the last session of the program. The questionnaire included an informed consent form complying with the latest data management regulations, and the study was sanctioned and approved by the first author's host university ethics committee.

Organization A offered a 6-week MBI based on the MBCT (Segal et al., 2001) standardized intervention including a component of self-compassion (Neff, 2003) labeled "Mindfulness and Self-Compassion Intervention" (MSCBI); Organization B offered a brief 3-week MBI custom program integrating MBCT (Segal et al., 2001; Kuyken et al., 2010) and ACT (Hayes et al., 2006) labeled "Mindfulness and Positive Stress Management" (MPSM). The content and rationale of both MBI programs can be found in **Tables 1**, **2**.

A total of 22 participants were allocated in the MBI program offered by Organization A, from now on labeled as MBSR Group, 13 of them completed the intervention program and the pre-post evaluation. They were 45.5 (SD = 7.25) years on average and 41.4% were women. A total of 20 participants were allocated in the MBI program offered by Organization B, from now on labeled as MPSM Group. Of the initial group, 15 participants completed the program and pre-post evaluation. They averaged 41 years of age (SD = 6.92) and 52% were women. Finally, 18 participants from Organization A and 15 participants from Organization B were allocated to the waiting list control group, for a total of 33 participants in the control group. They were 38.5 (SD = 10.72) years old on average and 51% were women. Cronbach's α and correlations for all variables at pre- and post-intervention times are shown in **Tables 3**, **4**.

Program Descriptions

Mindfulness and positive stress management or MPSM is a customized intervention program combining core elements of the traditional mindfulness teachings with specific tools from the field of positive psychology (i.e., character strengths) combined inside the framework or stress-management from a proactive perspective. This program aimed to develop specific and tailored action plans oriented to managing recurring sources of stress from an adaptative perspective. On the other side, mindfulness and self-compassion intervention or MSCBI is a more traditional program following a standardized format oriented specifically to developing mindfulness skills and tools combined with compassion with the explicit goal of enhancing wellbeing through mental training.

Both programs share the basic core of mindfulness teachings and skills but differ in the specific goals, framework, and strategies to deploy and transfer the skills and tools to everyday life.

Mindfulness and positive stress management focuses on developing a set of core skills and provides an established step-by-step guide to deploy said skills as core elements with a clear and committed goal. MSCBI offers a wider and more exploratory approach to mindfulness built on self-experimentation through different meditation techniques in a wide variety of everyday scenarios.

TABLE 1 | MPSM intervention program specific session content and structure.

Session No.	Length in hours	Rationale	Structure	Homework
1	4	• What is stress? Personal experiences, physical and emotional correlates. • Physiology of the stress response and its relation to human evolution. Fight, Flight or Freeze. • What is mindfulness? Brief body scan exercise, sharing personal experiences. • Definition and established benefits of mindfulness practice, and self-directed neuroplasticity. • Mindfulness and stress management through de-centering and re-appraisal of stressful situations.	• Class orientation (Welcome, Format, Intentions). • Ground rules • Introductions. • Experiences of Stress and brief presentation. • Body scan. • Benefits of mindfulness and mechanisms of action. • Sitting meditation with focus on breath • Re-appraisal exercise.	• Body scan and/or sitting meditation. • Mindfulness of routine activity. • Practice log.
2	4	• Mindfulness and character strengths. Mindfulness as a pathway to cultivating our best-possible self. • Understanding and discovering our signature strengths as well as those we would like to develop. • Identifying strengths in action, exploring new ways of practicing them, and imagining new pathways to cultivate new strengths. • Using strengths to overcome obstacles and difficult situations.	• Brief body scan check-in. • Home practice review. • Mindfulness and character strengths introduction. • Discover, identify and. practice personal strengths. • Explore and establish new behaviors to practice strengths	• Body scan and/or mindfulness of routine activity. • Mindful character strengths practice. • Practice log.
3	4	• Identifying areas of balance/unbalance in our work life. • Identifying patterns of recurring thoughts/behaviors that lead to stress and difficulty • Balancing character strengths with mindfulness practice for optimal use. • Developing specific action plans to address and transform our patterns into professional and personal growth opportunities. • Exploring our best possible self into the future as a guideline to follow in our professional and personal growth. • Choosing intentional and committed actions to cultivate our inner and outer balance.	• Brief body scan check-in. • Homework review • Balance/Unbalance in our working life • Balancing character strengths • Action plan development • Best possible self • Final thoughts	• Body scan and/or mindfulness of routine activity. • Mindful character strengths practice. • Best possible self in balance. • Practice log.

As well, MPSM explicitly introduces the concept of character strengths and values in action (Peterson and Seligman, 2004) as key elements to develop congruent and committed goals and action plans. On another side, MSCBI introduces such concepts in a more implicit manner when exploring the topics of wellbeing and compassion.

Finally, MPSM is delivered in a brief and condensed three-session length format that seeks to explicitly tackle the main sources of recurring stress in everyday work-related situations. MSCBI follows the traditional 8-week format focusing on building a regular and sustained mindfulness practice that is not directed at any particular type of event but to life in general.

Measures

Mindfulness was measured using the Spanish validation of the five facet mindfulness questionnaire (FFMQ; Baer et al., 2006; Cebolla et al., 2012; Coo Calcagni and Salanova Soria, 2016). It is a 20-item short version scale that assesses five different dimensions of mindfulness understanding it as a higher order factor. The five dimensions comprise, namely, Observe (OBS), Describe (DES), Act with Awareness (AW), Non-Reactivity to own thoughts (NR), and Non-Judgment to own experience (NJ). Participants indicate the frequency of 20 behaviors on a 7-point Likert scale (0 = *almost never*, 6 = *almost always*). Items include "I'm good at finding words to describe my feelings" and "I'm easily distracted." Half of the items are reverse scored. Following Baer et al. (2008) we decided to exclude the Observe subscale to facilitate the detection of training-related changes in mindfulness. The scale presented good internal reliability.

Psychological Wellbeing was measured using the short version Spanish adaptation of the Psychological Wellbeing Scale (SPWB; Díaz et al., 2006; Ryff and Singer, 2008). The 29-item scale assesses six distinct domains of wellbeing (Self-acceptance [SE], Positive relations [PR], Autonomy [AT], Environmental mastery [EM], Purpose in life [PL], and Personal growth [PG]). Participants rate their levels of agreement/disagreement regarding different statements using a six-point Likert scale (1 = *totally disagree*; 6 = *totally agree*). Sample items include "I feel like many of the people I know have gotten more out of life than I have" [SE], "Most people see me as loving and affectionate" [PR], "I have confidence in my opinions even if they are *contrary to the general consensus*" [AT], "I am good at juggling my time so that I can fit everything in that needs to get done" [EM], "I enjoy making plans for the future and working to make them a reality" [PL], and "I have the sense that I have developed a lot as a person over time" [PG]. The scale presented good internal reliability.

Work Engagement was measured using the Spanish version of the Utrecht Work Engagement Scale in its 9-item version (UWES9; Schaufeli and Bakker, 2003; Schaufeli et al., 2006). The scale is composed of three dimensions: (I) Vigor, (II) Dedication, and (III) Absorption. Participants indicate the frequency of specific feelings and behaviors on a 6-point Likert

TABLE 2 | MSCBI intervention program specific session content and structure.

Session No.	Length in hours	Rationale	Structure	Homework
1	2	• Reflecting on the social context and our daily habits. • How does our mind work? Attentional default network and the automatisms present in our mind. • Identifying the contents of the mind: thoughts, emotions and feeling. Decentering • What is mindfulness? • Formal and informal practice	• Class orientation (Welcome, Format, Intentions). • Ground rules • First mediation practice. Observing our inner experience and motivation. Why are we here? • Introductions. • Practice. What does our mind do when it is doing nothing? • What is mindfulness? Basic concepts introduction • Raisin mindful eating meditation • Collective reflection and conclusions. Instructions to keep practicing during the week.	• Brief pauses during the day (1–3 min). What are you doing? How do you feel? What are you thinking? • Mindfulness of breathing and awareness of inner experience (7–10 min). • Mindful eating • Practice Log
2	2	• Reflection on the main obstacles for practice • Understanding how to calm our mind. Focused attention on our body. Our breath as our ally. • Differentiating the Self as a subject and the self as an object. • Mechanisms of action and benefits of practice.	• Body scan (10 min) • Group reflection on the main obstacles while trying to practice at home. • Monitoring hand movements. • Group reflection on the different perspectives of the self (subject vs. object). • Mechanism of action. Benefits from a neurophysiological, mental and behavioral perspective. From reaction to choice. • Collective reflection and conclusions. Instructions to keep practicing during the week.	• Brief pauses during the day (1–3 min). • Body scan, calm and hand monitoring mediations. • Informal practice of daily activities • Daily gratefulness and practice log
3	2	• How to train a stable mind? Attention regulation. • Learning to stabilize or mind through mindfulness of breathing. • Identifying the right attitude in mindfulness practice. • Developing other forms of being present in our daily life. • Identifying the link between thoughts and emotions.	• Mindfulness of breathing. • Review of homework. • Attention stability and breathing as a regulator. • What kind of attitude to maintain during practice? • Mindful movement and walking • Mindfulness of breathing focusing on the belly. • Observation and experimentation. Mindful eating black chocolate. Where I put my attention, I create my reality. • Collective reflection and conclusions. Instructions to keep practicing during the week.	• Brief pauses during the day (1–3 min). • Mindfulness of breathing. Observing thoughts, and mindful movement (15 min). • Informal practice of daily activities • Mindfulness of social media and tv consumption • Gratefulness Letter • Practice Log
4	4	• Being present through our senses. Broadening our perspective. • Training our mind for clarity. • Knowing our relation with our thoughts. • Exploring acceptance and differentiating between primary and secondary pain. • Interpersonal mindfulness, mindful listening and talking.	• Mindfulness of the 5 senses including thoughts. • Review of homework. • Presentation on mental clarity. • Mindfulness of nose focused breathing. • Presentation on acceptance and primary and secondary pain. • Mental experiment Yes/No repeat. • Mindful listening and talking in couples. • Collective reflection and conclusions. Instructions to keep practicing during the week.	• Mindfulness of the 5 senses including thoughts. Acceptance and Openness. • Informal practice of daily activities. Mindful listening. • Mindfulness of difficulties and resistance. Practicing letting go. • Practice Log
5	4	• Basic skills for wellbeing. • Identifying emotional balance systems: Alert, achievement and connection. • Developing empathy. • Understanding compassion and self-compassion. • Developing gratitude.	• Mindfulness at the end of the day. • Review of homework. Main obstacles and difficulties. • Emotional regulation system by Gilbert. • Self-Compassion model by Neff. • Presentation and reflection on compassion and self-compassion, impermanence of relations, and video. • Mindfulness of self-care • Collective reflection and conclusions. Instructions to keep practicing during the week.	• Mindfulness at end of the day and self-care. • Kindness toward oneself and others. • Support videos. • Random acts of kindness. • Practice Log.
6	4	• Compassion and adherence to practice. • Last reflection and clearing doubts about compassion. • Distinguishing between different kinds of relations. Broadening circles. • Acquiring guidelines to sustain our practice.	• Mindfulness of gratitude. • Review of homework. • Presentation and reflection on compassion. • Kindness and compassion mediation in couples. • Group reflection on key learning points. • Guidelines to keep practicing independently in our daily lives • Collective reflection and conclusions.	• Kindness and compassion, as well as any other of the exercises practices during the course. • Autonomous weekly practice group. • Maintaining what we learned.

scale (1 = *almost never*, 6 = *almost always*) including "At my job, I feel strong and vigorous" and "I'm enthusiastic about my job." The scale presented good internal reliability.

Performance was measured using the six-item scale from Goodman and Svyantek (1999) that assesses in-role and extra-role performance using a 7 point Likert type scale (0 = *almost never*, 6 = *almost always*). The items include, "I achieve my work-related objectives" and "I go beyond my official responsibilities to help my teammates." The scale showed acceptable internal reliability.

TABLE 3 | Cronbach's α and correlations for all sub scales at pre intervention time.

		α	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Mindfulness (FFMQ)	Acting with awareness	0.88	–														
	Describe	0.79	0.018	–													
	Non-Judgment	0.68	0.052	−0.158	–												
	Non-Reactivity	0.75	0.121	0.154	0.135	–											
Subjective Psychological Wellbeing (SPWB)	Self-Acceptance	0.73	0.189	0.172	0.339**	0.163	–										
	Positive Relations	0.75	0.284*	0.224	0.182	0.178	0.477**	–									
	Autonomy	0.77	0.134	0.223	0.411**	0.241	0.489**	0.484**	–								
	Environmental Mastery	0.67	0.323**	0.276*	0.139	0.272*	0.662**	0.526**	0.548**	–							
	Purpose in Life	0.84	0.204	0.287*	0.153	0.119	0.642**	0.508**	0.541**	0.699**	–						
	Personal Growth	0.71	0.148	0.124	0.021	0.118	0.334**	0.333**	0.313*	0.416**	0.407**	–					
Work Engagement	Vigor	0.78	0.126	−0.141	−0.134	0.007	0.139	0.049	−0.020	0.252*	0.379**	0.162	–				
	Absorption	0.88	0.104	−0.195	0.075	−0.011	0.058	0.025	0.039	0.077	0.155	0.275*	0.526**	–			
	Dedication	0.83	0.115	0.026	−0.122	−0.012	0.200	0.131	0.005	0.287*	0.332**	0.196	0.801**	0.495**	–		
Performance	In-role Performance	0.76	0.012	−0.028	−0.091	0.067	0.013	−0.002	−0.039	−0.164	−0.023	0.094	0.040	0.327**	−0.013	–	
	Extra-role Performance	0.74	−0.118	0.015	−0.015	−0.117	0.253*	−0.003	0.109	0.177	0.306*	0.122	0.419**	0.367**	0.422**	0.449**	–
Stress		0.73	−0.108	−0.171	0.139	0.235	0.111	−0.075	−0.035	−0.173	−0.109	0.060	−0.002	−0.091	0.049	0.076	−0.002

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

TABLE 4 | Cronbach's α and correlations for all sub scales at post-intervention time.

		α	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Mindfulness (FFMQ)	Acting with-awareness	0.78	–														
	Describe	0.80	0.219	–													
	Non-Judgment	0.83	0.622**	0.108	–												
	Non-Reactivity	0.72	0.225	0.196	0.285*	–											
Subjective Psychological Wellbeing (SPWB)	Self-Acceptance	0.85	0.134	0.443**	0.043	0.332*	–										
	Positive Relations	0.72	0.232	0.362*	0.157	0.313*	0.351*	–									
	Autonomy	0.72	0.430**	0.264	0.213	0.154	0.144	0.498**	–								
	Environmental Mastery	0.78	0.437**	0.301*	0.286*	0.139	0.322*	0.660**	0.627**	–							
	Purpose in Life	0.84	0.004	0.369**	−0.006	0.220	0.733**	0.417**	0.154	0.398**	–						
	Personal Growth	0.75	0.275	0.286*	0.141	0.111	0.477**	0.685**	0.533**	0.750**	0.510**	–					
Work Engagement	Vigor	0.83	0.271	0.042	0.151	0.022	−0.068	0.230	0.204	0.384**	0.074	0.191	–				
	Absorption	0.92	0.455**	0.157	0.399**	0.183	0.249	0.259	0.411**	0.337*	0.245	0.219	0.634**	–			
	Dedication	0.83	0.128	0.153	0.151	0.116	0.169	0.248	0.198	0.302*	0.334*	0.260	0.724**	0.631**	–		
Performance	In-role Performance	0.87	0.160	0.088	0.216	−0.073	0.034	0.415**	0.194	0.357*	0.074	0.228	0.370**	0.440**	0.358*	–	
	Extra-role Performance	0.83	0.232	0.264	0.131	0.143	0.277	0.441**	0.184	0.294*	0.270	0.274	0.510**	0.597**	0.636**	0.654**	–
Stress		0.79	−0.312*	0.186	−0.290*	−0.084	0.188	−0.112	−0.266	−0.027	0.317	−0.002	0.033	−0.013	0.101	−0.027	0.014

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

Stress was measured using the Spanish validation of the Perceived Stress Scale in its 10-item version (Trujillo and González-Cabrera, 2007; Cohen et al., 2014). Participants respond to the frequency of specific statements about thoughts and feelings during the previous month on a 5-point Likert scale (0 = never, 5 = very often). Sample items include, "During the last month How frequently have you felt nervous or stressed?". The scale acceptable internal reliability.

Data Analysis

First, a one-way ANOVA test was conducted to establish sufficient baseline similarity for all variables between the three groups (MPSM, MSCBI, and Control). Non-significant results for this would allow for further comparison of the intervention effects including post-intervention measurements for all groups.

Second, to analyze the effects of the different MBI protocols, we conducted a multivariate ANOVA (MANOVA) with a 3 × 2 (Group × Time) design with three distinct group conditions (MPSM, MSCBI, and Control) as our between-subjects variables and two-time points of measurement (pre- and post-intervention) including all outcome variables. To a finer-grained description of the differential effects we introduced each one of the outcome variables per sub-scales [e.g., For Mindfulness, we used the sub-scales of Describe (DES), Act with Awareness (AW), Non-Reactivity to own thoughts (NR), and Non-Judgment to own experience (NJ)].

With the MANOVA analysis, we seek to observe the differences in the mean scores of each one of the outcome variables across the different groups. The effect represented by time will reflect if the MBI protocols were effective from a general perspective, the group effect will point out if there exist any differences between groups at the general mean level, and the interaction term of group × time will establish if there are differences related to the type of intervention participants underwent and its effects.

Effect sizes were calculated using eta-squared (η^2) and Cohen's *d* with specific cut-off points established at 0.02, 0.13, and 0.26, for small, medium, and big effects, respectively (Cohen, 1992).

RESULTS

As a first step, demographics and outcome variables were compared across groups at the baseline level (pre-intervention). There were no significant differences across groups with regard to gender distribution $s^2(3) = 1.723$, $p = 0.632$. As well there were no significant differences in age groups distribution between groups $\chi^2(9) = 9.058$, $p = 0.432$. Finally, there were no significant differences between the different groups for all the outcome subscales of the variable, for specific results see **Table 5**.

Second, with the MANOVA we observed the effects for the time, group, and the interaction term of time × group. Results indicate a significant effect for a time along with big effect size, Pillai's trace = 0.683, $F(16,31) = 4.174$, $p < 0.001$, $\eta^2 = 0.684$, suggesting significant changes in all groups across time. For group, significant effect a big effect size was found, Pillai's trace = 1.206, $F(32,64) = 3.035$, $p < 0.001$, $\eta^2 = 0.603$, indicating the three are significant differences across all groups. Last, there was a significant effect for the interaction term time × group with big effect size, Pillai's trace = 1.287, $F(32,64) = 3.509$, $p < 0.001$, $\eta^2 = 0.643$, indicating the changes across time are related to the type of intervention participants took part off.

TABLE 5 | Pre-intervention one-way ANOVA test with group as comparison factor.

Scales	Dimensions	df_{effect}	df_{error}	F	*P*
Mindfulness (FFMQ)	Describe	2	61	0.15	0.857
	Act with Awareness	2	61	2.02	0.140
	Non-Judgment	2	61	1.18	0.316
	Non-Reactivity	2	61	0.54	0.586
Psychological wellbeing (SPWB)	Self-acceptance	2	61	0.18	0.839
	Positive relations	2	61	0.12	0.890
	Autonomy	2	61	0.84	0.436
	Environmental mastery	2	61	0.49	0.618
	Purpose in life	2	61	0.66	0.523
	Personal growth	2	61	0.98	0.380
Engagement (UWES)	Dedication	2	61	0.06	0.946
	Vigor	2	61	0.40	0.961
	Absorption	2	61	0.53	0.590
Performance	In role Performance	2	61	0.20	0.821
	Extra Role Performance	2	61	1.00	0.905
Stress (PSS)		2	61	1.70	0.192

Third, we analyzed the follow-up ANOVAs for each one of the outcome variables specific sub-scales representing their dimensions to establish detailed differences between groups. First, we analyzed the sub-scales corresponding to mindfulness. Looking at the results of the time × group interaction, results suggest that significant differences between groups across time could be observed for the sub-scales of Describe [$F(2,46) = 4.342$, $p = 0.019$, $\eta^2 = 0.159$], Act with Awareness [$F(2,46) = 4.342$, $p = 0.024$, $\eta^2 = 0.149$] and Non-reactivity [$F(2,46) = 5.032$, $p = 0.011$, $\eta^2 = 0.180$], all with large effect sizes. No significant differences of mean scores between groups cross-time were detected for the sub-scale of Non-judgment [$F(2,46) = 1.819$, $p = 0.174$, $\eta^2 = 0.073$]. Results are of follow-up ANOVAs are shown in **Table 6**. Close inspection of mean scores suggests that the MSCBI group was more effective at increasing the Describe and Non-reactivity dimensions of mindfulness while the MPSM group was more effective at increasing Acting with Awareness. Mean scores and standard deviations are shown in **Table 7**. These effects become more evident when looking at the graphical representation of the interaction term presented in **Figure 1**. In light of these results, we deem Hypothesis 1 supported and established partial support for Hypothesis 3.

For the sub-scales of subjective psychological wellbeing, the results suggest that significant differences between groups across time could be observed for the sub-scales of Positive Relations [$F(2,46) = 5.815$, $p = 0.006$, $\eta^2 = 0.202$], Autonomy [$F(2,46) = 3.261$, $p = 0.047$, $\eta^2 = 0.124$] and Environmental Mastery [$F(2,46) = 5.375$, $p = 0.008$, $\eta^2 = 0.189$], once again with large effect sizes for all the variables. On the contrary, no significant effects were observed for the sub-scales of Self-Acceptance [$F(2,46) = 1.358$, $p = 0.267$, $\eta^2 = 0.056$], Purpose

TABLE 6 | Follow-up ANOVA test for the effects of time, group and their interaction on outcome variables.

		Time					Group				Time*Group				
Scales	**Dimensions**	**df_{effect}**	**df_{error}**	**F**	***P***	**η2**	**df_{effect}**	**df_{error}**	**F**	***P***	**η2**	**df_{effect}**	**df_{error}**	**F**	***P***	**η2**
Mindfulness (FFMQ)	Describe	1	46	3.423	0.071	0.069	2	46	1.413	0.254	0.058	2	46	4.342	0.019	0.159
	Act with Awareness	1	46	1.703	0.198	0.036	2	46	12.858	<0.001	0.359	2	46	4.035	0.024	0.149
	Non-Judgment	1	46	0.650	0.424	0.014	2	46	4.740	0.013	0.171	2	46	1.819	0.174	0.073
	Non-Reactivity	1	46	21.057	<0.001	0.314	2	46	10.515	<0.001	0.314	2	46	5.032	0.011	0.180
Psychological Wellbeing (SPWB)	Self-acceptance	1	46	12.126	0.001	0.209	2	46	0.778	0.465	0.033	2	46	1.358	0.267	0.056
	Positive relations	1	46	1.357	0.243	0.021	2	46	3.004	0.059	0.116	2	46	5.815	0.006	0.202
	Autonomy	1	46	4.245	0.045	0.084	2	46	9.162	<0.001	0.295	2	46	3.261	0.047	0.124
	Environmental mastery	1	46	2.012	0.163	0.042	2	46	6.598	0.003	0.223	2	46	5.375	0.008	0.189
	Purpose in life	1	46	0.276	0.602	0.042	2	46	0.404	0.670	0.017	2	46	0.248	0.782	0.011
	Personal growth	1	46	2.341	0.080	0.034	2	46	1.925	0.157	0.077	2	46	3.472	0.094	0.055
Engagement (UWES)	Dedication	1	46	3.670	0.62	0.074	2	46	0.106	0.899	0.005	2	46	2.644	0.082	0.103
	Vigor	1	46	2.376	0.130	0.049	2	46	0.568	0.571	0.024	2	46	15.189	<0.001	0.398
	Absorption	1	46	26.371	<0.001	0.364	2	46	2.183	0.124	0.087	2	46	11.000	<0.001	0.324
Performance	In role Performance	1	46	0.749	0.391	0.016	2	46	0.741	0.482	0.032	2	46	5.211	0.009	0.185
	Extra Role Performance	1	46	6.628	0.013	0.126	2	46	1.320	0.277	0.054	2	46	3.336	0.044	0.127
Stress (PSS)		1	46	3.271	0.077	0.066	2	46	0.178	0.837	0.008	2	46	4.667	0.014	0.169

in Life [$F(2,46) = 0.248$, $p = 0.782$, $\eta^2 = 0.011$] and Personal Growth [$F(2,46) = 3.472$, $p = 0.094$, $\eta^2 = 0.055$]. When looking at the different groups means scores, the MPSM group was more effective at increasing the al three dimensions that showed significant differences. A graphical representation of the results is shown in **Figure 2**. In summary, these results support Hypothesis 2.

Concerning the sub-scales of work engagement, significant differences between groups across time could be observed for the sub-scales of Vigor [$F(2,46) = 15.189$, $p \leq 0.001$, $\eta^2 = 0.011$] and Absorption [$F(2,46) = 11.000$, $p \leq 0.001$, $\eta^2 = 0.324$], but not for Dedication [$F(2,46) = 2.644$, $p = 0.082$, $\eta^2 = 0.103$] with large sized effects for all variables. When observing the mean scores of different groups, the MPSM group was more successful at increasing both dimensions of work engagement. Furthermore, this effect is graphically represented in **Figure 3**. These results provide partial support to Hypothesis 4.

For the sub-scales of performance, both In Role Performance [$F(2,46) = 5.211$, $p = 009$, $\eta^2 = 0.185$] and Extra-Role Performance [$F(2,46) = 3.336$, $p = 044$, $\eta^2 = 0.127$] exhibited significant differences between groups across time with large size effects. Closer inspection of mean scores suggests that the MSCBI group was more effective at increasing In-Role Performance, while on the other hand, the MPSM group was more effective at increasing Extra-Role Performance. A graphical representation of this effect is presented in **Figure 4**. In line with the previous paragraph, these results provide full support for Hypothesis 4.

Finally, significant differences between groups across time were observed for Stress [$F(2,46) = 4.667$, $p = 014$, $\eta^2 = 0.169$]. Mean scores suggest that the MSCBI group was slightly more effective at reducing stress than the MPSM group. Graphical representation of this effect is also presented in **Figure 4**. In addition, with the results related to the differences between groups on the different dimensions of Mindfulness, these results provide full support to Hypothesis 3.

DISCUSSION

This study aimed to observe the effects of two different types of MBIs (a lengthier MSCBI program, and a custom work-specific MPSM program) on the levels of mindfulness, psychological wellbeing, work engagement, performance, and stress in a sample of white-collar workers who belonged to two different organizations.

To begin, we seek to establish basic levels of efficacy for both MBI intervention programs when comparing them to a waiting-list control group. Overall, the results suggest that both MBI programs were effective at increasing the levels of mindfulness, psychological wellbeing, work engagement, and performance, as well as diminishing the effects of stress when compared to the control group. The results are in line with previous research and build the case for MBI at work as a successful strategy to increase employee health and wellbeing from a broad perspective that goes beyond the pure amelioration of negative aspects of experience.

Looking into the differential effects of each one of the programs, the MSCBI program was significantly better at

TABLE 7 | Pre – Post-intervention and control groups scores– mean (SD).

		Intervention group [MPSM]		Intervention group [MSCBI]		Control group	
Scales	**Dimensions**	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**
Mindfulness (FFMQ)	Describe	3.27(1.16)	3.67(1.08)	3.35(0.80)	4.23(0.59)	3.42(0.49)	3.22(1.29)
	Act with Awareness	3.52(0.48)	4.08(0.83)	3.54(1.05)	3.74(0.66)	3.17(0.42)	2.88(0.50)
	Non-Judgment	3.53(0.46)	3.64(0.56)	3.68(0.99)	3.89(0.91)	3.38(0.41)	3.11(0.62)
	Non-Reactivity	3.03(0.48)	3.17(0.41)	3.03(0.78)	4.10(0.63)	2.88(0.36)	3.08(0.71)
Psychological wellbeing (SPWB)	Self-acceptance	4.45(0.88)	4.83(0.76)	4.60(0.90)	5.06(0.52)	4.55(0.55)	4.63(0.85)
	Positive relations	4.13(0.78)	4.57(0.79)	4.15(1.11)	4.43(0.82)	4.26(0.81)	3.48(0.93)
	Autonomy	3.98(0.91)	4.63(0.50)	3.65(1.08)	4.07(0.63)	3.61(0.78)	3.31(0.86)
	Environmental mastery	4.26(1.10)	4.96(0.39)	4.21(0.79)	4.15(0.49)	4.04(0.59)	3.85(0.67)
	Purpose in life	4.49(1.00)	4.52(1.02)	4.77(0.76)	4.78(0.85)	4.55(0.75)	4.69(0.79)
	Personal growth	5.45(4.09)	5.43(0.44)	4.56(0.95)	4.73(1.00)	4.60(0.67)	4.57(0.63)
Engagement (UWES)	Dedication	4.31(0.82)	4.64(0.70)	4.39(0.90)	4.58(0.99)	4.40(0.81)	4.56(0.88)
	Vigor	4.35(0.79)	4.97(0.54)	4.39(0.60)	4.43(0.99)	4.42(0.73)	4.32(0.68)
	Absorption	4.11(0.74)	4.80(0.69)	3.87(0.59)	4.64(1.07)	4.00(0.71)	3.90(0.75)
Performance	In role Performance	5.08(0.58)	5.17(0.46)	5.03(0.50)	5.25(0.57)	5.12(0.49)	4.89(0.45)
	Extra Role Performance	4.70(1.00)	5.16(0.63)	4.58(0.83)	5.07(0.92)	4.59(0.82)	4.57(0.84)
Stress (PSS)		2.72(0.53)	2.33(0.33)	2.57(0.37)	2.30(0.43)	2.47(0.40)	2.65(0.33)

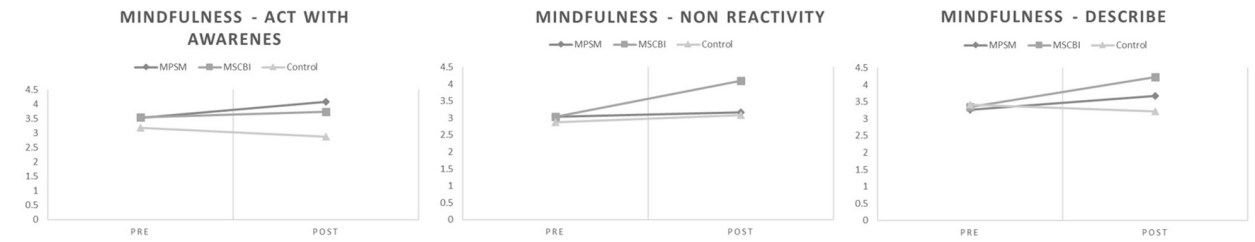

FIGURE 1 | Means estimated for the MBSR group, MPSM group, and control group on pre-intervention and post-intervention time points, for mindfulness dimensions with statistically significant interaction effect.

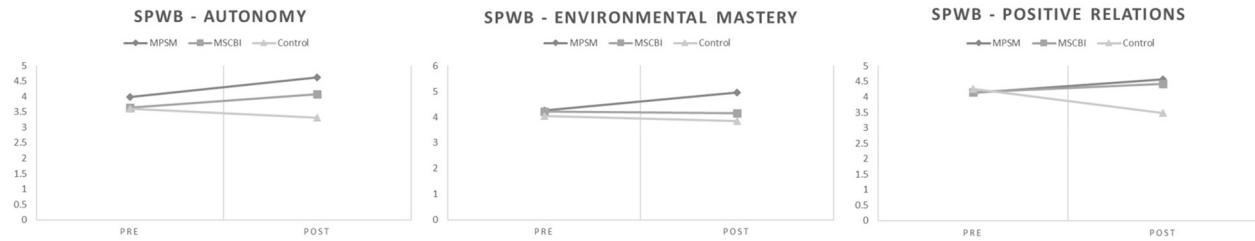

FIGURE 2 | Means estimated for the MBSR group, MPSM group, and control group on pre-intervention and post-intervention time points, for spwb dimensions with statistically significant interaction effect.

increasing the mindfulness facets of description and non-reactivity toward inner experience. This suggests that both the length and depth of the program could be important factors to develop specific mindfulness-related skills. Traditional MBI programs may be better suited for this particular task due to those specific factors.

Nonetheless, the custom MPSM program proved to be slightly better at increasing the acting with awareness mindfulness facet. In the case of this particular difference, we hypothesize it might be related to the use of psychoeducation methods and exercises in tandem with mediation practices that could enhance the sense of awareness present experience. An example of this is the use of character strengths emphasizing self-observation of specific values and behaviors, as well as establishing concrete action plans in the exploration of new ways to practice signature strengths as a mindfulness curiosity exercise.

Concerning the different dimensions of psychological wellbeing, the MPSM program turned out to be slightly better than the MSCBI program at increasing the facets of autonomy, environmental mastery, and positive relations. In this particular

FIGURE 3 | Means estimated for the MBSR group, MPSM group, and control group on pre-intervention and post-intervention time points, for work engagement dimensions with statistically significant interaction effect.

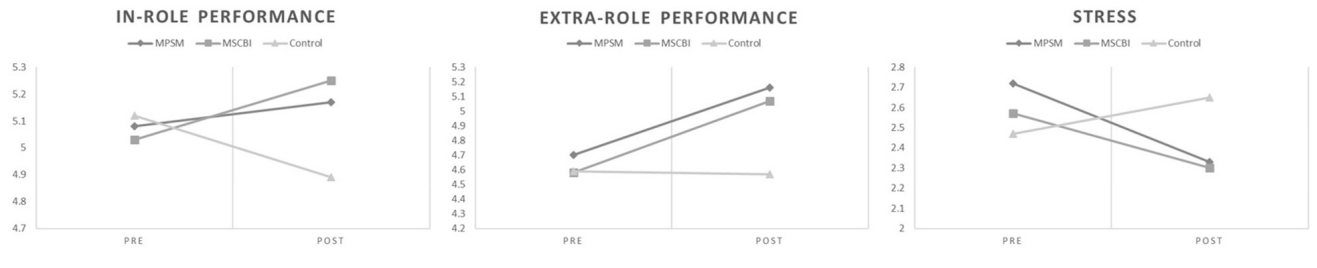

FIGURE 4 | Means estimated for the MBSR group, MPSM group, and control group on pre-intervention and post-intervention time points, for performance dimensions and perceived stress with statistically significant interaction effect.

case, we believe the narrative focus from ACT (Hayes et al., 2006), which builds around the development of intentional and values-committed actions, adds a significant explicit difference that accounts for this difference when it comes to increased levels of autonomy and environmental mastery. Deliberate focus on developing new behaviors related to personal values and positive characteristics of the self may have a more significant impact on the sense of autonomy since it is related to evaluating oneself according to personal standards (Ryff and Singer, 2008). MSCBI is also related to specific actions to detect maladaptive patterns of behavior related to stress. Still, these do not necessarily come explicitly in the form of approach goals or developing new behaviors. Along the same line, the capacity of feeling a sense of control over complex and changing scenarios reflected by environmental mastery is present in the MPSM rationale. The elaboration of specific action plans to cope and re-appraise difficult situations utilizing the inner resources of the participants is a perfect example of this idea. About the changes in positive relations, the differentiation of effects is not as clear between both programs since the differences are marginal. Both programs are deployed in a group setting that invites participants to share personal experiences and insights, incorporating vicarious learning experiences as an important factor.

About the differences in work engagement, our predictions were clearly supported by the results. The differential effects were particularly more explicit on the dimension of vigor. We believe this effect to be related to the incorporation of character strengths in tandem with mindfulness. Individuals who act upon their personal strengths tend to be more energized and engaged (Peláez et al., 2019). For the dimension of absorption, the differences are barely noticeable, and even though the scores for the participants from the MPSM group are a little higher in the post-intervention measurement time, the participants of the MSCBI group saw a more substantial increase from pre to post measurements. Thus, we believe the differences are not so relevant in this particular aspect.

With regard to performance, the results showed that the MSCBI program was slightly better at increasing in-role performance. More prolonged exposure to systematic meditation practices can be a significant factor when accounting for this difference. Executive processing and attentional capacities that change with meditation practices are dose-dependent (Lao et al., 2016), therefore a larger dose may have a significantly larger effect in the specific processes that may support individual in-role performance. On the other hand, the MBSP program was better at increasing extra-role performance, which revolves around behaviors that go above and beyond established goals and responsibilities. Again, we believe this is linked to the incorporation of character strengths to mindfulness practice since individuals that have the possibility to practice and enact their values in work-related scenarios tend to go beyond the norm in terms of effort and engagement with their work and companions (Peláez et al., 2019).

Next, the results regarding the decrease in levels of stress are in line with the existing literature pointing to the benefits of MBIs as effective strategies to help workers manage stress (Khoury et al., 2015; Bartlett et al., 2019). In this line, it is no surprise that the MSCBI program was more effective at diminishing the stress of the participants, considering that the rationale and focus of the program are built around this particular goal. However, it is important to note that shorter programs can be successful as well. They should be treated as the initial steps in the stress management process and should be sustained in time utilizing complementary strategies such as workplace-based wellbeing promotion programs that underline the importance of sustained practice in time to reap the benefits of mindfulness.

Finally, this study presents significant contributions to the study of MBIs in the workplace setting. First, it expands the effectiveness of MBIs to the population of office or white-collar workers proving that not only healthcare workers can benefit from mindfulness and related skills in their daily activities at work. Second, we support the claim for the positive effects of MBIs beyond the mitigation of negative aspects of human experience and broaden the scope toward the inclusion of wellbeing-related constructs such as work engagement and psychological wellbeing. This proposal is aligned with the calling for bridges between contemplative traditions and psychology articulated toward the pursuit of our highest potential or best possible self (Cebolla et al., 2017; Coo and Salanova, 2018). Third, we provide evidence in favor of mindfulness changing the individuals' perception of their own capacity and performance. This claim is not only rooted in subjective experience changes in relation to work capacity of the workers but also in the changes that occur in terms of stress management, executive processing, and cognitive flexibility improvements, and their neurophysiological correlates (Holzel et al., 2011).

Last but not least, our study supports the use of customized MBIs adapted to the work context. Even though there is great value in the use of standardized programs, adaptations of the basic building blocks of MBI to the experience of the participants are key when designing interventions for success. Underlying this notion is the fact that not all intervention designs will work the same for different groups of people, and thus is valuable work to establish legitimate and effective customized approaches that take into account what works from whom under what circumstances (Nielsen and Miraglia, 2016).

Limitations

Besides the contributions our study seeks to offer, there are also a significant number of limitations. First, the use of solely self-report measures is one of the recurring weaknesses of intervention studies in general. In our case, we could not access objective measures of performance, nor implement behavioral measures of mindfulness due to constraints imposed by the organizations we worked with. However, in an effort to provide an argument in favor of the validity of our data and following the recommendations of Podsakoff et al., 2012) to address common-method bias, single latent factor tests were performed for both pre and post measurements and in both cases the amount of variance explained by the unrotated single factors solution was less than 20% indicating the distinctiveness of each measure.

Another critical limitation has to do with the small size of the samples. Intervention studies require a great deal of time and resources from the researchers and the participating organizations, and expanding sample sizes toward the inclusion of larger numbers of participants is an endeavor that requires an equally large amount of time, resources, and effort. That being said, smaller sample sizes of well-described and contextualized scenarios are still valuable and pose a Contribution To The Field.

Finally, the lack of long-term follow-up measurements hinders our ability to test the longevity of the effects of the different intervention protocols. Discriminating confounding and contextual effects with the passage of time in different workplaces makes it difficult to support the validity of long-term measurements. However, the development and inclusion of objective measures of performance, and biobehavioral aspects of wellbeing can be a potential solution for this predicament.

Future Research and Final Remarks

As for suggestions toward future research, we believe there is great value in the design and implementation of intervention studies that incorporate different blocks of content and skills to be developed that allows for testing in a scaled fashion between different groups to dismantle the effects of different components (e.g., Lindsay et al., 2018b). Approaches like this could shed light on the possible synergies between different components, clearly identifying the core aspects of MBIs and also looking for potentially unwanted effects.

As well, the inclusion of cost-effect evaluations is the logical next step to develop solid arguments that go beyond the psychological benefits of implementing MBIs at work. Including financial evidence in favor of MBI as occupational health interventions with a positive return on investment will make them more readily available both in the private and public sectors.

Finally, incorporating objective measures of performance and biobehavioral aspects of wellbeing can further legitimate the positive effects derived from MBIs at work, providing solid ground for the actual benefits going beyond experimental and laboratory settings. Along the same line, planning for long term follow-up measures in tandem with structural measures to improve adherence to practice and effect sustainability is a relevant area still to be explored as is the incorporation of a multilevel perspective to expand the conception of mindfulness beyond the individual perspective into teams and organizations.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the Research Ethics Committee of

Universitat Jaume I of Castellón, Spain. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

CC contributed with the concept, data collection, analysis, writing, and editing of the manuscript. MS, SL, and DM-R contributed to the concept and review of the manuscript. MB-B contributed with the data collection and treatment. RM contributed with the intervention program design and description. All authors contributed to the article and approved the submitted version.

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Bibliometric Differences Between WEIRD and Non-WEIRD Countries in the Outcome Research on Solution-Focused Brief Therapy

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Solution Focused Brief Therapy (SFBT) developed in parallel to Positive Psychology, as a type of intervention that also emphasizes the strengths and resources of clients. The aim of this study was to examine the development of outcome research on SFBT and to determine whether it is predominantly carried out in Western, Educated, Industrialized, Rich and Democratic (WEIRD) countries. A literature review was conducted using a bibliometric methodology, identifying: (a) authors and countries, (b) time trends, (c) language of publications; (d) and journals; (e) samples on which they were tested; (f) characteristics of interventions; and (g) main study designs. A total of 365 original outcome research articles published in scientific journals on solution-focused interventions were extracted. The results show that outcome research on SFBT has grown steadily over the last three decades. Although it started in WEIRD countries, the number of outcome research publications generated in non-WEIRD countries is now higher. There is little international collaboration and, although English is the main language of publication in WEIRD countries, English, Chinese and Parsi predominate in non-WEIRD countries. Productivity is low and most authors have only published one paper. The journals that have published the most papers have a very diverse visibility. The tested interventions are conducted both in clinical and non-clinical samples; mostly in individual and group format; face-to-face; and not only in the form of psychotherapy, but also as coaching and school interventions. Almost half of the publications are randomized controlled trials. The results confirm the wide applicability of SFBT as a single or main component of psychosocial interventions. They support the claim that solution-focused interventions are not a WEIRD practice, but a global practice.

Keywords: solution-focused brief therapy, solution-focused therapy, positive psychology, WEIRD, non-WEIRD, bibliometric analysis

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INTRODUCTION

Solution-focused Brief Therapy (SFBT) is a therapeutic approach that developed outside the Positive Psychology field but shows several fundamental coincidences with it. SFBT was created by Steve de Shazer, Insoo Kim Berg and a group of enthusiastic social workers in Milwaukee, Wisconsin in the eighties, years before the official creation of the Positive Psychology field

(Seligman, 1999). SFBT developed within the strategic tradition of brief family therapy (Weakland et al., 1982), initially as a way to complement its narrow focus on interactional problem patterns (de Shazer et al., 1986), but evolved into a radical approach that changed the therapy focus from problems to what was called "solutions": exceptions to the problems, strengths, improvements and goals (de Shazer, 1994; de Shazer et al., 2007). The emphasis on the strengths and resources of clients, and the straightforward nature of the approach, lead to its expansion to a number of intervention contexts beyond psychotherapy and family therapy: social work (Sundman, 1997), child protection (Berg and Kelly, 2000), coaching (Berg and Szabó, 2005), nursing (MCAllister, 2007), organizational consulting (McKergow, 2012), mediation (Bannink, 2007), pastoral work (Kollar, 1997), school counseling (Kelly et al., 2008), or University teaching (Devlin, 2003), among others. Over the last decades, SFBT has amassed considerable evidence of its effectiveness and cost-efficiency in a variety of contexts (Kim, 2008, 2012; Bond et al., 2013; Gingerich and Peterson, 2013; Kim et al., 2015, 2019; Carr et al., 2016; Gong and Hsu, 2017), demonstrating outcomes equivalent to those of alternative interventions, both at termination (e.g., Creswell et al., 2017) and at follow-up (e.g., Boyer et al., 2015).

The similarities and complementarities between Positive Psychology (PP) and the solution-focused approach have been pointed out by a number of scholars (Glass, 2009; Bannink and Jackson, 2011; Warner, 2013; Blundo et al., 2014; Pereira et al., 2017). At the level of practice, solution-focused therapists co-construct solutions in dialogue with their clients by focusing on their desired futures and those occasions when parts of those futures are already happening, capitalizing on clients' strengths and past successes instead of analyzing problems and their causes. SFBT is therefore not a problem-solving procedure, but a process of solution construction. At a conceptual level, the solution-focused approach shares with Positive Psychology the trust in the capabilities and strengths of people, the rejection of the "illness ideology" (Maddux, 2009) and the deconstruction of diagnostic labels (de Shazer and Berg, 1991). SFBT is not construed as specific therapies for specific "disorders," but as a general procedure that can help all kind of clients achieve their own goals. The solution-focused emphasis on collaboration with clients and on "leading from one step behind" (Cantwell and Holmes, 1994) is consistent with the promotion of clients' self-determination (Deci and Ryan, 2002) and self-efficacy (Maddux, 2009); the position of curiosity and humility that solution-focused practitioners adopt vis a vis their clients resonates with Positive Psychology's emphasis on the character strengths and virtues of people (Peterson and Seligman, 2004). The recent emphasis in the SFBT literature on the emotional side of SFBT interventions, and specifically on the role of positive emotions in promoting therapeutic in-session change (Connie, 2013; Kim and Franklin, 2015; Neipp et al., 2016) is another parallel with Positive Psychology interests (Fredrickson, 2001).

There are also some important differences among PPIs (Positive Psychology Interventions) and SFBT interventions. The most salient one is that in the solution-focused approach there is no aspiration to propose a universal model of psychological wellbeing or to promote a given recipe for happiness or growth, as is the case in PP (for instance, PERMA, Seligman, 2018). Instead, SFBT takes a constructivist and non-expert approach to wellbeing that translates into a constant effort to adjust to the individual person, to respect their worldviews and use their values and believes as resources for change. In our view, this makes SFBT especially suited to work within different cultural contexts and to intervene with cultural minorities and specific communities (Kim, 2013; Ouer, 2016). Another difference is that SFBT comes from a "hands on," action-oriented social work tradition, outside the world of academia and university-based research in which PP is rooted. Furthermore, SFBT developed as a brief intervention to construct workable, as simple as possible solutions in difficult contexts. In our view, the solution-focused emphasis on simplicity and the use brief interventions also increases its applicability with under-privileged populations. Another difference is that SFBT is far more homogeneous than PPIs. While PPIs include a number of very different practices, from positive recollections and positive psycho education to gratitude expression, mindfulness or life review (Hendriks et al., 2018), all SFBT interventions include, in one way or another, the same basic elements of the solution-building process.

These differences between PPIs and SFBT may give SFBT an advantage in terms of how applicable it is worldwide, beyond the limits of western countries. Different authors indicate that PPIs are too Western-centric (Christopher and Hickinbottom, 2008; Frawley, 2015) since the origin of Positive Psychology is linked to the North American culture. In PP, happiness and flourishing are constructed as an individual process, assuming social and cultural values of that region, underestimating the importance of social, cultural and historical factors of other countries. This is evidenced in a recent systematic review by Kim et al. (2018) who conclude that 78% of the research in Positive Psychology has been conducted in Western countries. Moreover, the bibliometric study carried out by Hendriks et al. (2018) reflects that 78.2% of Randomized Controlled Trials (RCTs) on the efficacy of PPI have been conducted in WEIRD countries. Most of the samples represented in these studies are WEIRD samples (Western, Educated, Industrialized, Rich and Democratic; Henrich et al., 2010a,b) and do not represent the characteristics of the majority of the world's population. However, since 2012 there has been a strong increase in publications on PPI from non-Western countries, indicating a promising trend of expansion of positive psychology research globally (Hendriks et al., 2018).

This study examined the differences between WEIRD and non-WEIRD countries in the worldwide scientific production on SFBT. To this end, a bibliometric study of the literature on SFBT outcome research was carried out, in which (a) authors and countries, (b) time trends, (c) language of the publications; (d) and journals were identified; (e) the samples on which SFBT were tested; (f) the features of the SFBT interventions (use of SFBT, format of implementation, type of intervention and modality of intervention); and (g) the main study designs of research on this type of interventions were also analyzed. Based on the differences between PP and SFBT, we expected to

find a more balanced WEIRD/non-WEIRD production on SFBT interventions than on PPIs.

METHODS

Search Methods

A systematic literature search was conducted by BMR and ASP from May 29th to May 31st, 2021, in nine databases: Web of Science Core Collection (WOSCc), Medline, Scopus, PsycINFO, ERIC, Embase, PubMed, ASSIA y SciELO. The databases were searched with the following terms, adapted to each database: solution focused brief therapy OR solution focused therapy. The search was done on the titles, abstracts and keywords of articles, without any restrictions on dates, language or availability. In addition, all articles included in the data base on research on Solution Focused Brief Therapy of the Solution Focused Brief Therapy Association (SFBTA)[1] were reviewed.

Search Outcomes and Eligibility Criteria

2,251 records were initially identified. After removal of duplicates, 1,144 remained. MCN performed a first reading of the titles and abstracts, eliminating another 528 records. Afterward, MCN and MB reviewed the whole data base, selecting 365 records for the bibliometric analysis. The few disagreements between the two authors were discussed and solved by consensus.

The same inclusion and exclusion criteria were used at all stages of the selection process. Inclusion criteria were: (a) original research articles, (b) published in scientific journals, (c) on the outcome (effectiveness or efficacy) of psychosocial interventions in which (d) at least one component was solution-focused. We excluded: (a) non-original research papers, (b) research papers that did not focus on interventions, and (c) research papers that focused only on the process of a SFI (not on its outcome). Papers with non-accessible content were also excluded (**Figure 1**).

Data Extraction and Analysis

Once all original papers had been retrieved, BMR, ASP and MCN extracted their titles, abstracts, authors, affiliations, publication year and journal. Information on the design of the study, the sample (type of participants and sample size) and the intervention (type, context, and format) was extracted by MCN and MB.

MCN and BMR classified the articles as proceeding from WEIRD or non-WEIRD countries according to the affiliation of their first author. Hendriks et al.'s (2018) criteria were used: (1) Western: countries in North America, Western Europe, Israel, Australia and New Zealand were classified as Western societies. (2) Educated: human development was rated as very high, high, average, or low according to the United Nations Development Programme (2020). (3) Industrialized: countries were classified as advanced or emerging economies, according to the International Monetary Fund (2021). (4) Rich: The Global Wealth Databook (Credit Suisse, 2020) was the basis to classify countries as high, upper middle, lower middle and low income. (5) Democratic: countries were classified as a full democracy, a flawed democracy, a hybrid regime or an authoritarian regime according to the Democracy Index compiled by The Economist Intelligence Unit [EIU], 2007, 2008, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020. The Democracy Index is subject to temporal variations due to conjunctural political changes. For this reason, we used the average Democracy Index score from 2006 to 2020. Countries were classified as WEIRD if they met all five (see **Table 1**).

Bradford's Law (Bradford, 1934; Brookes, 1969) was used to classify the journals that published the retrieved papers according to three groups of decreasing productivity. Each group contains an approximate number of articles that have been published by a decreasing number of journals. This allows the determination of a first group of journals with the highest production and two others with the lowest productivity in geometric progression. Price's transience index, [(number of authors with only one publication/total number of authors) × 100] was the used to evaluate the proportion of authors with only one publication.

All data obtained were stored and descriptively analyzed with Microsoft Excel. In addition, chi-square analysis and Student's *t*-test were performed with the IBM SPSS Statistics 26 to compare the proportions of different sample types and of different intervention features in WEIRD and non-WEIRD countries.

RESULTS

General Bibliometrics

The 365 outcome research articles on SFBT originated from 12 WEIRD and from 21 non-WEIRD countries in all five continents. Of the 365 studies, 175 (47.95%) were conducted in WEIRD countries and 190 (52.05%), in non-WEIRD ones (**Figure 2**). By continents, 44.11% of the papers originated from Asia, with China, Iran, Turkey y South Korea accounting for 39.45% of the studies; twelve European countries made the second largest contribution (28.49%), originating mostly in United Kingdom, Finland, Netherlands and Lithuania (20.82%). Seven American countries accounted for 21.37% of the studies, most of them conducted in United States and Canada (18.08%); Oceania (4.66%) and Africa (1.37%) were only marginal contributors. Seventy-five percent of all the studies originated in only eight of 33 contributing countries, five of them WEIRD (United States, United Kingdom, Finland, Australia, and Netherlands) and three of them non-WEIRD (China, Iran, and Turkey) countries.

As far as international cooperation in concerned, only 17 retrieved studies were conducted by authors of different countries. Nine of these international collaborations included authors from different WEIRD countries, most of them European, and eight publications had author affiliations from WEIRD and non-WEIRD countries.

Outcome research on SFBT has been published from 1991 to 2021 (*Min.* = 1; *Max.* = 55), with a slow progression up to 2006 (n = 52; Mean = 3.25), a constant growth until 2016 (n = 225; Mean = 22.5) and some decline after that (n = 88; Mean = 17.6) (**Figure 3**). The first outcome studies on SFBT were published in WEIRD countries during the nineteenths, with an irregular

[1]https://www.sfbta.org/current-research

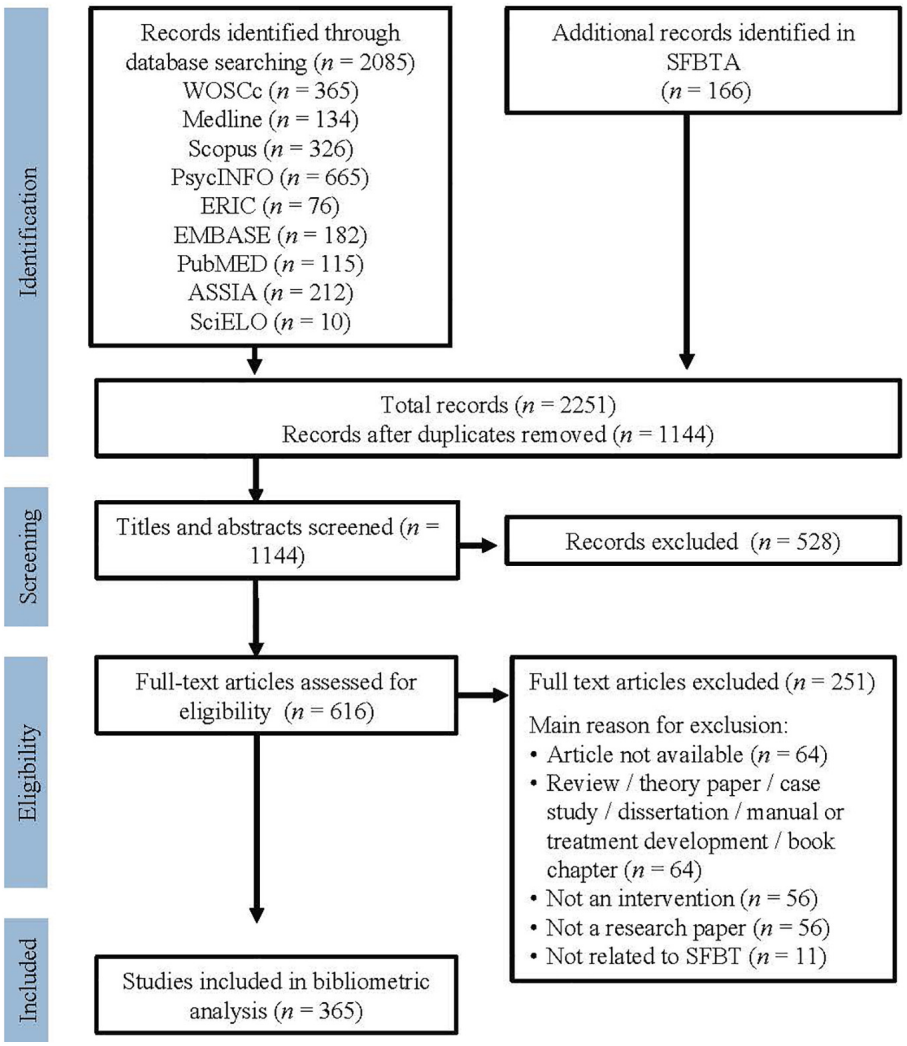

FIGURE 1 | Flow chat through the different phases of the literature review.

progression over the next 30 years. Although research on SFBT in non-WEIRD countries began in 1994 with a paper from Greece, it was not until a decade later that a real start took place. The non-WEIRD outcome research shows a more regular progression than the WEIRD production, accelerating between 2013 and 2017, when it reached the level of accumulated publications of WEIRD countries. From 2003 (when research on SFBT started to be published in non-WEIRD countries) until 2012 the average ratio of non-WEIRD vs. WEIRD publications was 1:3.4. From 2013 on, the number of yearly publications in non-WEIRD countries has doubled the production of WEIRD countries, with an average ratio of 2.3:1 (see **Figure 3**).

All studies conducted in WEIRD countries were published in English (93.09%). In non-WEIRD publications, the most used languages were English (35.59%), Chinese (31.64%) and Parsi (19.77%); and to a lesser extent Spanish (5.08%), Korean (5.08%), Turkish (4.52%), Indonesian (2.26), Thai (2.26%), Japanese (0.56%), and Lithuanian (0.56%).

Publications on the outcomes of SFBT were authored by 969 different contributors, with a range of 1–11 authors per publication. These authors signed 1,251 times, with an average of 3.4 authors per publication. 45.48% of authorships corresponded to non-WEIRD, and 54.52% to WEIRD countries. Only five authors were great producers, with 10 or more publications (see **Table 2**). A high transience rate of 84.52% was found, with 819 of the 969 authors participating in only one publication. This indicates that the majority were occasional authors in this field. Finally, of the 14 authors with five or more publications, only three were from non-WEIRD countries; the affiliations of the first nine authors in order of productivity were all in WEIRD countries.

Solution focused brief therapy outcome studies have been published in 261 different journals. Applying Bradford's Law (Bradford, 1934; Brookes, 1969), 11 journals are the most productive ones, having published four or more articles on SFBT outcomes (n = 69; 18.90%). In these 11 journals, 72.46% of the

TABLE 1 | Description of WEIRD parameters by country and classification.

Country	W[1]	E[2]	I[3]	R[4]	D[5]	Classification
Australia	Western	Very high	Advanced	High	Full	WEIRD
Bolivia	Non-Western	High	Emerging	Lower middle	Hybrid	Non-WEIRD
Canada	Western	Very high	Advanced	High	Full	WEIRD
Chile	Non-Western	Very high	Emerging	Upper middle	Full	Non-WEIRD
China	Non-Western	High	Emerging	Upper middle	Authoritarian	Non-WEIRD
Colombia	Non-Western	High	Emerging	Lower middle	Flawed	Non-WEIRD
Finland	Western	Very high	Advanced	High	Full	WEIRD
Germany	Western	Very high	Advanced	High	Full	WEIRD
Greece	Western	Very high	Advanced	High	Flawed	Non-WEIRD
India	Non-Western	Medium	Emerging	Lower middle	Flawed	Non-WEIRD
Indonesia	Non-Western	High	Emerging	Lower middle	Flawed	Non-WEIRD
Iran	Non-Western	High	Emerging	Lower middle	Authoritarian	Non-WEIRD
Ireland	Western	Very high	Advanced	High	Full	WEIRD
Japan	Non-Western	Very high	Advanced	High	Full	Non-WEIRD
Jordan	Non-Western	High	Emerging	Upper middle	Authoritarian	Non-WEIRD
Lithuania	Eastern Europe	Very high	Advanced	High	Flawed	Non-WEIRD
Mexico	Non-Western	High	Emerging	Upper middle	Flawed	Non-WEIRD
Netherlands	Western	Very high	Advanced	High	Full	WEIRD
New Zealand	Western	Very high	Advanced	High	Full	WEIRD
Nigeria	Non-Western	Low	Emerging	Low	Hybrid	Non-WEIRD
Norway	Western	Very high	Advanced	High	Full	WEIRD
Peru	Non-Western	High	Emerging	Lower middle	Flawed	Non-WEIRD
Poland	Eastern Europe	Very high	Advanced	High	Flawed	Non-WEIRD
Romania	Eastern Europe	Very high	Advanced	High	Flawed	Non-WEIRD
South Africa	Non-Western	Medium	Emerging	Lower middle	Flawed	Non-WEIRD
South Korea	Non-Western	Very high	Advanced	High	Full	Non-WEIRD
Spain	Western	Very high	Advanced	High	Full	WEIRD
Sweden	Western	Very high	Advanced	High	Full	WEIRD
Taiwan	Non-Western	Very high	Advanced	High	Flawed	Non-WEIRD
Thailand	Non-Western	High	Emerging	Upper middle	Flawed	Non-WEIRD
Turkey	Non-Western	Very high	Emerging	Upper middle	Hybrid	Non-WEIRD
United Kingdom	Western	Very high	Advanced	High	Full	WEIRD
United States	Western	Very high	Advanced	High	Full	WEIRD

[1]*W, region.*
[2]*E, educated (human development).*
[3]*I, industrialized (economy).*
[4]*R, rich (income).*
[5]*D, democratic.*

publications come from WEIRD and 27.54% from non-WEIRD countries (see **Table 3**). As far as their visibility is concerned, eight of the 11 most productive journals were indexed in the WOS and SCOPUS databases, and seven in the JCR 2020 edition. However, the most productive journal, the *Chinese Journal of Modern Nursing,* is not indexed in any of these three, while the *Journal of Systemic Therapies* and *Modern Nursing* are only indexed in Google Scholar.

Samples in the Retrieved Studies

In the retrieved SFBT studies, samples ranged from 1 to 3,910 subjects, with an average of 98.13 and a Median of 148.13. The average sample size was 135.27 (SD = 379.52) in WEIRD studies and 63.54 (SD = 53.72) in non-WEIRD studies, and it was significantly different (t = 2.610; p = 0.000). Taking only RCTs into account, the average sample size was 212.03 (SD = 395.59) in WEIRD studies and 73.93 (SD = 41.29) in non-WEIRD studies, also a significant difference (t = 3.678, p = 0.000).

Of the 365 papers on the outcome of SFBT, 182 studies had clinical samples (60.49% of all subjects) (see **Figure 4**). Of these, 86 (40.31% of subjects) were done by researchers from WEIRD countries and 96 (20.18% of subjects) were conducted by researchers from non-WEIRD countries.

The remaining 183 studies (39.51% of all subjects) were conducted on a wide range of non-clinical samples (see **Figure 4**): (a) General population (n = 86; 8,201 subjects), with the same number of papers in WEIRD and non-WEIRD countries (50% of papers and 74% of subjects from WEIRD countries); (b) primary and secondary school students (n = 43; 2,245 subjects), with a larger sample in the non-WEIRD

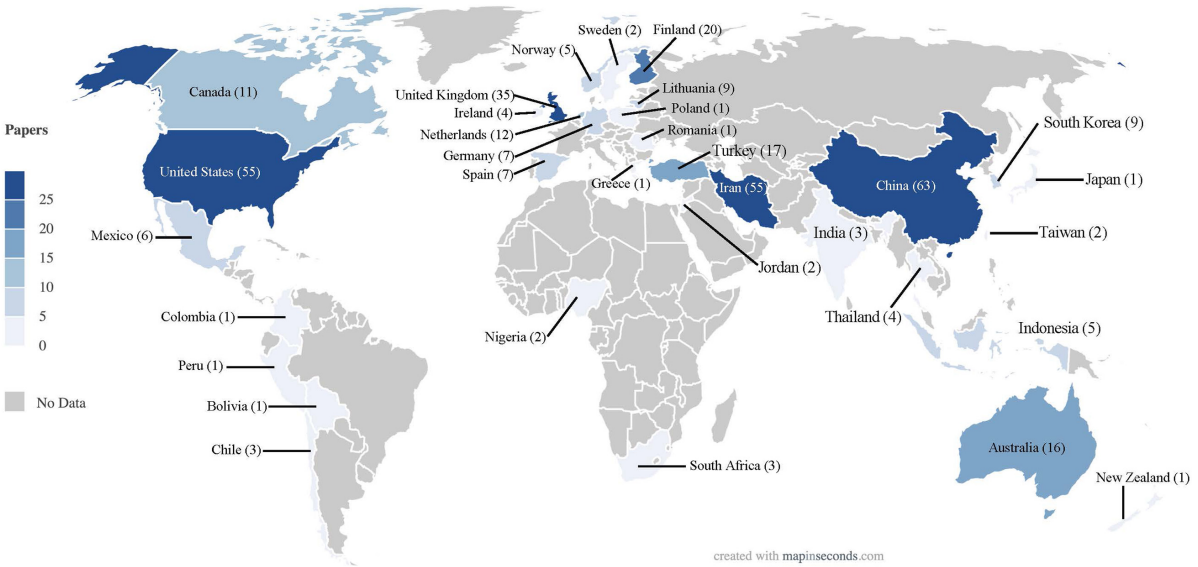

FIGURE 2 | Geographical distribution of selected publications.

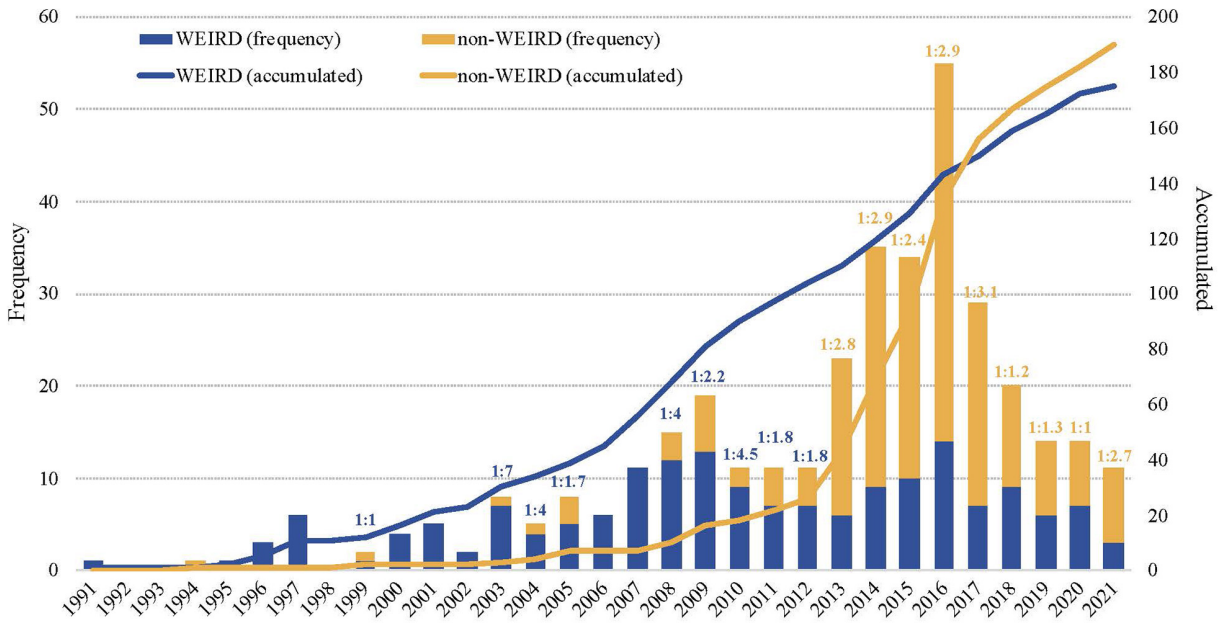

FIGURE 3 | Temporal distribution of publications, accumulated frequency and WEIRD/non-WEIRD publication ratio.

country papers (58.14% of papers and 41.11% of subjects); (c) university students (n = 25; 2,160 subjects), with more papers published in non-WEIRD countries but similar samples (60% of papers and 49.44% of subjects); (d) social service users (n = 15; 1,028 subjects), with a majority of WEIRD countries (53.33% of papers and 56.03% of subjects); and (e) company workers (n = 14; 518 subjects), also with a majority of WEIRD countries (71.43% of papers and 66.41% of subjects). Globally, the differences between WEIRD and non-WEIRD countries in the distribution of sample types were not statistically significant.

Features of the Solution Focused Brief Therapy

In the majority (84.38%) of the retrieved studies, the SFBT was either the exclusive component of the tested intervention (65.48%; 42.26% WEIRD and 57.74% non-WEIRD) or the main component (18.90%; 53.62% WEIRD and 46.38 non-WEIRD)

TABLE 2 | Most productive authors.

Author	Articles	Institution	Country
Paul B. Knekt	19	Finnish Institute for Health and Welfare	Finland
Olavi Lindfors	19	Finnish Institute for Health and Welfare	Finland
Esa Virtala	12	Finnish Institute for Health and Welfare	Finland
Cynthia G. S. Franklin	11	The University of Texas at Austin	United States
Maarit Laaksonen	10	Finnish Institute for Health and Welfare	Finland
Mark Beyebach	8	Univ. Pública Navarra and Univ. Pontificia Salamanca	Spain
Anthony M. Grant	8	University of Sydney	Australia
Tommi Härkänen	8	Finnish Institute for Health and Welfare	Finland
Erkki Heinonen	7	Finnish Institute for Health and Welfare	Finland
Viktorija Cepukiene	5	Vytautas Magnus University	Lithuania
David Alexander Grone	5	Goethe-Univeresität Frankfurt am Main	Germany
Stefanie Mache	5	Universitätsklinikum Hamburg-Eppendorf	Germany
Rytis Pakrosnis	5	Vytautas Magnus University	Lithuania
Abdollah Shafiabadi	5	Islamic Azad Univ. and Allameh Tabataba'i Univ.	Iran

(see **Figure 5A**). Only in a small proportion of studies the solution-focused component was one of two elements of the intervention (4.66%; 64.71% WEIRD and 35.29% non-WEIRD), or a minority component (8.2%; 86.21% WEIRD and 13.79% non-WEIRD). The differences between WEIRD and non-WEIRD countries in the overall distribution of the intervention content were statistically significant ($X^2 = 19.68$; $p = 0.000$). Z analyses reveal that there were significantly more WEIRD than non-WEIRD publication on studies where the solution focused approach was a minority component ($Z = 3.2$; $p < 0.05$).

As far as the intervention type is concerned, a majority of the SFBT studied were classified as psychotherapy (56.44%), followed by coaching (16.99%) and school counseling (16.44%) (see **Figure 5C**). Less frequent were publications on SFBT with organizations (3.29%), communities (1.64%) and in child protection (0.82%); the contribution of non-WEIRD countries to the SFBT literature in these fields was almost inexistent ($n = 6$). The distribution of SFI type by WEIRD/non-WEIRD countries was not significantly different ($X^2 = 9.36$; $p = 0.154$).

The intervention format of the SFBT interventions (see **Figure 5B**) was individual in 46.30% of the extracted studies (53.85% WEIRD and 46.15% non-WEIRD countries). Group interventions were the second most used interventions, with a 38.90% of the published papers (40.14% WEIRD and 59.86% non-WEIRD countries). Family SFBT was less frequent, 4.38% (12.50% WEIRD and 87.50% non-WEIRD), and couple SFBT was analyzed in 3.56% of the publications (38.46% WEIRD and 61.54% non-WEIRD). In 25 of the 365 SFBT research studies (4.38%) it was not possible to ascertain the intervention format.

TABLE 3 | Journals, papers published in WEIRD and non-WEIRD countries and presence in databases.

Journal	n	WEIRD	Non-WEIRD	WOS	Scopus	Google Scholar	JCR[2]
Chinese J. of Modern Nursing	11	0	11	No	No	No	–
J. of Systemic Therapies	9	8	1	No	No	Yes	–
Research on Social Work Practice	7	5	2	Yes	Yes	Yes	Q1
J. of Affective Disorders	6	6	0	Yes	Yes	Yes	Q2
J. of Family Psychotherapy	6	5	1	Yes	Yes	Yes	Q4
J. of Marital and Family Therapy	6	6	0	Yes	Yes	Yes	Q3
J. of Psychiatric and Mental Health Nursing	6	6	0	Yes	Yes	Yes	Q3
J. of Family Therapy	5	5	0	Yes	Yes	Yes	Q4
Modern Nursing	1	4	5	No	No	Yes	–
Children and Schools	4	0	4	Yes	Yes	Yes	–
J. of Positive Psychology	4	0	4	Yes	Yes	Yes	Q1
First area of productivity[1]	11/69	51	18				
Second area of productivity[1]	38/84	49	45				
Third area of productivity[1]	212/212	88	124				

[1]Distribution of journals and papers according to Bradford's area of productivity and WEIRD and non-WEIRD countries.
[2]Quartile of the Journal in its category in the Journal citation Reports (JCR) 2020.

The differences between WEIRD and non-WEIRD countries in the distribution of SFI format were statistically significant ($X^2 = 16.63$; $p = 0.002$). Z analyses reveal that there were significantly more non-WEIRD than WEIRD publication on group interventions ($Z = 1.1$; $p < 0.05$) and more WEIRD than non-WEIRD publications on family interventions ($Z = 4.3$; $p < 0.05$).

Regarding the intervention modality, an overwhelming majority of the SFBT took place face-to-face (95.89%), both in WEIRD (46.86%) and in non-WEIRD (53.14%) countries. Online (3.01%) and telephone (0.55%) interventions were rare (see **Figure 5D**).

Design of the Retrieved Studies

As far as the scientific design of the extracted studies is concerned, 169 SFI outcome studies (46.30%) were randomized trials (36.69% WEIRD and 63.31% non-WEIRD). Quasi-experimental studies with non-randomized trials of two groups account for 26.85% of the publications (42.86% WEIRD and 57.14%

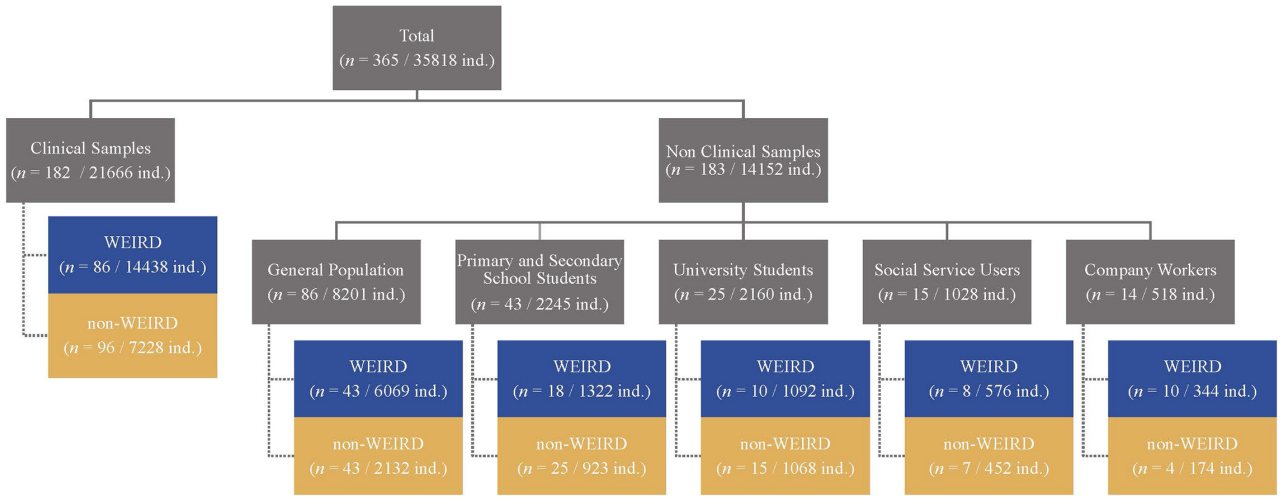

FIGURE 4 | Number of papers and sample size with different types of participants in WEIRD and non-WEIRD studies.

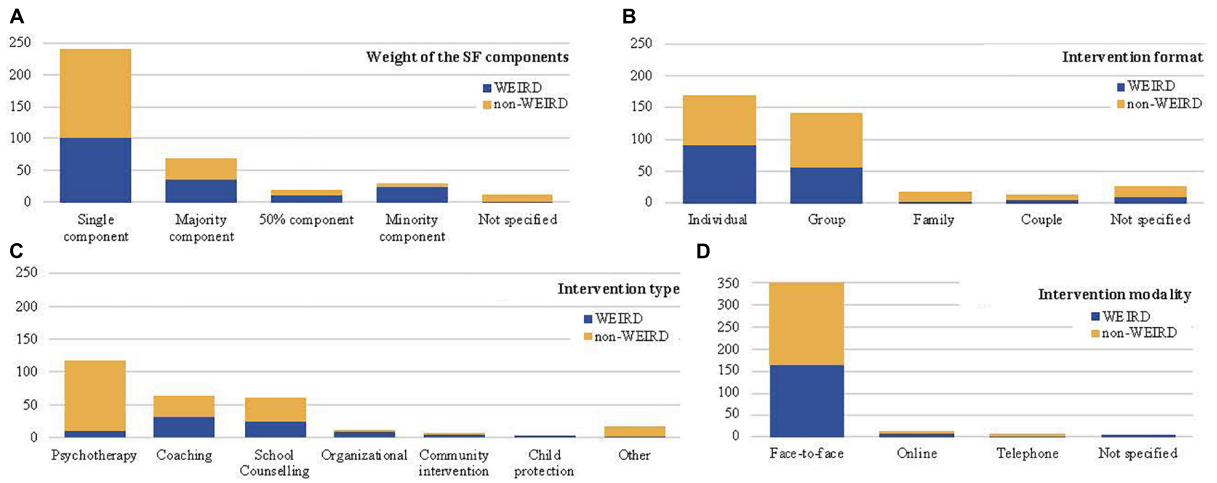

FIGURE 5 | Comparison of SFBT features between WEIRD and non-WEIRD countries. **(A)** Weight of the SF components. **(B)** Intervention format. **(C)** Intervention type. **(D)** Intervention modality.

non-WEIRD) and naturalistic, quasi-experimental single-group pre/post treatment studies for 13.42% (75.51% WEIRD and 24.49% non-WEIRD). The least frequent designs were single-case studies, with 6.85% of the publications (68% WEIRD and 32% non-WEIRD), and qualitative methodology studies, with 6.30% (73.91% WEIRD and 26.09% non-WEIRD). The differences between WEIRD and non-WEIRD countries were statistically significant (X^2 = 34.75; p = 0.000). Z analyses reveal that there were significantly more RCTs in non-WEIRD than WEIRD countries (Z = 4.6; $p < 0.05$) whereas WEIRD studies were more often naturalistic (Z = 5.06; $p < 0.05$) or qualitative (Z = 3.4; $p < 0.05$) than non-WEIRD ones.

Analyzing only RCTs with 30 or more experimental subjects (n = 144), the differences in the progression of studies in WEIRD vs. non-WEIRD (see **Figure 6**) became more accentuated than for the general data (see **Figure 3**). RCT on SFBT started to be published in WEIRD countries in 1991, while the first non-WEIRD RCTs appeared only in 2009. However, only 6 year later, in 2015, the SFBT studied with RCT in non-WEIRD countries had surpassed the level of RCTs in WEIRD countries, a trend that continues until 2021.

DISCUSSION

The first purpose of this study was to examine the development over time of the outcome research on SFBT. A second purpose was to determine if SFBT, which comes from a less theory-driven and more "hands-on" tradition than mainstream PPI, is WEIRD-centric from a scientometric point of view. Finally, we wanted to provide a bibliometric overview of authors, countries, and journals, and to give a broad description of the field in terms of

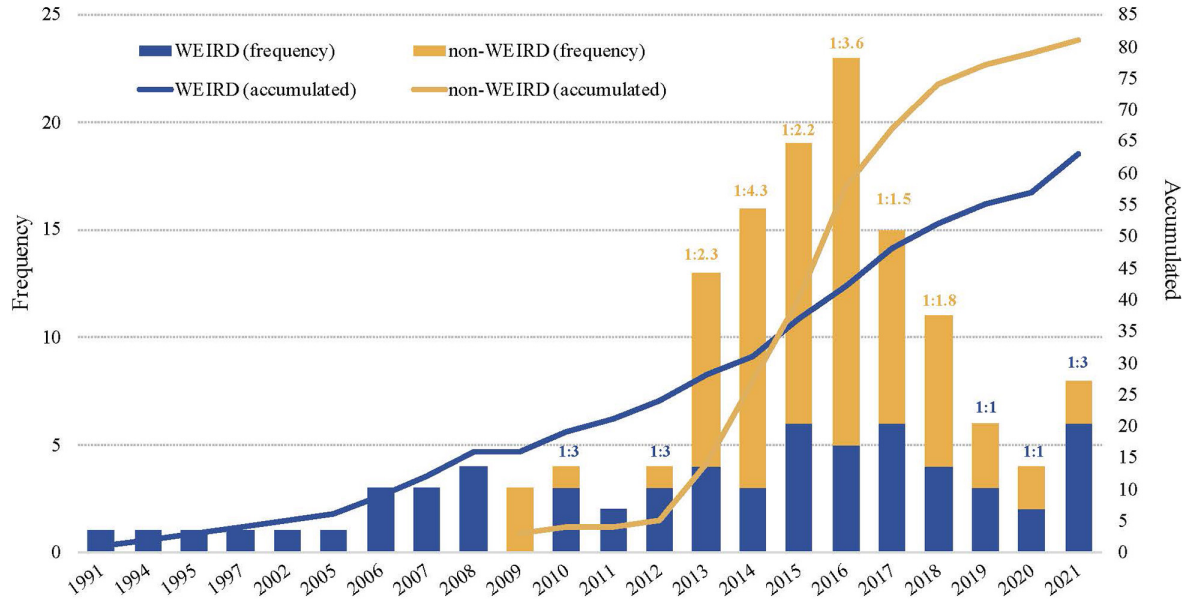

FIGURE 6 | Temporal distribution of publications, accumulated frequency and WEIRD/non-WEIRD publication ratio in RCTs about SFBT.

the type of samples studied, the features of the interventions and the type of scientific designs employed to test them.

General Bibliometric Data

In relation to our first purpose, our findings reveal an incremental growth in the number of outcome studies on SFBT over the last 30 years, showing an increasing interest in research on the effects of SFBT. We extracted 365 outcome research papers on SFBT published between 1991 and 2021, of which 169 were RCTs. This number comes close to the number of RCTs on PPIs than Hendriks et al. (2018) analyzed. In other words, although the solution-focused approach is less popular than mainstream PP, at the level of interventions it has generated a similar body of research. On the less bright side, only a minority of the SFBT outcome studies have been published in high impact journals, and in fact the two journals that have published the largest number of SFBT outcome papers are not even included in databases with high visibility. Another weakness of this body of research on SFI is that no strong networks of researchers seem to be operating in the field: our findings show that there are not many teams researching regularly on SFBT and that most authors are occasional authors, who have only published one research paper on SFI.

Is Solution Focused Brief Therapy a WEIRD Approach?

Our results provide a clear answer to the second research question. In spite of the North American origin of SFBT, SFBT should not be considered a WEIRD approach: the outcome research on SFBT started later in non-WEIRD countries than in WEIRD countries, but since 2013 the yearly non-WEIRD production is doubling the WEIRD one. Therefore, non-WEIRD countries have already surpassed WEIRD countries in the accumulated number of research papers on the effects of SFBT, both for outcome research in general and for RCTs. Therefore, in bibliometric terms, SFBT is not a WEIRD practice and can be considered a global approach to intervention. This stands in contrast to the predominantly WEIRD nature of the research on PP (Hendriks et al., 2018; Kim et al., 2018). This difference between PP and SFBT in the globalization of outcome research can be seen as a reflection of the conceptual and practical differences between PP and SFBT that we highlighted in the introduction.

In our view, the expansion of outcome research on SFBT in non-WEIRD countries can be attributed to the atheoretical stance of the solution-focused approach, which allows using it in a diversity of cultural environments without the need of previous cultural adaptations. From this perspective, the fact that the solution-focused approach is basically procedural and content-free would make it suitable to address a variety of contents in a diversity of contexts. In fact, we only found two papers that performed an explicit cultural adaptation of SFBT (González et al., 2016; Stith et al., 2020). Furthermore, the finding that in most studies the solution-focused element was the only component of the tested SFI intervention confirms that the globalization of research on SFBT has not required *ad hoc* adaptations of the solution-focused procedures. This is different in the traditional PPIs, which are often adapted to specific populations (Hendriks et al., 2018).

In contrast to the globalization of research, it is noteworthy that while most WEIRD SFBT studies are published in English, only one-third of the outcome research on SFBT from non-WEIRD countries was published in that language. This relates to the scarcity of high-impact non-WEIRD publications on SFBT. It remains to be established if this is due to low quality of

the published non-WEIRD research (that might be causing its rejection in more visible journals), to problems in the access of this research to English language journals, or to a lack of interest on the part of non-WEIRD authors to publish in these journals. In any case, the uneven distribution of WEIRD/non-WEIRD publication in language terms makes non-WEIRD research less accessible.

Samples of the Extracted Studies

As far as other features of the tested SFBT interventions are concerned, there is a balanced distribution of the SFBT outcome research on clinical and non-clinical samples, with an almost identical number of studies on both. This confirms that the solution-focused approach has expanded well beyond the family therapy context in which it developed and is being applied in many other fields. In this respect, it would make sense to use the term "Solution-focused Interventions" or "Solution-focused Practice" (Sundman et al., 2019) instead of the somewhat narrower term "Solution-focused Brief *Therapy*." No WEIRD/non-WEIRD differences were found in the distribution of SFI studies on clinical and non-clinical studies, suggesting that the expansion to non-clinical samples has happened globally.

College student samples constitute only 6.9% of the subjects that received the SFBT, which suggests that most of the outcome studies on SFBT have been done in the "real world," outside university campuses. Given that American Psychology in general and PP in particular are sometimes critiqued as being based on skewed North American college samples (Arnett, 2008; Christopher and Hickinbottom, 2008; Frawley, 2015), our findings on SFBT provide a different picture.

Features of the Interventions

Although non-clinical samples are well represented in the SFBT outcome research, more than half of the extracted SFBT papers were categorized as psychotherapy studies, followed in number by the studies on coaching and on school counseling. There are only few SFBT studies in the fields of child protection, organization development and community intervention, in spite of the fact that many authors and practitioners have convincingly presented the case for the application of solution-focused principles in these contexts (for instance, Sundman, 1997; Berg and Kelly, 2000; McKergow, 2012). In our view, the scarcity of the research on SFBT in child protection, organizations and communities does not necessarily mean that the solution focused approach is less useful in these contexts but could be explained by the difficulties to carry out effectiveness research in these fields.

As far as the format of interventions is concerned, the largest minority of the tested SFBT interventions were individual. "Group" was the second most frequent intervention format and was significantly more frequent in non-WEIRD than in WEIRD publications. Intriguingly, in spite of the fact that SFBT developed in a family therapy context (de Shazer et al., 1986), there were only a few publications on family SFBT interventions, more in WEIRD than in non-WEIRD countries. Although it has been argued that the solution-focused approach lends itself well to online interventions (Pakrosnis and Cepukiene, 2015), the overwhelming majority of the SFBT studied in the extracted papers were carried out face-to-face.

Design of the Extracted Studies

Randomized controlled trials account for almost half of all outcome research papers on SFBT. We would like to highlight that the rhythm of publication of RCTs on SFBT in non-WEIRD countries has increased sharply over the last decade, so that non-WEIRD RCT publications currently outnumber WEIRD published RCTs. However, sample sizes are larger in WEIRD countries than in non-WEIRD ones, especially in research on clinical populations, with WEIRD samples almost 50% larger than non-WEIRD samples. This points to a possible weakness of non-WEIRD studies that may be making access to high impact journals more difficult.

Limitations and Future Research

In our study the data extraction from the nine most relevant databases was complemented by a manual search in the SFBTA list and the 365 extracted publications were categorized according to a variety of dimensions. Alongside these strengths, there are also some weaknesses of our study. We have used a global categorization of WEIRD vs. non-WEIRD countries, ignoring possible regional differences within countries. It is also debatable to what extent the five dimensions encompassed by the WEIRD acronym should be given equal weight in the categorization as WEIRD or non-WEIRD. Given that our study covers a wide timespan of 30 years, with frequent political changes in some countries, we used an average of the Democracy Index. Therefore, our classifications of certain countries as WEIRD or non-WEIRD may not fit entirely with their current consideration as "full" vs. "flawed" democracies. In any case, the possible recategorization of some of these countries would not alter the overall results. We had no access to non-"western" databases, and a number of publications in Chinese and in Parsi, among others, could not be translated; therefore, non-WEIRD publications on SFBT may be actually under-represented.

Future bibliometric studies could attempt to include non-"western" data bases. Some possibly interesting variables, like the gender of the study population, could also be included. Another line for future bibliometric research would be to analyze citation trends for the retrieved articles.

Looking into the future of the outcome research on SFBT, our data suggest that it would be worthwhile to conduct more research on SFBT in child protection, community interventions and organizational interventions, both in WEIRD and non-WEIRD countries. Secondly, we look forward to seeing more outcome research on SFBT published in journals that are more visible for researchers and practitioners, especially for non-WEIRD publications. To that end, the reasons for the relative scarcity of non-WEIRD high-impact publications needs to be better understood, but in any case, an increase in the sample sizes of the SFBT outcome research might be helpful, especially for RCTs. Thirdly, higher team stability and longer research projects would contribute to a larger number of authors publishing more than only one paper on the outcomes of SFBT.

CONCLUSION

Research on the effect of SFBT has been growing consistently over the last three decades. Almost half of this production are RCTs.

There are some important differences between WEIRD and non-WEIRD publications on SFBT in terms of the language of the publications and their visibility. Sample sizes are almost two times larger in WEIRD publications than in non-WEIRD publications, except for studies on school students; considering only RCT, the sample sizes of WEIRD publications triple those of non-WEIRD publications. SFBT with groups are more frequent in non-WEIRD than in WEIRD publications.

Although outcome studies on SFBT started in WEIRD countries, nowadays non-WEIRD publications on SFBT have quantitatively surpassed WEIRD research. Therefore, our findings support the statement that SFBT is not a WEIRD, but a global practice. Our results also confirm the wide applicability of the solution-focused approach in different fields. The number of SFBT papers on clinical and non-clinical samples is similar, and SFBT have been researched not only in the form of psychotherapy, but also as coaching and school interventions, with fewer SFBT outcome studies in organizations, child protection and communities.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author/s.

AUTHOR CONTRIBUTIONS

MB, M-CN, BM-d-R, and ÁS-P: conceptualization, investigation, data curation, writing—original draft preparation, and writing—review and editing. M-CN and BM-d-R: methodology and formal analysis. BM-d-R and ÁS-P: visualization. All authors have read and agreed to the published version of the manuscript.

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Autobiographical Memory, Gratitude, Forgiveness and Sense of Humor: An Intervention in Older Adults

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Research has shown that happiness and well-being play a fundamental role in the health of older adults. For this reason, programs based on Positive Psychology seek to improve quality of life, preventing and reducing the appearance of emotional disorders. The objective of this study was to verify whether an intervention based on Autobiographical Memory, Forgiveness, Gratitude, and Sense of humor would increase quality of life in institutionalized older adults. We used a quasi-experimental design with pre- and post-intervention measures and follow-on measures at 3, 6, and 12 months. A total of 111 institutionalized older adults participated in the study and were randomly assigned to one of three groups: experimental ($n = 36$), placebo ($n = 39$), and control ($n = 36$). Measurements were taken of depression, subjective happiness, satisfaction with life, psychological well-being, and specific memories. Program duration was 11 weeks, followed by refresher sessions of the activities that had been conducted. The results showed that the intervention was effective, producing lasting increase in the participating adults' well-being, maintained for the following 12 months, in contrast to the other two groups. In conclusion, the proposed intervention proved to be a novel tool that was effective, easily applied, and able to improve quality of life and emotional disorders in older adults.

Keywords: older adults, forgiveness, gratitude, sense of humor, well-being

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INTRODUCTION

Since the late 20th century, aging is no longer being considered an inevitable, universal process of decline, but rather a period where the individual can develop potentialities and resources that were not present in earlier stages of life. The World Health Organization (2002) speaks of the concept of active aging as "a process of optimizing health, participation and safety opportunities with the goal of improving quality of life as people become older," highlighting that it is not a uniform process and does not take place the same way in every human being.

Successful aging includes three main components: low probability of disease and disease-related disability, high physical and cognitive functional capacity, and active engagement with life. This last component focuses mainly on maintaining interpersonal relations and productive activities. Keeping and even broadening one's interpersonal relations is a significant determinant of longevity, given that social support – whether emotional or instrumental – can have positive effects on health. The effectiveness of such support will depend on the situation and the

individual. On the other hand, productive activity is related to functional capacity, education, and self-efficacy, which together with environmental mastery consistently predict sustained activity in old age (Rowe and Kahn, 1997).

This concept of successful aging, based on objective indicators, has recently been expanded to include positive psychology indicators (Ardelt, 2016). One's subjective attitude toward the physical and social changes that occur in old age play a crucial role in predicting well-being in this stage of life (Thomsen et al., 2017). Thus, aging is a multidimensional process. There is agreement in the scientific literature that physical, psychological, and social factors must all be addressed in order to age well (Brown et al., 2015).

Positive psychology has been a contributor in this change in the conception of old age. The objective of positive psychology is to increase quality of life and levels of well-being, as well as to mitigate emotional disorders present at different stages of life, using interventions designed to cultivate positive emotions, cognitions, and behaviors (Riva et al., 2012; Baumann et al., 2019).

Ranzijn (2002) stressed the application of positive psychology to the sector of older adults, considering that too much attention had been given to stereotypes about losses and decline in this stage of life, without taking into account possible gains. Positive interventions in older adults can supply useful tools for increasing well-being, happiness, and satisfaction with life, as well as for reducing depressive moods.

Following this idea, different authors have implemented a number of proposed interventions for increasing positive emotions in older adults, training them in one or more human strengths by implementing positive activities that help maintain their skills and resources (see Sutipan et al., 2017, for a review). Based on the results obtained in this line of research, we believe that a particularly interesting intervention would include autobiographical memory, forgiveness, gratitude, and sense of humor. This joint intervention will enhance the effect of the interventions that have been carried out separately. Autobiographical memory plays an important role in the well-being of older adults, because remembering the past induce positive emotions (Latorre et al., 2013). Gratitude helps increase satisfaction with life because it magnifies good memories from the past (Sánchez-Cabaco et al., 2019a). When we forgive, we transform bitterness into neutrality, or even into memories with a positive slant, and so enable greater satisfaction with life (Allemand et al., 2012). Finally, satisfaction increases when good humor increases. A sense of humor is associated with psychological benefits, such as a sensation of happiness, well-being, and harmony (Hirsch et al., 2010).

Training in autobiographical memory is important in old age, because it plays a decisive role in configuring one's identity and well-being, according to the valence of events recalled. Positive autobiographical memories are associated with greater well-being, in contrast to the high anxiety that is related to negative memories (Merrill et al., 2016). Several studies have revealed that, when presented with a cue that elicits a memory, depressed persons recall less specific, more general memories than do nondepressed individuals, whether the cues are words (Champagne et al., 2016) or images (Ridout et al., 2016).

Life review is an activity based on eliciting specific positive memories; the method is attractive, non-stigmatizing and easily administered (Reker et al., 2014). Interventions based on this therapy suggest that recovering these types of memories can be a protective factor against depression in older adults (Talarowska et al., 2016; Hitchcock et al., 2017), producing increased satisfaction with life (Ricarte et al., 2011) and emotional well-being (Bohlmeijer et al., 2007; Cantarella et al., 2017).

Ramírez et al. (2014) used training in autobiographical memory, gratitude, and forgiveness (MAPEG program) in a sample of institutionalized older adults; they obtained an increase in specific memories, satisfaction with life, subjective happiness, and a reduction in depression and state anxiety. Similarly, Jo and An (2018) used a program based on life review therapy with older institutionalized adults and found a positive impact on satisfaction with life and anxiety toward death. The effectiveness of these interventions corroborates the work of other researchers who used similar approaches (Ortega et al., 2015; Ha et al., 2021).

The practice of gratitude magnifies good memories from the past, helping to increase satisfaction with life. Empirical research shows that gratitude is related to increases in well-being (Barrett-Cheetham et al., 2016; Nezlek et al., 2017); in satisfaction with life, whether considered as a whole (Chen et al., 2016) or in the specific realm of work, health, or relationships with others (Robustelli and Whisman, 2018); in hope and happiness (Witvliet et al., 2019; Bryant et al., 2021), in optimism (Peters et al., 2013); in interpersonal relationships (Sun et al., 2014); and in generosity (Liu and Hao, 2017). Moreover, gratitude is negatively related to depressive symptoms (Senf and Liau, 2013); stress and burnout (Lanham et al., 2012; Cheng et al., 2015); anger (Baxter et al., 2012); anxiety (Petrocchi and Couyoumdjian, 2016); and anhedonia (Simon, 2016).

Méndez et al. (2014) studied gratitude as an existential attitude and its possible relationship to psychological well-being in individuals between the ages of 63 and 96 years. Their results showed that gratitude is significantly related to four of the five dimensions of psychological well-being: self-acceptance, autonomy, purpose in life, and personal growth. Chopik et al. (2019) examined the relationship between gratitude and well-being in different age groups. The results showed that the relationship between gratitude and subjective well-being remained relatively constant throughout life.

Killen and Macaskill (2015) found short-term benefits in both hedonic and eudaimonic well-being after an intervention in gratitude, although after 30 days the benefits only remained in hedonic well-being. Ho et al. (2014) found a decrease in depression scores and an increase in life satisfaction, gratitude, and happiness, through implementing an intervention program that included *optimism*, *gratitude*, savoring, happiness, curiosity, courage, altruism, and meaning of life, and promoted positive experiences in people between the ages of 63 and 105 who lived in senior residences. Ramírez et al. (2014) obtained similar results when using their MAPEG program, which also includes training in gratitude. In this same line, Salces-Cubero et al. (2019) found that gratitude training in persons between the ages of 60 and 89 effected an increase in satisfaction with

life, happiness, positive affect, and resilience as well as a decrease in negative affect.

Another interesting line of work for increasing well-being consists of acting on negative memories that generate intense emotions, like resentment and rage, through forgiveness (Robertson and Swickert, 2018). It is a process that has demonstrated value for enrichment and for restoring ties (Silton et al., 2013). Different meta-analyses have shown a robust relationship between forgiveness and psychological and physical health (Lee and Enright, 2019; Rasmussen et al., 2019).

Forgiveness-based interventions enhance social relations (Mooney et al., 2016); relations with one's partner (Kato, 2016); and kindness (Riaz and Khan, 2016). They are related to an increase in psychological well-being (Cornish and Wade, 2015); in self-esteem (Strelan and Zdaniuk, 2015); in life satisfaction and optimism (Rey and Extremera, 2016); and to a reduction levels of anxiety (Allemand et al., 2013; Silton et al., 2013) and depression (Liao and Wei, 2015; Stackhouse et al., 2016). Other authors have found forgiveness-based interventions to be associated with improvements in anxiety, stress, and physical health (Lin et al., 2013; Stewart et al., 2016; Toussaint et al., 2016). Ermer and Proulx (2016) found that older women who forgave other people were less likely to show symptoms of depression, whether or not they felt forgiven by other individuals, while men showed higher levels of depression when they forgave others but did not feel forgiven.

One source of positive emotions that also regulates negative emotions is sense of humor. Emotional regulation based on a sense of humor is an important personal resource; it is perceived as a coping strategy and a protective factor against adversity (Boerner et al., 2017; Tagalidou et al., 2019).

A sense of humor increases self-esteem (Falkenberg et al., 2011; Goodenough et al., 2012); happiness; and satisfaction with life (Hirsch et al., 2010); it reduces anxiety (Kuiper et al., 2014) and depression (Konradt et al., 2013); emotional and physical wear (Ho, 2017); and it promotes conflict resolution (Campbell and Moroz, 2014) and social relationships, and inhibits stress (Caudill and Woodzicka, 2016; Sánchez et al., 2017).

Tse et al. (2010) investigated the effects of a sense of humor on levels of pain, loneliness, happiness, and life satisfaction in people between the ages of 60 and 92. Their findings showed a decrease in pain and perceived loneliness, and an increase in happiness and satisfaction with life, similar to results obtained by Sánchez et al. (2017). Likewise, Quintero et al. (2015) evaluated the impact of laughter on degree of depression and feelings of loneliness in a group of older adults living in senior residences. Their results showed that the participants' frame of mind improved significantly, showing greater happiness and less depressed and lonely feelings. Along these lines Santos et al. (2018) carried out a study using laughter therapy with non-institutionalized older adults; their results showed that the intervention led to decreased depression and increased happiness and motivation. Barzegar Bafrooei et al. (2018) found a positive relationship between life expectancy, social support, and sense of humor in older adults.

According to the review carried out by Greengross (2013), several studies in the scientific literature find that as people age, their appreciation of humor increases. This has been considered one of the main defense mechanisms against aging, since it allows emotions to be expressed without unease and without unpleasant effects on others (Harm et al., 2014; Proyer, 2014).

As we have presented in the foregoing, studies on this type of intervention in older adults indicate that benefits are produced (Bolier et al., 2013), even though in most cases they disappear after a time (Smith and Hanni, 2019). This may be because the interventions usually do not last more than 8 weeks, so participants may not be able to incorporate the activities into their daily lives. Consequently, refresher sessions were included in this study as one way to ensure that the individuals will continue to carry out the activities, incorporating them into their daily life, whereby we assume that intervention benefits would be maintained. Moreover, the follow-on period was lengthened in comparison with other studies, to 1 year from the end of the intervention.

Moreover, while many studies assess program effectiveness by identifying the changes found after the intervention, adequate control groups are not always included (Fortuna et al., 2018; Treichler et al., 2020). In the few studies that have used a control group (who received the intervention afterward), placebo groups have not been used. We consider it important to include a group with these characteristics in order to know whether the benefits are due to the positive nature of the training activities.

The objective of the present study, therefore, was to verify (1) whether an intervention in older adults based on training in Autobiographical Memory, Gratitude, Forgiveness, and Sense of humor would be effective in increasing their well-being and (2) whether this increase would be maintained in the long term by introducing follow-on refresher sessions that encouraged further use of these activities in their day-to-day life, and so consolidate a lasting effect. Program effectiveness would also be assessed by comparing the results obtained with a placebo group and a control group.

Specifically, older adults who participated in this intervention were expected to have increased levels of subjective happiness, psychological well-being, life satisfaction, and number of specific positive memories they were able to recall, as well as lower levels of depression and fewer general memories, in comparison with the control and placebo groups, and to their own pre-intervention scores. It was also expected that the effects produced by the intervention would be maintained after 3, 6, and 12 months' time.

MATERIALS AND METHODS

Participants

The initial sample was composed of 144 institutionalized older adults, of which 66% were women. Participants were randomly assigned to three groups: experimental, placebo, and control. Some participants did not complete every phase of the study, due to physical illness ($n = 25$), change of residence ($n = 1$), death ($n = 5$), and/or voluntary dropout ($n = 2$). None of these persons completed the intervention, only pre-intervention scores

were obtained, so their data were not included in the analyses. Pre-intervention scores did not differ between those who continued with the study and those who dropped out. The final sample was thus reduced to 111 participants. Of these, 36 belonged to the experimental group, 39 to the placebo group, and 36 to the control group. The age range of the sample is between 62 and 96 years, the mean age was 83.47 years (SD = 6.78), with the same proportion of men and women as in the initial sample.

The inclusion criteria for study participation were: not showing cognitive impairment [scores of less than 27 on the Mini-Mental Status Examination (MMSE), Spanish version], institutionalized in a senior residence, age 60 or older, and providing informed consent.

Instruments

Autobiographical Memory Test (AMT; Williams and Broadbent, 1986; adapted to Spanish by Serrano et al., 2005). The test uses 5 positive words and 5 negative words, and participants have 60 s to recall a specific memory related to each word. The memories they generate can be specific, categorical, or general. The degree of interjudge agreement (3 judges) for specific positive memories generated in the study sample was 0.79.

Mini-Mental Status Examination (Folstein et al., 1975, adapted to Spanish by Lobo et al., 1979). Consisting of 11 items, this instrument assesses eight cognitive areas: place and time orientation, recall (encoding and recent memory), attention-concentration and calculation, comprehensive and expressive language, abstract reasoning, and visuospatial construction. According to the version of the MMSE used in this work, the degrees of cognitive impairment established are as follows: between 30 and 27 points, there is no cognitive impairment; between 26 and 25 points, there could be a possible cognitive impairment; between 24 and 10 points, there is a mild to moderate cognitive impairment; between 9 and 6 points, there is moderate to severe cognitive impairment; and less than 6 points, severe cognitive impairment. We have added this information in the description of the scale. This scale adaptation has a sensitivity of 92% and a specificity of 90%.

Satisfaction With Life Scale (SWLS; Diener et al., 1985), adapted by Atienza et al. (2000). The scale evaluates participants' general levels of well-being with five items on a scale from 1 = "Totally disagree" to 7 = "Totally agree." Internal consistency obtained in this study was 0.85.

Subjective Happiness Scale (SHS; Lyubomirsky and Lepper, 1999 and translated to Spanish by Extremera and Fernández-Berrocal, 2014). It is a 4-item Likert-type scale that measures global subjective happiness using statements whereby the person evaluates himself/herself. The Cronbach alpha coefficient obtained in the sample of these research is 0.89.

Scale of psychological well-being (SPWB; Ryff, 1989), adapted to Spanish by Díaz et al. (2006). This instrument measures six dimensions of psychological well-being (Self-acceptance, Purpose in life, Autonomy, Environmental mastery, Positive relationships, and Personal growth). Internal consistency of the subscales in this study sample, measured by Cronbach's alpha coefficient, was as follows: Self-acceptance = 0.81, Positive relationships with others = 0.79, Autonomy = 0.73, Environmental mastery = 0.70, Purpose in Life = 0.84, and Personal growth = 0.68.

Geriatric Depression Scale (Yesavage et al., 1983, adapted to Spanish by Martínez de La Iglesia et al., 2002) is a brief questionnaire in which the older adult is asked to answer 15 yes-or-no items regarding how he/she was feeling during the preceding week. Internal consistency obtained in this study was 0.91.

Design and Procedure

A mixed factorial design was used. The independent variables were Group, with three levels: experimental, placebo, and control and Time (the different moments when the dependent variables were measured), with five levels: before and after the intervention and at the 3rd, 6th, and 12th month following its completion. The dependent variables were the scores obtained in Depression, Happiness, Satisfaction with life, Psychological well-being, and General and specific memories, both positive and negative.

Once the pertinent authorizations had been obtained from the Ethics Committee for Biomedical Research of Junta de Andalucia (Spain), the study objectives and procedure were explained to the potential participants at each nursing home, also indicating that their data would be recorded and analyzed anonymously and that they could drop out of the research at any time, if they wished to. Finally, they were asked to sign their informed consent.

The people who gave their consent were first assessed with the MMSE (Spanish version) in order to eliminate any participants who showed cognitive impairment. All the participants scored lower than 27, so there was no need to exclude anyone from the study. Next, participants were randomly assigned to one of three groups. In each case, the instruments were administered as an individual interview, with an approximate duration of 60 min.

The experimental group received an intervention focusing on Life Review Therapy, Gratitude, Forgiveness, and Sense of Humor. The intervention consisted of 11 weekly sessions of 60 min each, carried out in a room adapted for this purpose at the residences where the participants lived. Participants were divided into 4 subgroups of 9 participants each, and all were treated by the same professional graduated in Psychology and Master in Positive Psychology. The intervention was administered in person to all participants in a standardized way. Given the characteristics of the sample, this was possible by dividing the intervention group into four small groups.

In the first session to promote group cohesion, we began with an activity in which the participant introduced themselves by saying their name and three positive qualities about themselves. Then, we discussed the importance of being happy during aging.

The second, third, fourth, fifth, and sixth sessions focused on autobiographical memory, life review, and positive emotions in old age. The participants recalled personal stories from their childhood, adolescence, and adulthood, through a process of drawing out their experiences from childhood to the present.

Participants were instructed in tasks used to evoke personal experiences through photography (old photos) and touch (recognizing objects from the past through touch) to evoke childhood. To work the adolescence period, we used music (songs that marked their lives) and aromas (capturing memories of their past through different smells). In the case of adult period, the participants were asked to express their memories in an artistic way through drawing, writing, etc.

The seventh session was devoted to gratitude, in this session the benefits of gratitude were explained and an activity was carried out in which each participant told the group things that happened in the last week for which they were grateful and they were also asked to write one thank you letter to a close person.

The eighth session was dedicated to forgiveness. The benefits of forgiveness were explained and an activity was performed consisting of remembering general questions for which they should ask for forgiveness. They were also asked to write a letter or make a phone call to forgive to a person who had been harmed in some way.

The ninth and tenth sessions offered training in sense of humor through mime, telling jokes, making funny gestures, choreography, and comedy videos. What is intended is that through laughter and the positive emotions that are produced by these activities, the participants learn to appreciate humor (laugh at oneself, perceive life from a more positive perspective), use humor in different situations especially in bad moments (positive coping) and also use it to improve their personal relationships.

Finally, the eleventh session was dedicated to summarize what had been done in all the previous sessions and insist in that they continue to carry out the activities learned.

At the end of each session, they were asked to carry out some activity during the week related to their training (homework); the following session began by discussing these activities and resolving any questions that might have come up.

In the case of the placebo group, the first session was the same as that of the experimental group. In the second session, they were given a brief introduction to positive psychology and were asked to spend 10 min before going to sleep, 2 days a week, to reflect on early experiences that may have influenced their adulthood. These experiences were discussed in a group with the psychologist. This work dynamic was maintained during the same period of time that the intervention lasted in the experimental group.

One week after the end of the intervention, all participants were re-evaluated individually through an interview using the same scales. Subsequently, refresher sessions were held 2 weeks after the intervention, and in the 1st, 3rd, 6th, 8th, and 12th month following the intervention, in both the experimental and placebo groups. The objective of these sessions was to promote lasting benefits from the intervention. The need to continue following the guidelines established during the intervention was explained to the older adults in the experimental group: for example, trying to guide their memory toward positive events, being grateful, eliminating feelings of resentment, and encouraging good humor. The refresher sessions were carried out at the same time in the placebo group, with the same dynamics that were used before. Finally, 1 week after the corresponding refresher session, in the 3rd, 6th, and 12th months, measurements were taken to assess whether the benefits obtained were lost over time.

In the case of the control group, all assessments were carried out at the same times as in the other groups, but without intervening in any way. Participants in this group, like those in the placebo group, were placed on a waiting list to receive the intervention if the program was shown to be effective.

Statistical Analyses

Descriptive statistics were calculated for the different dependent variables, as well as Pearson product-moment correlation coefficients between them using Hmisc library (Harrell, 2021). In addition, the data were analyzed using the general linear model (library stats; R Core Team, 2021), taking the Group variable as the inter-subject factor and the Time variable as the repeated measures factor with the five levels described. *A posteriori* comparison was made using the Tukey HSD test (implemented in the postHoc library, Labouriau, 2020). All statistical tests were conducted using R proyect for statistical computing and statistical decisions were made at a significance level of 0.05.

RESULTS

Descriptive statistics for the different dependent variables in the three groups are shown in **Tables 1**–**3**. **Table 4** describes the correlations found between the different measurements.

An exploratory analysis to verify compliance with parametric assumptions revealed that the variables had normal distribution (Shapiro–Wilk test $p > 0.05$) and the Levene test confirmed homoscedasticity in all of them ($p > 0.05$). Consequently, parametric tests were carried out in all cases. Furthermore, for an analysis of differences in the pretest, an ANOVA was computed with each of the measures considered in this study as dependent variables, and the three groups (intervention, placebo, and control) as grouping variable. There was a nonsignificant main effect (all $p > 0.05$) and no significant differences were found between the three groups neither in age or sex.

Analysis of the dependent variable "Depression" showed a significant effect from the factor Group $F(2, 101) = 5.83$, $p = 0.004$, $\eta_p^2 = 0.10$, from the factor Time $F(4, 101) = 6.94$, $p = 0.000$, $\eta_p^2 = 0.10$ and from the interaction between the two $F(8, 101) = 4.5$, $p = 0.000$, $\eta_p^2 = 0.10$. Once the intervention was completed, the Experimental group presented significantly lower levels of depression than the Placebo group ($p = 0.008$) and the Control group ($p = 0.003$); between the latter groups there were no differences ($p = 1.00$). As seen in **Figure 1**, this same result was maintained at 3 months (experimental vs. placebo, $p = 0.013$; experimental vs. control, $p = 0.014$; placebo vs. control, $p = 1.00$), 6 months (experimental vs. placebo, $p = 0.028$; experimental vs. control, $p = 0.000$; placebo vs. control, $p = 0.258$), and 12 months after the intervention (experimental vs. placebo,

TABLE 1 | Descriptive statistics for the dependent variables depression, happiness, and satisfaction with life in the three groups over time.

	Pre	Post	3 months	6 months	12 months
Depression					
Experimental					
M	3.93	1.93	2.69	2.24	3.41
SD	0.65	0.56	0.62	0.60	0.66
Placebo					
M	3.41	4.25	5.00	4.56	5.92
SD	0.56	0.48	0.54	0.52	0.57
Control					
M	4.72	4.55	5.03	5.86	5.69
SD	0.58	0.50	0.56	0.54	0.60
Happiness					
Experimental					
M	4.46	5.28	5.29	5.31	4.64
SD	0.24	0.22	0.25	0.22	0.28
Placebo					
M	4.56	4.53	4.50	4.36	3.94
SD	0.21	0.19	0.21	0.18	0.21
Control					
M	4.32	4.14	4.00	4.03	3.85
SD	0.22	0.19	0.22	0.19	0.22
Satisfaction with life					
Experimental					
M	23.80	27.14	26.31	26.69	25.34
SD	0.99	0.88	0.96	0.92	0.96
Placebo					
M	24.82	22.02	23.20	22.15	20.10
SD	0.86	0.76	0.83	0.79	0.83
Control					
M	23.94	23.39	22.64	22.36	21.50
SD	0.89	0.79	0.86	0.83	0.86

$p = 0.012$; experimental vs. control, $p = 0.030$; placebo vs. control, $p = 1.00$).

In the Experimental group, moreover, scores obtained before the intervention were significantly different from those obtained afterward ($p = 0.000$) and at 3-month ($p = 0.010$) and 6-month ($p = 0.001$) follow-ups, but there were no differences from scores at the 12-month follow-up ($p = 0.371$). Twelve-month follow-on scores were significantly higher than those obtained at the end of the intervention ($p = 0.009$) and at 6 months ($p = 0.029$). Regarding the Placebo group, the pre-intervention scores were significantly lower than those obtained at the end of the intervention ($p = 0.020$), and at 3 months ($p = 0.004$), 6 months ($p = 0.034$), and 12 months after ($p = 0.000$). Depression showed an increase over time, and scores obtained after 1 year were significantly higher than the rest (post-intervention, $p = 0.003$; 3 months, $p = 0.049$; 6 months $p = 0.002$). Finally, in the Control group, pre-intervention scores showed no differences from the rest of the levels; but significant differences did appear between the different post-intervention measures. Specifically, Depression continued to rise, being higher at 6 months than at 3 months ($p = 0.04$) and at post-intervention ($p = 0.02$); likewise, depression at 1 year was higher than at post-intervention ($p = 0.04$).

The scores obtained in "Happiness" showed a significant effect from the factor Group $F(2, 101) = 6.38$, $p = 0.002$, $\eta_p^2 = 0.11$, from the factor Time $F(4, 101) = 6.91$, $p = 0.000$, $\eta_p^2 = 0.06$ and from the interaction, $F(8, 101) = 3.66$, $p = 0.000$, $\eta_p^2 = 0.07$ (**Figure 2**). Analysis of this interaction showed that, once the intervention was completed, the Experimental group presented

TABLE 2 | Descriptive statistics for the different dimensions of psychological well-being in the three groups over time.

	Pre	Post	3 months	6 months	12 months
Self-acceptance					
Experimental					
M	25.24	31.41	27.69	27.69	27.31
SD	0.90	0.89	1.00	1.01	1.04
Placebo					
M	26.72	27.87	27.72	26.64	24.66
SD	0.77	0.77	0.87	0.88	0.90
Control					
M	26.33	26.39	26.56	25.92	25.89
SD	0.80	0.80	0.90	0.91	0.94
Environmental mastery					
Experimental					
M	26.27	30.83	28.83	29.52	27.93
SD	0.93	0.79	1.01	1.01	1.09
Placebo					
M	27.56	26.36	25.49	26.00	24.02
SD	0.80	0.68	0.87	0.87	0.94
Control					
M	27.03	26.05	25.31	26.47	25.33
SD	0.84	0.70	0.91	0.91	0.98
Personal growth					
Experimental					
M	24.21	27.10	27.86	26.45	25.93
SD	1.25	1.20	1.45	1.27	1.34
Placebo					
M	24.05	22.26	23.67	22.28	20.15
SD	1.08	1.03	1.25	1.10	1.16
Control					
M	22.97	22.44	21.86	20.0.6	21.55
SD	1.12	1.07	1.30	1.14	1.21
Purpose in life					
Experimental					
M	20.10	26.38	23.90	23.93	22.55
SD	1.15	1.08	1.25	1.20	1.24
Placebo					
M	22.33	20.97	19.87	20.36	18.31
SD	0.99	0.93	1.08	1.04	1.07
Control					
M	20.25	20.53	18.80	19.78	18.06
SD	1.03	0.97	1.12	1.08	1.11
Positive relationships with others					
Experimental					
M	22.96	24.93	25.17	24.90	25.24
SD	1.31	1.33	1.35	1.23	1.35
Placebo					
M	26.05	23.72	23.95	23.10	22.95
SD	1.13	1.15	1.16	1.06	1.17
Control					
M	22.50	22.11	21.22	21.33	20.58
SD	1.18	1.19	1.21	1.10	1.21
Autonomy					
Experimental					
M	30.93	31.76	34.00	32.45	32.45
SD	1.31	1.41	1.28	1.45	1.53
Placebo					
M	33.15	33.56	34.87	31.92	32.92
SD	1.13	1.25	1.10	1.25	1.32
Control					
M	33.94	35.72	34.58	33.19	34.86
SD	1.17	1.26	1.15	1.30	1.37

TABLE 3 | Descriptive statistics for the different memories in the three groups over time.

	Pre	Post	12 months
General positive memories			
Experimental			
M	1.47	2.44	1.00
SD	0.17	0.24	0.18
Placebo			
M	1.74	2.20	1.87
SD	0.16	0.23	0.17
Control			
M	1.11	2.55	1.58
SD	0.17	0.24	0.18
Specific positive memories			
Experimental			
M	1.83	2.68	2.89
SD	0.22	0.22	0.23
Placebo			
M	1.84	1.87	1.46
SD	0.21	0.21	0.22
Control			
M	2.03	1.80	1.28
SD	0.22	0.22	0.23
General negative memories			
Experimental			
M	1.22	1.11	1.08
SD	0.17	0.17	0.18
Placebo			
M	1.03	0.87	1.41
SD	0.16	0.16	0.17
Control			
M	0.97	1.53	1.42
SD	0.17	0.17	0.18
Specific negative memories			
Experimental			
M	1.28	1.68	1.39
DT	0.16	0.16	0.16
Placebo			
M	1.28	1.31	1.26
DT	0.15	0.16	0.15
Control			
M	1.17	1.17	0.97
DT	0.16	0.16	0.16

significantly higher levels of Happiness than the Placebo ($p = 0.045$) and Control groups ($p = 0.001$); between the latter groups there were no differences ($p = 0.449$). This same result was maintained at 3 months (experimental vs. placebo, $p = 0.041$; experimental vs. control, $p = 0.001$; placebo vs. control, $p = 0.031$), and at 6 months (experimental vs. placebo, $p = 0.010$; experimental vs. control, $p = 0.000$; placebo vs. control, $p = 0.688$); after a year the differences had disappeared.

Similarly, pre-intervention scores in the Experimental group were significantly lower than those obtained afterward ($p = 0.001$) and at 3-month ($p = 0.000$) and 6-month follow-ups ($p = 0.000$). However, 1 year later, Happiness scores returned to initial levels, dropping significantly ($p = 0.365$). In the Placebo group, scores progressively declined, although differences were not significant; only the values obtained after 12 months were significantly different, contrasting with all other levels (pre-intervention, $p = 0.019$; post-intervention, $p = 0.007$; 3 months, $p = 0.006$; and 6 months, $p = 0.008$). Finally, in the Control group, differences were found only between the pre-intervention scores and the scores after 1 year, where the latter scores were lower ($p = 0.007$).

In "Satisfaction with life" there was a significant effect from the factor Group $F(2, 101) = 6.23$, $p = 0.003$, $\eta_p^2 = 0.11$, from the factor Time $F(4, 101) = 6.37$, $p = 0.000$, $\eta_p^2 = 0.06$ and from the interaction between the two $F(8, 101) = 6.10$, $p = 0.000$, $\eta_p^2 = 0.11$. Once the intervention was completed, the Experimental group had significantly higher levels of Satisfaction with life than the Placebo ($p = 0.000$) and Control groups ($p = 0.009$); between the latter groups there were no differences ($p = 0.653$). This same result was maintained at 3 months (experimental vs. placebo, $p = 0.045$; experimental vs. control, $p = 0.024$; placebo vs. control, $p = 1.00$), at 6 months (experimental vs. placebo, $p = 0.002$; experimental vs. control, $p = 0.004$; placebo vs. control, $p = 1.00$) and at 12 months after the intervention (experimental vs. placebo, $p = 0.000$; experimental vs. control, $p = 0.017$; placebo vs. control, $p = 0.738$; **Figure 3**).

Moreover, in the Experimental group scores obtained before the intervention were significantly lower than those obtained afterward ($p = 0.012$) and at 3-month ($p = 0.013$) and 6-month follow-ups ($p = 0.002$), but they disappear after 1 year ($p = 0.159$). The Placebo group presented significantly higher scores before the intervention than after the intervention ($p = 0.001$); also true after 3 months ($p = 0.021$); 6 months; and 12 months ($p = 0.000$); differences between the various post-assessment and follow-on scores were not significant, except for scores after 1 year, which were significantly lower than all other times (post-intervention, $p = 0.012$; 3 months, $p = 0.000$ and 6 months, $p = 0.000$). Finally, in the Control group, pre-intervention scores were significantly higher than those obtained at 6 months ($p = 0.031$) and at 12 months ($p = 0.001$); the latter were lower than those obtained just after the intervention ($p = 0.042$).

Regarding the different dimensions of psychological well-being, the analysis of Self-acceptance revealed a significant effect of the factor Time $F(4, 101) = 8.57$, $p = 0.000$, $\eta_p^2 = 0.08$ and of the interaction between Time and Group, $F(8, 101) = 4.02$, $p = 0.000$, $\eta_p^2 = 0.07$, while there were no significant between-group differences (**Figure 4**). An analysis of this interaction showed that, once the intervention was completed, the Experimental group had higher levels of Self-acceptance than the Placebo ($p = 0.010$) and Control groups ($p = 0.000$), between which there were no significant differences. These differences disappear, however, 3 months after the intervention.

On the other hand, in the Experimental group, pre-intervention scores were significantly lower than all other measures (post-intervention, $p = 0.000$; 3 months, $p = 0.014$; 6 months, $p = 0.002$ and 12 months, $p = 0.021$), and post-intervention scores were significantly higher than all other times (3 months, $p = 0.010$; 6 months, $p = 0.009$ and 12 months, $p = 0.009$), while there were no differences after 3 months. As for the Placebo group, the only finding was that scores after 12 months were lower than those obtained in post-intervention, $p = 0.003$; 3 months, $p = 0.001$; and 6 months, $p = 0.032$. Finally, in the Control group there were no significant differences between any of the levels of this variable.

The analysis of scores obtained in "Environmental mastery" revealed a significant effect from the factor Group $F(2, 101) = 4.88$,

TABLE 4 | Pearson's correlation coefficients found between depression, happiness, satisfaction with life, and the six dimensions of psychological well-being at all time points.

	1	2	3	4	5	6	7	8
Pre-intervention scores								
Depression (1)	–							
Happiness (2)	−0.752**	–						
Satisfaction with life (3)	−0.749**	0.713**	–					
Self-acceptance (4)	−0.625**	0.616**	0.668**	–				
Environmental mastery (5)	−0.653**	0.578**	0.525**	0.641**	–			
Personal growth (6)	−0.532**	0.484**	0.462**	0.442**	0.480**	–		
Purpose in life (7)	−0.608**	0.593**	0.541**	0.539**	0.596**	0.480**	–	
Positive relationships with others (8)	−0.385**	0.310**	0.405**	0.428**	0.426**	0.481**	0.437**	
Autonomy (9)	−0.309**	0.207*	0.411**	0.366**	0.253**	0.258**	0.342**	0.221*
Post-intervention scores								
Depression (1)	–							
Happiness (2)	−0.707**							
Satisfaction with life (3)	−0.660**	0.661**						
Self-acceptance (4)	−0.560**	0.579**	0.495**					
Environmental mastery (5)	−0.591**	0.578**	0.545**	0.496**				
Personal growth (6)	−0.399**	0.493**	0.309**	0.226*	0.421**			
Purpose in life (7)	−0.579**	0.575**	0.529**	0.473**	0.526**	0.444**		
Positive relationships with others (8)	−0.394**	0.493**	0.455**	0.402**	0.372**	0.209*	0.420**	
Autonomy (9)	−300**	0.276**	0.221*	0.052	0.206*	0.246**	0.258**	0.303**
3 months								
Depression (1)	–							
Happiness (2)	−0.834**							
Satisfaction with life (3)	−0.725**	0.832**						
Self-acceptance (4)	−0.569**	0.554**	0.617**					
Environmental mastery (5)	−0.707**	0.700**	0.681**	0.560**				
Personal growth (6)	−0.640**	0.656**	0.566**	0.453**	0.644**			
Purpose in life (7)	−0.638	0.704**	0.709**	0.595**	0.674**	0.605**		
Positive relationships with others (8)	−0.437	0.391**	0.478**	0.447**	0.424**	0.453**	0.464**	
Autonomy (9)	−0.268	0.271**	0.255**	0.232*	0.223*	0.312**	0.339**	0.174
6 months								
Depression (1)	–							
Happiness (2)	−0.783**	–						
Satisfaction with life (3)	−0.797**	0.786**	–					
Self-acceptance (4)	−0.580**	0.566**	0.703**	–				
Environmental mastery (5)	−0.721**	0.674**	0.759**	0.585**	–			
Personal growth (6)	−0.611**	0.620**	0.562**	0.401**	0.607**	–		
Purpose in life (7)	−0.675**	0.680**	0.665**	0.543**	0.713**	0.656**	–	
Positive relationships with others (8)	−0.498**	−469**	0.446**	0.393**	0.539**	0.504**	0.524**	–
Autonomy (9)	−0.318**	0.310**	0.491**	0.439**	0.366**	0.309**	0.357**	0.300**
12 months								
Depression (1)	–							
Happiness (2)	−0.799**	–						
Satisfaction with life (3)	−0.778**	0.812**	–					
Self-acceptance (4)	−0.698**	0.684**	0.697**	–				
Environmental mastery (5)	−0.759**	0.717**	0.678**	0.710**	–			
Personal growth (6)	−0.555**	0.560**	0.587**	0.455**	0.646**	–		
Purpose in life (7)	−690**	0.686**	0.697**	0.563**	0.671**	0.656**	–	
Positive relationships with others (8)	−0.469**	0.432**	0.480**	0.425**	0.479**	0.534**	0.513**	–
Autonomy (9)	−0.229*	0.197*	0.232*	0.193*	0.255**	0.284**	0.208*	0.141

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

$p = 0.009$, $\eta_p^2 = 0.09$, from the factor Time $F(4, 101) = 4.12$, $p = 0.003$, $\eta_p^2 = 0.04$ and from the interaction $F(8, 101) = 3.76$, $p = 0.000$, $\eta_p^2 = 0.07$ (**Figure 5**). Analysis of this interaction showed that, once the intervention was completed, the Experimental group presented significantly higher levels of Environmental mastery than the Placebo ($p = 0.001$) and Control groups ($p = 0.000$); between the latter groups there were no differences. This same result was maintained at 3 months (placebo, $p = 0.049$; control, $p = 0.039$). At 6 months after the intervention there are only differences between the experimental and placebo groups ($p = 0.041$); after a year the differences had disappeared.

Likewise, in the Experimental group, scores obtained before the intervention were lower than those obtained afterward ($p = 0.000$) or at 3- ($p = 0.010$) and 6-month follow-ups ($p = 0.000$). Similarly, scores following the intervention were found to be greater than those after 3 months ($p = 0.035$) and after

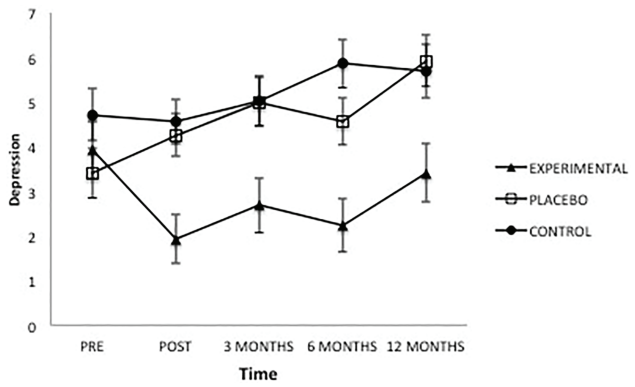

FIGURE 1 | Average scores of experimental, placebo, and control groups in depression as a function of time. The error bars represent the standard error of mean (SEM).

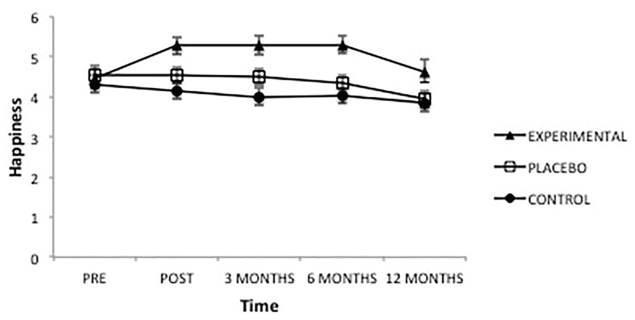

FIGURE 2 | Average scores of experimental, placebo, and control groups in happiness as a function of time. The error bars represent the standard error of mean (SEM).

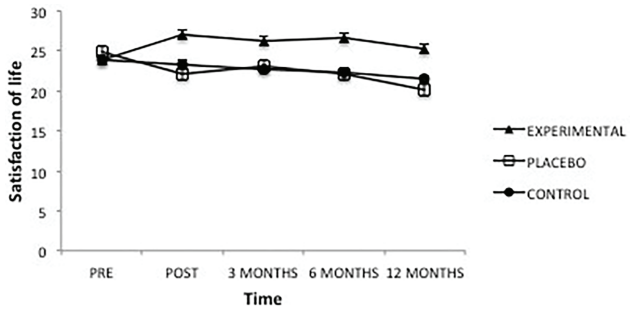

FIGURE 3 | Average scores of experimental, placebo, and control groups in satisfaction with life as a function of time. The error bars represent the standard error of mean (SEM).

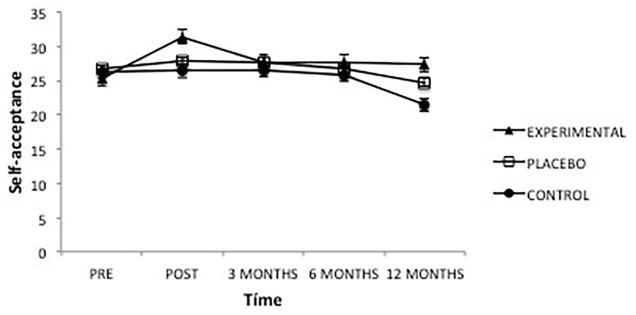

FIGURE 4 | Average scores of experimental, placebo, and control groups in self-acceptance as a function of time. The error bars represent the standard error of mean (SEM).

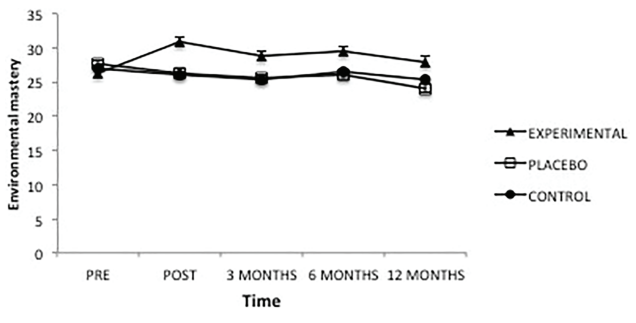

FIGURE 5 | Average scores of experimental, placebo, and control groups in environmental mastery as a function of time. The error bars represent the standard error of mean (SEM).

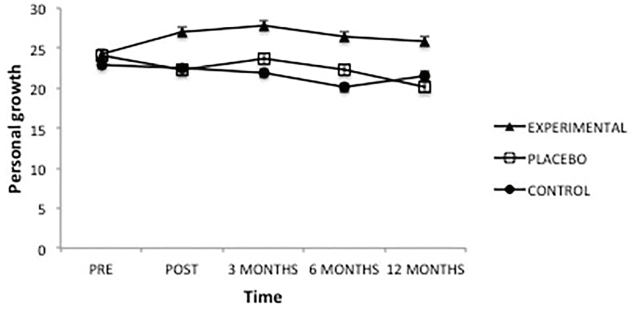

FIGURE 6 | Average scores of experimental, placebo, and control groups in personal growth as a function of time. The error bars represent the standard error of mean (SEM).

12 months ($p = 0.003$). The same situation occurred between the 6-month and 12-month follow-ups ($p = 0.021$). This shows that environmental mastery increases after the intervention; then, it begins to decline until it returns to its initial values after 1 year. In the Placebo group, there were significant differences between the pre-intervention scores and those obtained at 3 months ($p = 0.033$) and at 12 months ($p = 0.009$), with the pre-intervention scores surpassing the other two levels. Likewise, scores at 12 months were significantly lower than those following the intervention ($p = 0.021$) and then scores at 6 months ($p = 0.037$). Finally, in the Control group no significant differences were found.

Regarding the "Personal growth" dimension, there was a significant effect from Group $F(2, 101) = 5.71$, $p = 0.004$, $\eta_p^2 = 0.10$ and from Time $F(4, 101) = 2.92$, $p = 0.021$, $\eta_p^2 = 0.03$

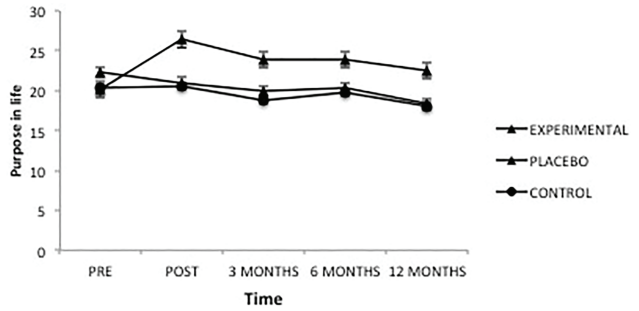

FIGURE 7 | Average scores of experimental, placebo, and control groups in purpose in life as a function of time. The error bars represent the standard error of mean (SEM).

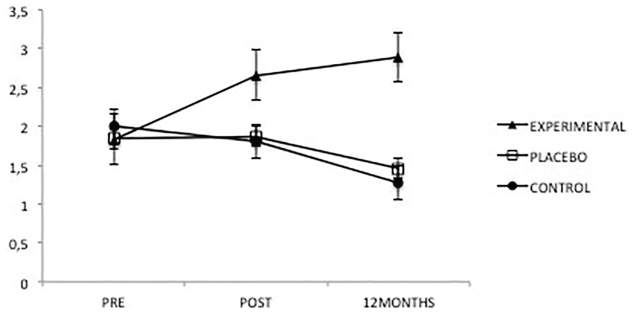

FIGURE 8 | Average scores of experimental, placebo, and control groups in specific positive memories as a function of time. The error bars represent the standard error of mean (SEM).

as well as from the interaction between the two, $F(8, 101) = 2.90$, $p = 0.004$, $\eta_p^2 = 0.05$ (**Figure 6**). Analysis of this interaction showed that, once the intervention was completed, the Experimental group presented significantly higher levels of Personal growth than the Placebo ($p = 0.008$) and Control ($p = 0.015$) groups; between the latter groups there were no significant differences. This same result was maintained at 3 months (experimental vs. placebo, $p = 0.047$; experimental vs. control, $p = 0.008$), 6 months (experimental vs. placebo, $p = 0.036$; experimental vs. control, $p = 0.001$) and 12 months after the intervention (experimental vs. placebo, $p = 0.006$; experimental vs. control, $p = 0.049$).

On the other hand, in the Experimental group there were significant differences between scores obtained before the intervention, and those obtained afterward ($p = 0.016$) and at 3 months ($p = 0.016$), the initial scores being lower, after this the differences disappear. In the Placebo group, the only difference found was that personal growth at 12 months was significantly lower than before the intervention ($p = 0.005$), and lower than three and 6 months after the intervention ($p = 0.002$). In the Control group, the scores were significantly lower 6 months after the intervention than at all other times (pre-intervention, $p = 0.002$; post-intervention, $p = 0.009$; 3 months, $p = 0.046$ and 12 months, $p = 0.028$), with no other differences found in this group.

The analysis of scores obtained in "Purpose in life" revealed a significant effect from the factor Group $F(2, 101) = 4.61$, $p = 0.012$, $\eta_p^2 = 0.08$, from the factor Time $F(4, 101) = 7.52$, $p = 0.000$, $\eta_p^2 = 0.07$ and from the interaction $F(8, 101) = 5.10$, $p = 0.000$, $\eta_p^2 = 0.09$ (**Figure 7**). Once the intervention was completed, the Experimental group had significantly higher levels of Purpose in Life than the Placebo ($p = 0.001$) and Control groups ($p = 0.000$); between the latter groups there were no differences. However, when measured after 3, 6, and 12 months, the differences between the Experimental group and the Placebo group were lost, although the Placebo group scored lower.

Likewise, in the Experimental group, pre-intervention scores were significantly different from the scores obtained after the intervention ($p = 0.000$), and at 3 months ($p = 0.008$), 6 months ($p = 0.001$), and 12 months ($p = 0.039$), with pre-intervention scores lower. On the other hand, post-intervention scores were significantly greater than the other levels (3 months, $p = 0.026$; 6 months, $p = 0.040$; and 12 months, $p = 0.008$). As for the Placebo group, the only differences found were between the 12-month follow-up and the other levels of this variable (pre-intervention, $p = 0.001$; post-intervention, $p = 0.012$; and 6 months, $p = 0.004$), excepting the 3-month follow-up, which did not differ. In the same way, the scores obtained after 3 months were lower than pre-intervention scores ($p = 0.014$). In the case of the Control group, the scores 12 months after the intervention were lower than those at all other times (pre-intervention, $p = 0.018$; post-intervention, $p = 0.003$; and 6 months, $p = 0.041$), except those obtained at 3 months, which did not differ. Similarly, the Control group showed differences between the scores obtained after 3 months and those immediately following the intervention, the latter being higher ($p = 0.013$).

Regarding the dimensions of Positive Relationships with others and Autonomy, the analysis showed no significant effects.

Regarding memories, positive and negative memories were considered separately, analyzing general and specific memories. The only significant results were found in the case of specific, positive memories, revealing a significant effect from the Group factor $F(2, 108) = 6.80$, $p = 0.002$, $\eta_p^2 = 0.11$, and from the interaction between Group and Time $F(4, 108) = 6.57$, $p = 0.000$, $\eta_p^2 = 0.11$ (**Figure 8**). The analysis of the interaction showed that, once the intervention was completed, the Experimental group presented a significantly higher number of specific positive memories than did the Placebo ($p = 0.033$) and Control groups ($p = 0.021$), between which there were no differences. This same result was maintained 12 months after the intervention ($p = 0.000$ for both groups).

On the other hand, the number of memories in the Experimental group was significantly lower before the intervention than afterward ($p = 0.001$) or after 12 months ($p = 0.000$). In the Placebo group, no significant differences were found, and in the Control group, memories before the intervention were significantly greater than 12 months after the intervention ($p = 0.012$).

In addition, the Pearson product–moment correlation coefficient was calculated between specific, positive

memories and the rest of the variables, using scores obtained after the intervention. The results showed positive relationships between this type of memories and Subjective Happiness ($r = 0.44$, $p = 0.000$), Satisfaction with Life ($r = 0.41$, $p = 0.000$), Self-acceptance ($r = 0.27$, $p = 0.004$), Positive Relationships with others ($r = 0.36$, $p = 0.000$), Environmental Mastery ($r = 0.37$, $p = 0.000$), Personal Growth ($r = 0.35$, $p = 0.000$), and Purpose in Life ($r = 0.40$, $p = 0.000$). In addition, a negative relationship was found with Depression ($r = -0.37$, $p = 0.000$).

DISCUSSION AND CONCLUSION

The empirical evidence obtained in this research shows that older adults who receive training in Autobiographical Memory, Gratitude, Forgiveness, and Sense of Humor present a significant increase in Subjective happiness, Satisfaction with life, certain dimensions of Psychological well-being and specific positive memories, as well as a significant reduction in depression. In most cases, the effect on the different measures was maintained for 1 year after the intervention, with exceptions in Subjective happiness and Environmental mastery, where it had disappeared after 6 months, and in Self-acceptance and Purpose of life, where it had disappeared after 3 months. These results show that the adults over age 65 who received this intervention obtained lasting beneficial effects in comparison with persons in the placebo and control groups. On the other hand, in those dependent variables in which the intervention has produced significant results, the effect size values have been medium. We consider this to be an important result since other investigations that have also used these types of activities have generally shown small effect sizes. This result is consistent with the idea that working on autobiographical memory and strengths enhances the effectiveness of this type of intervention in the elderly population.

Similar results were found by Proyer et al. (2014), who carried out an online intervention in Gratitude, Savoring, and the use of Strengths, obtaining an increase in happiness and a decrease in depressive symptoms. In the same way, Ramírez et al. (2014) found reductions in depression and anxiety using training in autobiographical memory, forgiveness, and gratitude. Jiménez et al. (2016) showed that, after a psychoeducational intervention based on sense of humor, gratitude, forgiveness, perseverance, courage, and altruism, the participants significantly increased their level of happiness and reduced their levels of worry, in comparison with a control group whose members did not receive any type of intervention. Ho et al. (2014) obtained a reduction in the number of depressive symptoms and an increase in levels of life satisfaction, gratitude, and happiness, in institutionalized adults, through an intervention focused on optimism, gratitude, happiness, curiosity, altruism, and savoring positive life experiences.

Unlike other studies, the present study took measurements of both subjective and psychological well-being; in other words, this variable was measured from both a hedonic and eudaimonic perspective. One important fact in this regard is that the intervention resulted in a significant increase in several dimensions of psychological well-being: Self-acceptance, Environmental mastery, Personal growth, and Purpose in life. It seems, therefore, that these types of interventions have proven to help older people to feel good about themselves, to choose situations that are favorable for them, to develop their personal capacities and to set new goals in life, bringing about a resulting increase in well-being.

In several studies (Ryff and Keyes, 1995; Keyes et al., 2002), the dimensions of self-acceptance and environmental mastery were found to be related to measures of happiness and satisfaction with life, that is, with measures of subjective well-being, while the dimensions that perhaps most genuinely represent the meaning of psychological well-being – purpose in life and personal growth – show little relation to these types of measures. Our results, however, show relationships existing between all of these, in the same line as in the study by Joshanloo (2019). This discrepancy might be explained by the fact that participants in these studies were from different populations. It is possible, in the case of an elderly population, that the lines between the types of well-being identified in the literature are more blurred.

According to Ryff (1989), one dimension of well-being that remains relatively stable throughout the life cycle is self-acceptance – one of the dimensions most closely related to subjective well-being. Some authors consider this due to it not being affected by physical changes (Benítez Ríos and Domínguez Ortega, 2010). The results of this study, however, do not support these claims. The increase found in this dimension may be due to its very nature. Self-acceptance is more than knowing oneself and having an accurate perception of one's own actions, motivations and feelings; it also includes attainment of a positive view of oneself.

On the other hand, environmental mastery tends to be greater in older and middle-aged adults than in young people. Nonetheless, the increase that was achieved in our study means that people who have received the intervention can more easily adapt to the inevitable changes in their environment, helping them gain a sense of control. The intervention also brought about a significant increase in the dimensions of purpose in life and personal growth. This fact is important since these dimensions decrease over one's lifetime, this being particularly pronounced in older adults (Ryff, 1995). In this regard, Navarro et al. (2008) carried out a study exclusively with an elderly population and observed a negative relationship between age and three of Ryff's dimensions (environmental mastery, personal growth, and purpose in life). These authors indicate that the decrease in environmental mastery possibly has to do with greater use of accommodative strategies, which imply modifying one's goals, lowering one's aspirations, abandoning certain objectives, or establishing alternative parameters of comparison with which to evaluate one's current situation. However, our intervention led to a significant increase in these dimensions, opening up a new line of work, that is, helping older adults

set new goals and consider that they are able to carry out projects, by involving them in a continuous process of personal development.

Therefore, our study points in the same direction as did Musich et al. (2018), who found that older people with high levels of well-being have a meaningful and purposeful life thanks to the use of psychological resources that help them face adversities by accepting and giving meaning to their experiences.

Regarding memories, several studies indicate that there is a relationship between depression and overgeneralization of memories. Access to specific autobiographical memories has been shown to be more difficult when people are sad (Philippe et al., 2011). Likewise, older adults have a greater number of general memories and fewer specific memories than young people (Ros et al., 2006), which could be due to a greater presence of affective disorders in the elderly (Navarro et al., 2008). Vázquez and Hervás (2011) postulated that these disorders can alter the interpretation of memories, having negative consequences on satisfaction in older adults, thus affecting their quality of life.

In our study, life review therapy has been used to help people recover and organize their memories, since this therapy is based on recalling specific positive events. Our results show a considerable increase in these memories, and this increase was found to have a significant negative correlation with depression. We therefore observe a relationship between improved mood and the recovery of positive memories. Other studies have found results pointing in the same direction. For example, Preschl et al. (2012) carried out an intervention based on life review therapy and obtained a significant decrease in depression, increase in well-being and decrease in obsessive thoughts. Other studies have found an increase in self-esteem, life satisfaction, psychological well-being, and a decrease in depression (Meléndez Moral et al., 2015; Hitchcock et al., 2017; Jo and An, 2018).

Interventions that lead to recalling specific positive events are thus especially beneficial, since recovery of these memories may be a protective factor against depression (Ramírez et al., 2014; Talarowska et al., 2016), eventually leading to increased life satisfaction (Latorre et al., 2013) and emotional well-being (Bohlmeijer et al., 2007). The present study has found positive relationships between all the dimensions of psychological well-being except for Autonomy, Happiness, Satisfaction with life, and specific positive memories. In this regard, our intervention program is innovative because it can stimulate the recovery of these memories by also including training in gratitude, forgiveness, and a sense of humor, strategies that improve autobiographical recall because they magnify and intensify good memories about the past.

Although our results support the fact that positive interventions help people improve their emotional state and increase their specific memories, the factors that mediate the relationship between depression, gratitude, forgiveness, sense of humor, and memory specificity have not been studied. It would be interesting to discover what those factors are and to what extent each one contributes to the effects obtained. In this regard, several studies suggest that rumination could mediate the relationship between high levels of depression and reduced specific memory (Raes et al., 2012). In fact, rumination is considered to be a risk factor that predicts multiple disorders. Positive activities can disrupt rumination processes by stimulating positive emotions that help people creatively solve their problems. Positive thoughts and behaviors can become more common when a ruminating style is replaced by a more positive style (Layous et al., 2014).

On the other hand, the results obtained in the present investigation represent important empirical support for the fact that training in the strengths of gratitude, forgiveness, and sense of humor is especially effective in this type of population.

Older adults are more likely to value gratitude as a positive, rewarding experience; as we get older we reevaluate our priorities and goals and become more interested in events that we find emotionally pleasing. This may be because older adults realize that they have little time left in their lives, so they focus their resources on what is meaningful and pleasing to them (Layous et al., 2018). This becomes important because experiencing gratitude predicts satisfaction with life, is related to having a purpose in life, and significantly correlates with well-being (Ramírez et al., 2015; García Álvarez et al., 2019). In this regard, Killen and Macaskil (2015) carried out a gratitude intervention with older adults, who wrote daily in a gratitude journal. Stress levels showed a decline, and levels of well-being increased, but these benefits did not persist 1 month after the intervention. The same result was found by Krejtz et al. (2016) and others. Similarly, Salces-Cubero et al. (2019) also found that gratitude training in older persons produced an increase in satisfaction with life, happiness, positive affect, and resilience as well as a decrease in negative affect.

In the area of forgiveness research, it is well known that forgiving is related to both physical and psychological health benefits (Lee and Enright, 2019; Rasmussen et al., 2019). The results obtained here support this statement and are consistent with those found in other research studies. These include Cornish and Wade (2015) and Kent et al. (2018), who found an improvement in psychological well-being; Rey and Extremera (2016), an increase in life satisfaction and reduced depression; Rezaei et al. (2019), an increase in happiness and quality of life; and Sánchez-Cabaco et al. (2019b), a decrease in depression, anxiety and stress.

On the other hand, sense of humor can play a very important role in the well-being of older adults since it contributes to the enjoyment of present events and is a protective factor against adversity and negative emotions (Hone et al., 2015; Tagalidou et al., 2019). Wellenzohn et al. (2016) showed that practicing a sense of humor decreases depression and increases levels of happiness. In the same direction, the studies of Van der Wal and Wok (2019), and Siregar and Gultom (2019) showed that sense of humor reduces depression, anxiety and stress, while Wu et al. (2019), and Zhao et al. (2019) found

that a sense of humor leads to increased satisfaction with life and positive affect.

One of the greatest contributions of present study was that effects produced by the program persisted over time. As Sutipan et al. (2017) argue, interventions in positive psychology with people over 60 years of age are beneficial for increasing well-being, happiness, satisfaction with life and for reducing depression, but this benefit is achieved fundamentally in the short term. Research has shown that Life Satisfaction increases with age until the final stage of life is reached; then, a marked decline is observed (Gerstorf et al., 2010). This agrees with the data we obtained from participants in the placebo and control groups: We observed a decrease in the different measures of well-being over time. Using these two groups represents a contribution that endorses the effectiveness of the proposed intervention, given that not all studies use a control group, and very few use a placebo group (Allemand and Flückiger, 2020; Treichler et al., 2020). In our study, it was possible to maintain the benefits obtained from the intervention; lasting benefits are especially important in older adults since this has been associated with higher quality of life (Smith and Bryant, 2016). This achievement may be due to the refresher sessions, which represent a novel aspect in comparison with other programs proposed. We believe that these sessions can maintain the positive emotions produced by the different activities, as the participants have more chances to include them in their daily life. This is a particularly noteworthy aspect of our intervention. On one hand, it is a feature that had not been incorporated in this type of intervention to date, and on the other hand, as our results shown, it enabled the intervention benefits to be maintained as long as 1 year after the intervention. This represents an important contribution, because most studies have not carried out follow-up for this length of time, and when they did, effects were not maintained (e.g., Westerhof and Slatman, 2019).

Authors, such as Lyubomirsky and Layous (2013) have suggested that the increase in positive emotions may be one mechanism that mediates the effectiveness of positive interventions. As indicated in studies by Fredrickson et al. (2005) and Fredrickson (2013), positive emotions can directly affect health and well-being. Positive emotions produce an accumulation of growth and expansive effects, which can even transform individuals, making them healthier, more socially integrated, more effective, and resilient. They predict an increase in well-being by expanding the individual's psychological resources. This undoubtedly may have helped the participants in this study to more positively cope with the events that have occurred in their lives; the positive emotions produced by the intervention activities can become a component of the coping process, where situations are considered as challenges rather than threats (Folkman, 2008).

Despite the contributions we have made here, our investigation presents a number of limitations. First, the sample selection was not random, so there could be issues in generalizing the results, although the sample does represent the demographic characteristics of the elderly in Spain. Second, only subjective measurements were taken. Future studies should include objective measures, such as behavioral measures, evaluation of facial expressions and even objective measures of health. Third, the measurement of memories was taken at two times only: immediately following the intervention and after 12 months, due to its complexity and to the characteristics of the study participants. Nonetheless, the intervention clearly proved to be effective in this measure. Fourth, while the results have shown the intervention to be effective, we cannot know whether some activities produced more benefits than others. This will have to be investigated in the future in order to better match the intervention to the characteristics of this population. Finally, any changes that the intervention produced in forgiveness, gratitude, and sense of humor were not measured.

Future studies should incorporate refresher sessions to corroborate their usefulness in maintaining intervention benefits over time. In addition, both the interventions and the refresher sessions could be conducted using information technologies. In fact, so-called positive technologies make use of informational technology to improve the quality of one's personal experience; their goal is to increase well-being and generate strengths and resilience in individuals, organizations, and society (Riva et al., 2012; Drozd et al., 2014; Barceló Soler et al., 2019).

Health professionals have more and more resources to help people construct their well-being. This means improving quality of life, preventing the appearance of psychopathologies, developing emotional competencies – in short, making people happier, regardless of their age.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Comité de Bioética de Andalucía. Junta de Andalucía. Spain. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

AC-G, ER-F, and AO-M contributed to conception and design of the study. AC-G organized the database and wrote the first draft of the manuscript. AO-M and ER-F performed the statistical analysis and wrote sections of the manuscript. All authors contributed to the article and approved the submitted version.

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Following the Science to Generate Well-Being: Using the Highest-Quality Experimental Evidence to Design Interventions

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The second wave of devastating consequences of the COVID-19 pandemic has been linked to dramatic declines in well-being. While much of the well-being literature is based on descriptive and correlational studies, this paper evaluates a growing body of causal evidence from high-quality randomized controlled trials (RCTs) that test the efficacy of positive psychology interventions (PPIs). This systematic review analyzed the findings from 25 meta-analyses, 42 review papers, and the high-quality RCTs of PPIs designed to generate well-being that were included within those studies. Findings reveal PPIs have the potential to generate well-being even during a global pandemic, with larger effect sizes in non-Western countries. Four exemplar PPIs—that have been tested with a high-quality RCT, have positive effects on well-being, and could be implemented during a global pandemic—are presented and discussed. Future efforts to generate well-being can build on this causal evidence and emulate the most efficacious PPIs to be as effective as possible at generating well-being. However, the four exemplars were only tested in WEIRD (Western, Educated, Industrial, Rich, and Democratic) countries but seem promising for implementation and evaluation in non-WEIRD contexts. This review highlights the overall need for more rigorous research on PPIs with more diverse populations and in non-WEIRD contexts to ensure equitable access to effective interventions that generate well-being for all.

Keywords: positive psychology intervention, well-being, randomized controlled trial, systematic review, exemplar method

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INTRODUCTION

In response to psychology's strong emphasis on pathology and repairing human deficits, Seligman and Csikszentmihalyi (2000) provided a vision for the next generation of psychological scientists to spend at least some of their careers understanding the factors that make life worth living and preventing pathologies that arise when life is barren and meaningless. The call was answered and thousands of peer-reviewed articles on positive psychology topics have been published and more than a thousand of these articles included empirical tests of positive psychology theories, principles, and interventions (Donaldson et al., 2015; Kim et al., 2018). Furthermore, this new science is now being conducted across many disciplines and professions, five continents, and more than 60 countries

(Kim et al., 2018; Donaldson et al., 2020). It is hard to believe anyone could have imagined that two decades of rigorous peer-reviewed positive psychological science would become one of the key knowledge bases that could be used to generate well-being in the unprecedented global pandemic of 2020–2021.

"Follow the Science" is the cry being heard from public health scientists around the world as they try to stop the spread of COVID-19 by "flattening the curve." It is the same cry that we hear with respect to finding treatments to reduce the severity and length of illness caused by the coronavirus, as well as developing effective vaccines. Scientists working on each of these public health challenges are using the best science they have available to prevent the spread of the virus, find effective treatments, and develop vaccines that can be taken to scale to alleviate the fear, trauma, and suffering occurring across the globe (National Institutes of Health, 2020; World Health Organization, 2020).

The second wave of devastating consequences of this global pandemic has been linked to dramatic declines in well-being (see Panchal et al., 2020). These undesirable consequences have affected marginalized and vulnerable groups disproportionately, increasing health and economic disparities around the world (United Nations, 2020). In the same way, public health scientists are following the most rigorous science available to combat the physical health impacts of the virus; it is also important to follow the most rigorous positive psychology intervention (PPI) science to design new PPIs that can be implemented during the pandemic to generate well-being across the globe (see Seligman, 2008; Donaldson et al., 2020). Just as equitable access to effective vaccines has been a major concern worldwide, it is also critical to ensure access and efficacy of PPIs beyond WEIRD (Western, Educated, Industrial, Rich, and Democratic) contexts to ensure that they generate well-being for all.

Present Study

The focus of this review is to identify the most promising PPIs for generating well-being by identifying and describing the most efficacious PPIs to date as determined by high-quality randomized controlled trials (RCTs). Like the health scientists designing RCTs to test the efficacy of treatments and vaccines to combat the coronavirus, we are using a conceptual version of the exemplar method (Bronk, 2012; Bronk et al., 2013) to intentionally identify the most efficacious PPIs when tested by the rigorous RCTs. The following sections will describe how we evaluated findings from reviews, meta-analyses, and peer-reviewed RCTs testing PPI efficacy in order to determine the most promising exemplar PPIs for generating well-being during the global pandemic. We hope the findings will help intervention researchers and practitioners around the world, including those in non-WEIRD contexts, to optimize the design and implementation of future PPIs.

MATERIALS AND METHODS

The exemplar method is a research approach that involves focusing a study on a select sample that exemplifies the area of interest (Bronk, 2012; Bronk et al., 2013). In the spirit of positive psychology, researchers can study within the upper bounds of what is possible as opposed to limiting study to the averages of what is typical. For this reason, the method has been utilized in many previous positive psychology studies (e.g., Reimer et al., 2009; Dunlop et al., 2012; Reimer and Reimer, 2015; Morton et al., 2019). In this study, high-quality RCTs were chosen as exemplars from a larger pool of studies previously published in meta-analyses and review papers. The subsequent sections outline the search strategy, selection, and coding processes. Refer to **Figure 1** for a flow diagram of the exemplar process utilized for this study.

Search Strategy

A systematic literature search was conducted for meta-analyses and review papers in the following five databases: Academic Search Premier, PsycINFO, PsycArticles, PubMed, and Scopus, covering the period from 1998 (the start of the positive psychology movement) to 2020. The last run was conducted on June 3, 2021. In addition, a hand search was conducted through the websites of three non-Western journals in the field of positive psychology: the Indian Journal of Positive Psychology, the Iranian Journal of Positive Psychology, and the Middle East Journal of Positive Psychology.

Selection of High-Quality RCTs Testing PPIs

The present study focused its in-depth analysis on PPIs that were examined by RCTs that had undergone quality assessment by previous peer-reviewed meta-analyses and reviews. The 25 meta-analyses and 42 review articles were reviewed for the use of quality assessments (QA). Fifteen meta-analyses and nine review papers utilized some sort of QA, the most common of which was Cochrane's Tool for Assessing Risk of Bias (Higgins et al., 2011). From eleven papers that used Cochrane's, after removing two for calculating ratings differently from the others (Brown et al., 2019; Carrillo et al., 2019) and one that did not have studies meeting inclusion criteria (Macaskill and Pattison, 2016), we analyzed the QA ratings within the eight remaining papers (Bolier et al., 2013; Sutipan et al., 2016; Weiss et al., 2016; Chakhssi et al., 2018; Hendriks et al., 2018; Carr et al., 2020; Hendriks et al., 2020; Tejada-Gallardo et al., 2020).

The studies were included based on the following criteria: (1) included in one of the aforementioned meta-analyses or review papers, (2) utilized some form of a Cochrane's quality assessment rating, (3) RCTs using individual random assignment, (4) intervention described as a "PPI," "positive psychological intervention," a "positive intervention", "positive psychotherapy", "well-being intervention" or referred to their work in the context of "positive psychology" (in order to minimize bias by relying on an explicit, objective criterion for inclusion), (5) published in a peer-reviewed journal in the English language, and (6) intervention focused on improvement of psychological or mental well-being or any dimension based on any one of five major definitions: Subjective Well-being (SWB; Diener, 1984), the PERMA model of flourishing (PERMA; Seligman, 2011), Thriving (Su et al., 2014), Psychological Well-being (PWB; Ryff, 1989),

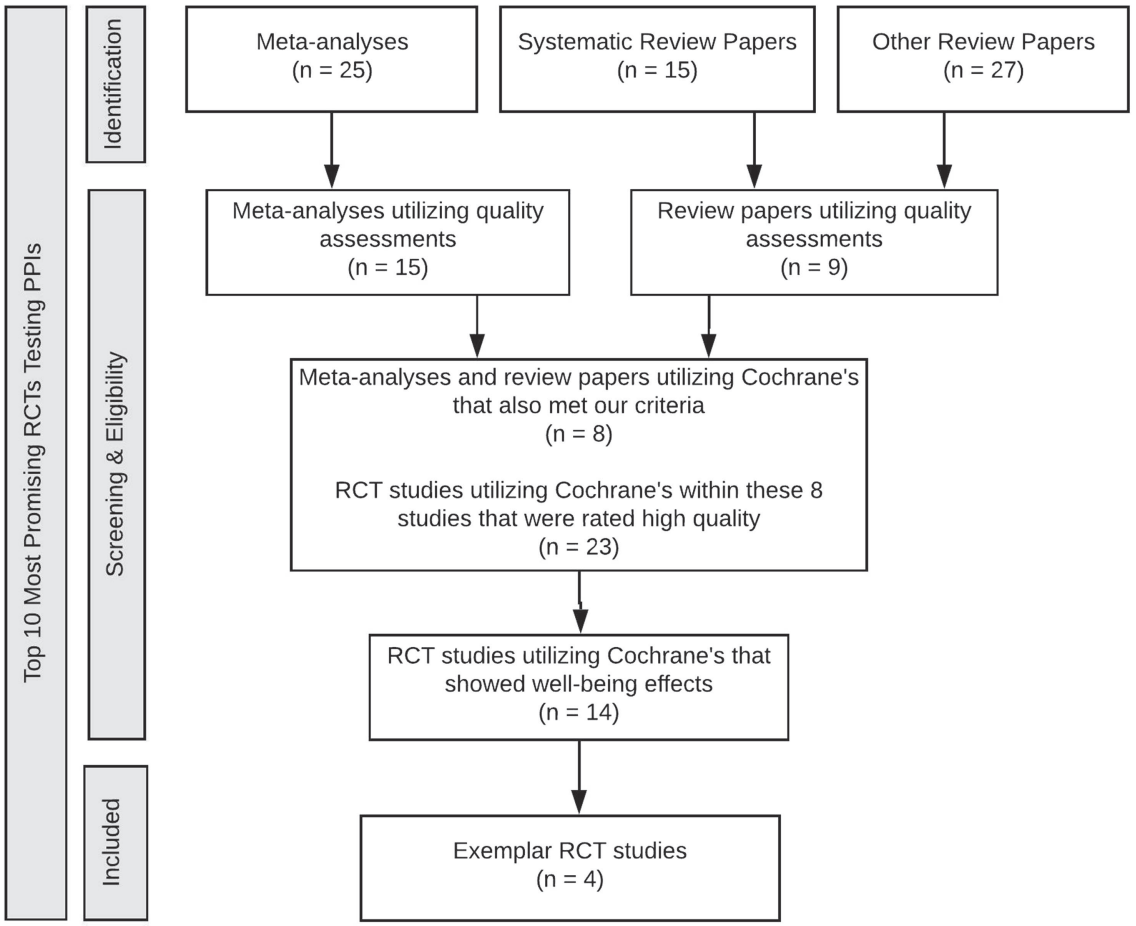

FIGURE 1 | Flow diagram of the search and selection procedure for target studies.

and Quality of Life (Seligman and Csikszentmihalyi, 2000). As part of our exemplar approach, a variety of PPI types and features, samples, and well-being measures were included to ensure the sample was representative of the wide variety of PPI RCTs in the literature. We excluded: (1) cluster RCTs and quasi-experimental studies. (2) interventions that were not described as a PPI, positive psychological intervention, positive intervention, positive psychotherapy, well-being intervention, or referred to their work in the context of positive psychology (3) studies that solely measured as an outcome the reduction of depression, anxiety, or other negative emotions or states without a psychological well-being component as an outcome. (4) PPIs that solely changed behavior without a psychological well-being component as an outcome (e.g., physical activity, and cessation of smoking, etc.). (5) studies published in book chapters, dissertations, and grey literature, and (6) articles not published in the English language.

After removing duplicates and studies that did not meet our inclusion criteria, 23 high-quality studies were identified within the eight papers that met Cochrane's high versus low or moderate-quality criteria (source of bias criteria: random sequence generation, allocation concealment, blinding of participants and personnel, blinding of outcome assessment, incomplete outcome data, selective reporting, and anything else; Higgins et al., 2011). Of these 23 studies that were rated as high-quality, six were removed because they received different quality ratings from different papers. Out of the 17 remaining studies, 14 of the most promising trials of PPIs were identified where the PPI was found to improve at least one well-being outcome.

Coding of High-Quality RCT PPIs

Coding was conducted for: (1) year, (2) country of origin, (3) setting of intervention, (4) participants, (5) mention of PP, (6) PPI term used, (7) PPI description, (8) theory behind the intervention, (9) control group type, (10) time points assessed, (11) well-being measure, (12) other non-well-being measures, (13) well-being outcomes & effect sizes, (14) other non-well-being outcomes & effect sizes, (15), other findings, (16), the review or meta-analysis that assessed its quality, (17) applicable in the context of a global pandemic, (18) relevant for equity or marginalized groups heavily impacted by COVID-19, (19) relevant for vulnerable populations during a global pandemic,

and (20) and each of the previously assessed quality assessments and quality ratings that used Cochrane's.

Selection of Four Exemplar PPIs

Fourteen promising PPIs were further analyzed to find exemplar PPIs according to the following criteria: (1) improved well-being outcomes with medium to large effect sizes; (2) outcomes were attributed with confidence to the PPI; and (3) relevance in a global pandemic where the PPI could be delivered at scale and at a lower cost (e.g., online), could be delivered in social distancing conditions (e.g., delivered remotely *via* online or phone), and incorporated flexible delivery or content (e.g., participants choose their own content or time to complete it).

RESULTS

Systematic Reviews and Meta-Analyses

The science of PPIs has matured to the point where we now have numerous systematic reviews and meta-analyses (see **Table 1**). There has also been a surge in recent studies testing PPIs (e.g., Biswas-Diener, 2020).

Well-Being Effect Sizes

Most of these reviews and meta-analyses of RCTs show that PPIs, on average, do have at least small to medium-sized positive effects on important outcomes, such as well-being (**Table 2**). By way of example, Van Agteren et al. (2021) and Hendriks et al. (2020) both examined the efficacy of multi-component positive psychology interventions (MPPIs). Van Agteren et al. (2021) found small to moderate effects on overall well-being for the general, mentally ill, and physically ill populations. Hendriks et al. (2020) concluded that MPPIs studies had an overall small effect on subjective well-being and depression, and a small to moderate effect on psychological well-being. In addition, they suggest MPPIs had an overall small to moderate effect on anxiety and a moderate effect on stress. Further, Donaldson et al. (2019a) published a meta-analysis of the most rigorous PPI studies conducted in the workplace. They found that the workplace interventions had small to moderate positive effects across both desirable and undesirable work outcomes (e.g., job stress), including well-being, engagement, leader-member exchange, organization-based self-esteem, workplace trust, forgiveness, prosocial behavior, leadership, and calling.

Moderators

These meta-analyses based on numerous empirical tests and thousands of participants illustrate the conditions under which PPIs can generate well-being and positive human functioning. Many moderators were tested and found to impact effect size. Each of these meta-analyses focused on different types of PPIs with differing study designs, which explains some variability in findings.

Some features of the PPIs were found to be moderators that impacted effect sizes, including the program format, program type, and duration, but not frequency. The program format showed that individualized interventions led to greater effects than self-help or group (Sin and Lyubomirsky, 2009; Weiss et al., 2016; Carr et al., 2020). The program type findings were mixed with Carr et al. (2020) demonstrating that multi-component PPIs showed greater effects than single component PPIs, but Hendriks et al. (2018) showed no effect for this moderator. The impacts of duration were also mixed with Carr et al. (2020), Koydemir et al. (2020), and Sin and Lyubomirsky (2009) finding that longer interventions led to greater effects, but Carrillo et al. (2019) found the opposite and Davis et al. (2016), Geerling et al. (2020), Hendriks et al. (2018), and Slemp et al. (2019) not finding this effect. Frequency was only tested by Slemp et al. (2019) study of contemplative interventions and was not found to be a moderator.

Features of the participants were also found to be moderators, including age, gender, and clinical status. Many meta-analyses found age to be a moderator, with older participants showing a larger effect size than younger participants (Sin and Lyubomirsky, 2009; Dickens, 2017; Curry et al., 2018; Carrillo et al., 2019; Carr et al., 2020). However, Weiss et al. (2016) did not report this finding. Gender was a moderator in one meta-analysis with women showing greater effects (Lomas et al., 2019) but was not found to be a moderator by Curry et al. (2018) or Dickens (2017). Meta-analyses that compared clinical participants to non-clinical participants found that clinical participants demonstrated greater effects (Sin and Lyubomirsky, 2009; Weiss et al., 2016; Carr et al., 2020). However, Hendriks et al. (2018) did not replicate this finding.

Features of the study were also moderators, including country of study, study quality, and control group type, in that non-Western countries, lower-quality studies, and those that used no intervention as a comparison group tended to report higher effect sizes. Hendriks et al. (2018) found that PPIs from non-Western countries tend to report larger effect sizes than those from Western countries with the caveat that these studies tend to have lower study quality. Supporting these findings, Carr et al. (2020) and Hendriks et al. (2020) both found country as a moderator of well-being, with individuals in non-WEIRD countries showing greater effects than those in WEIRD countries (Henrich et al., 2010). However, both meta-analyses rated few non-WEIRD studies as good or high-quality according to their quality assessments: 5 out of 64 non-WEIRD studies in Carr et al. (2020) and 1 out of 13 non-WEIRD studies in Hendriks et al. (2020). Across the two meta-analyses, only 19.35% of studies took place in non-WEIRD countries; 48.05% of non-WEIRD studies were rated poor quality, 44.16% of non-WEIRD studies were rated fair/moderate quality, and only 7.79% of non-WEIRD studies were rated good/high quality. Beyond country distinctions, lower-quality RCTs often overestimated the effects of PPIs (e.g., Carr et al., 2020; Hendriks et al., 2020; Tejada-Gallardo et al., 2020). However, this finding was not found by Slemp et al. (2019). As further indication of study quality, the type of control group was also found to be a moderator where studies that used no intervention as a comparison group led to greater effects than those that used an alternative/active intervention; plus,

TABLE 1 | Positive psychology intervention meta-analyses.

References	Title	Sample	Main Effect Findings	Moderator Findings
Van Agteren et al. (2021)	A systematic review and meta-analysis of psychological interventions to improve mental wellbeing	393 studies, 53,288 participants from clinical, non-clinical and physical illness populations in 42 countries	Multi-component PPIs were effective with small to moderate effects on overall well-being for the general population (Hedge's $g = 0.28$), mentally ill population ($g = 0.37$), and physically ill population ($g = 0.52$). See the article for effects for ACT, Compassion, CBT, expressive writing, mindfulness, multi-theoretical, singular PPI, and reminiscence interventions.	Moderators that increased effectiveness in well-being included: time to follow-up (shorter versus longer, with effect sizes maintained at the 3-month follow-up but dropping at 6 months), as well as comparison groups (waitlist-control or assessment-only design versus placebo).
Carr et al. (2020)	Effectiveness of positive psychology interventions: a systematic review and meta-analysis	347 studies, over 72,000 participants from clinical and non-clinical child and adult populations in 41 countries	PPIs with an average of ten sessions over six weeks offered in multiple formats and contexts were effective with small to medium effects on well-being (Hedge's $g = 0.39$), strengths ($g = 0.46$), quality of life ($g = 0.48$), depression (g −0.39), anxiety ($g = -0.62$), and stress ($g = -0.58$), with gains maintained at three months follow-up.	Moderators that increased effectiveness of well-being included: life-stage (older versus younger), clinical status (clinical problems versus not), recruitment method (referred versus self-selected), country (individuals in non-western countries versus western), program format (engagement in longer individual or group therapy programs versus self-help), program type (containing two or more PPIs versus one PPI), program duration (longer versus shorter), control group type (no intervention type comparison group versus alternate intervention type), PPI type (e.g., savoring, optimism, and hope versus forgiveness and goal-setting), and alternative intervention type (PPIs versus treatment-as-usual or CBT), study quality (lower versus higher quality), and year of publication (older versus newer).
Geerling et al. (2020)	The effect of positive psychology interventions on well-being and psychopathology in patients with severe mental illness: A systematic review and meta-analysis	16 studies (including 9 RCTs), 729 patients	PPIs in people with severe mental illness were not effective on well-being or psychopathology in comparison to control conditions. However, when only looking at within-group effects, these PPIs were effective with moderate effects on well-being ($g = 0.40$) and with a large effect on psychopathology ($g = 0.70$).	Moderators for well-being included diagnosis (patients with major depressive disorder over schizophrenia or mixed samples). Moderators showed no significant differences between sub-groups for treatment duration or format.
Heekerens and Eid (2020)	Inducing positive affect and positive future expectations using the best-possible-self intervention: A systematic review and meta-analysis	34 RCT studies, 4,462 participants	The Best Possible Self interventions were effective PPIs with small effects for positive affect ($g = 0.28$) and optimism ($g = 0.21$), with no substantial follow-up effects.	Moderators included: assessment of momentary affect immediately after the intervention and conceptualizing optimism as positive future expectations instead of a general orientation in life.
Hendriks et al. (2020)	The efficacy of multi-component positive psychology interventions: A systematic review and meta-analysis of randomized controlled trials	50 RCT studies in 51 articles, 6,141 participants	Multi-component PPIs (MPPIs) were effective with small effects for subjective well-being ($g = 0.34$) and depression ($g = 0.29$), small to moderate effects for psychological well-being ($g = 0.39$) and anxiety ($g = 0.35$), and moderate effects for stress ($g = 0.48$), after taking study quality and outliers into account.	Moderators included region and study quality. Non-Western countries and lower-quality studies found greater effects.

(Continued)

TABLE 1 | Continued

References	Title	Sample	Main Effect Findings	Moderator Findings
Koydemir et al. (2020)	A meta-analysis of the effectiveness of randomized controlled positive psychological interventions on subjective and psychological well-being	68 RCT studies of nonclinical populations, 16,085 participants	PPIs were effective with small effects for psychological well-being (Cohen's $d = 0.08$) and subjective well-being ($d = 0.22$), with small to moderate effects when targeting both types of well-being ($d = 0.43$), with evidence for sustained effects at follow-up.	Moderators included: longer interventions (versus shorter), traditional methods (versus technology-assisted methods), and mixed outcomes for age.
Tejada-Gallardo et al. (2020)	Effects of school-based multicomponent positive psychology interventions on well-being and distress in adolescents: A systematic review and meta-analysis	9 studies in 9 articles, 4,898 participants	Multi-component PPIs (MPPIs) were effective with small effects for subjective well-being ($g = 0.24$), psychological well-being ($g = 0.25$), and depression symptoms ($g = 0.28$).	Moderators included: year of publication (more recent over older), study design (non-randomized over randomized), type of intervention (multi-component combined with another type of positive intervention), control group (placebo over waitlist), quality of studies (removing low-quality studies lowered effects for subjective well-being and raised effect size for psychological well-being and depression symptoms), and measurement of follow-up (no-followup over follow-up).
Brown et al. (2019)	The effects of positive psychological interventions on medical patients' anxiety: A meta-analysis	12 RCT studies with 1,131 participants; 11 non-randomized trials with 300 participants	PPIs were effective with small to medium effects for patient anxiety ($g = -0.34$), sustained 8 weeks post ($g = -0.31$).	Moderators included: clinician-led interventions (versus self-administered), longer interventions (versus shorter).
Carrillo et al. (2019)	Effects of the Best Possible Self intervention: A systematic review and meta-analysis	29 studies in 26 articles, 2,909 participants	The Best Possible Self (BPS) interventions were effective PPIs with small effects for negative affect ($d+ = 0.192$), and depressive symptoms ($d+ = 0.115$), as well as moderate effects for positive affect ($d+ = 0.511$), optimism ($d+ = 0.334$), and well-being ($d+ = 0.325$).	Moderators included: older participants and shorter (total minutes of) practice. BPS was more effective than gratitude interventions for positive and negative affect outcomes.
Donaldson et al. (2019a)	Evaluating positive psychology interventions at work: A systematic review and meta-analysis	22 studies, 52 independent samples, 6,027 participants from 10 countries	Five workplace PPIs (psychological capital, job crafting, strengths, gratitude, and employee well-being) can be effective with small effects for desirable work outcomes (performance, job well-being, engagement, etc.; $g = 0.25$) and with small to moderate effects for undesirable work outcomes (negative performance, negative job well-being; $g = -0.34$).	Moderators for both desirable and undesirable outcomes did not include: type of theory or intervention delivery method.
Howell and Passmore (2019)	Acceptance and Commitment Training (ACT) as a positive psychological intervention: A systematic review and initial meta-analysis regarding ACT's role in well-being promotion among university students	5 randomized experiments of university students, 585 participants	Acceptance and Commitment Training (ACT) was an effective PPI with small effects on well-being ($d = 0.29$).	N/A

(Continued)

TABLE 1 | Continued

References	Title	Sample	Main Effect Findings	Moderator Findings
Lomas et al. (2019)	Mindfulness-based interventions in the workplace: An inclusive systematic review and meta-analysis of their impact upon wellbeing	35 RCT studies, 3,090 participants	Mindfulness-based interventions (MBIs) were effective with moderate effects for stress (Standardized Mean Difference = −0.57), anxiety (SMD = −0.57), distress (SMD = −0.56), depression (SMD = −0.48), and burnout (SMD = −0.36), as well as small to moderate effects for health (SMD = 0.63), job performance (SMD = 0.43), compassion (SMD = 0.42), empathy (SMD = 0.42), mindfulness (SMD = 0.39), and positive well-being (SMD = 0.36), with no effects for emotional regulation.	Moderators for health included: region (higher effects for studies in North America), intervention type (MBSR versus other intervention types), and age (younger versus older). Moderators for positive well-being and compassion included: gender (more women in the intervention group).
Slemp et al. (2019)	Contemplative interventions and employee distress: A meta-analysis	119 studies, 6,044 participants	Contemplative interventions (e.g., mindfulness, meditation, and other practices) were effective in RCTs with small to moderate effects for reducing employee general distress (d = 0.39), sustained at follow-up. More specifically, distress consisted of anxiety (d = 0.58), negative affect (d = 0.50), stress (d = 0.47) depression (d = 0.42), somatic symptoms (d = 0.40), and burnout (d = 0.20).	Moderators included: type of contemplative intervention (highest for general meditation-based interventions, followed by mindfulness-based and ACT-based interventions) and type of control group (no-intervention or comparisons that received no education only versus active control comparisons). Moderators did not include: study quality ratings, overall duration of the programs, or the number of sessions included. Adjustments for publication bias lowered overall effects.
White et al. (2019)	Meta-analyses of positive psychology interventions: The effects are much smaller than previously reported	2 previous meta-analyses (Sin and Lyubomirsky, 2009; Bolier et al., 2013)	When small sample size bias was taken into account, PPIs were effective with small effects for well-being (r = .10), with variable mixed effectiveness for depression.	Study notes need for increasing sample sizes in future studies.
Chakhssi et al. (2018)	The effect of positive psychology interventions on well-being in clinical populations: A systematic review and meta-analysis	30 studies, 1,864 participants with clinical disorders	PPIs were effective with small effects for well-being (g = 0.24) and depression (g = 0.23), moderate effects for anxiety (g = 0.36), and no significant effects for stress, with similar effects 8 to 12 weeks post.	Moderator for well-being included: guided PPIs (versus unguided, such as self-help). Moderator for stress included: control group type (no intervention/waitlist control versus active or treatment-as-usual control). Moderators did not include: population type (psychiatric versus somatic disorders), intervention format (individual versus group), intervention duration (shorter versus longer), or type of PPI (PPI therapy programs versus single PPIs).
Curry et al. (2018)	Happy to help? A systematic review and meta-analysis of the effects of performing acts of kindness on the well-being of the actor	27 studies in 24 articles, 4,045 participants	Kindness interventions (e.g., random acts of kindness) were effective PPIs with small to medium effects for well-being (for the actor of kindness; δ = 0.28).	Moderators did not include: sex, age, type of participant, intervention, control condition, or outcome measure.

(Continued)

TABLE 1 | Continued

References	Title	Sample	Main Effect Findings	Moderator Findings
Hendriks et al. (2018)	The efficacy of positive psychology interventions from non-Western countries: A systematic review and meta-analysis	28 RCT studies, 3,009 participants	PPIs from non-Western countries were effective with moderate effects for subjective wellbeing ($g = 0.48$) and psychological wellbeing ($g = 0.40$), and a large effect on depression ($g = 0.62$) and anxiety ($g = 0.95$).	Moderators did not include: study population (clinical or non-clinical), mode of delivery of the PPI (group or self-help), intervention type (single component or multi-component), type of control group (active/placebo or non-active/waitlist), duration of the intervention (≤ 8 weeks or > 8 weeks), or cultural adaptation of the PPI (yes or no).
Dhillon et al. (2017)	Mindfulness-based interventions during pregnancy: A systematic review and meta-analysis	14 articles (some RCT and some non-RCT studies), pregnant (prenatal) participants	Mindfulness-based interventions showed no significant effects for anxiety, depression, or perceived stress in the pooled RCTs, but each showed a significant effect in the pooled non-RCTs: anxiety (SMD = −0.48), depression (SMD = −0.59), and perceived stress (SMD = −3.28). Further, mindfulness as an outcome showed significant effects for both the pooled RCT (SMD = −0.57) and pooled non-RCT studies (SMD = −0.60).	N/A
Dickens (2017)	Using gratitude to promote positive change: A series of meta-analyses investigating the effectiveness of gratitude interventions	38 studies, 5,223 participants	Gratitude interventions can be effective with small to medium effects for well-being, happiness, life satisfaction, grateful mood, grateful disposition, positive affect, and depressive symptoms, with mixed findings for negative affect and stress, and no significant effects for physical health, sleep, exercise, prosocial behavior, or self-esteem. Please see the full paper for effect sizes for each of the comparison group types: neutral, positive, and negative conditions.	Moderators included: adults (versus children or college-aged). Moderators did not include: gender, type of neutral comparison group, duration of the follow-up period.
Davis et al. (2016)	Thankful for the little things: A meta-analysis of gratitude interventions	32 studies in 26 articles	Gratitude interventions were effective PPIs with small effects for psychological well-being ($d = 0.31$) but not gratitude as an outcome itself ($d = 0.20$) in comparison to measurement-only controls. However, gratitude interventions were effective with moderate effects for gratitude ($d = 0.46$) and small effects for psychological well-being ($d = 0.17$), with no significant effects for anxiety ($d = 0.11$), in comparison to alternate-activity conditions.	Moderators did not include: type of gratitude intervention or dosage (neither days nor minutes of participation).
Weiss et al. (2016)	Can we increase psychological well-being? The effects of interventions on psychological well-being: A meta-analysis of randomized controlled trials	27 RCT studies, 3,579 participants	Behavioral interventions were effective with moderate effects for psychological well-being ($d = 0.44$), with small effects at follow-up ($d = 0.22$).	Moderators included: clinical groups (versus non-clinical) and individual face-to-face interventions (versus self-help or group face-to-face). Moderators did not include: age, number of sessions, measurement instrument, and control group. Lower-quality studies found greater effects.

(Continued)

TABLE 1 | Continued

References	Title	Sample	Main Effect Findings	Moderator Findings
Theeboom et al. (2014)	Does coaching work? A meta-analysis on the effects of coaching on individual-level outcomes in an organizational context	18 studies, 2,090 participants, organizational context	Coaching was effective with moderate to large effects for goal-directed self-regulation ($g = 0.74$) and with small to moderate effects for performance/skills ($g = 0.60$), well-being ($g = 0.46$), coping ($g = 0.43$), and work attitudes ($g = 0.54$), in an organizational context.	N/A
Bolier et al. (2013)	Positive psychology interventions: A meta-analysis of randomized controlled studies	39 RCT studies in 40 articles, 6,139 participants	PPIs were effective with small effects for subjective well-being (SMD = 0.34), psychological well-being (SMD = 0.20), and depression (SMD = 0.23).	Moderators for decreasing depression included: longer duration (four or eight weeks versus as opposed to less than four weeks), recruited as a referral from a healthcare practitioner or hospital (versus recruitment at a community center, online, or at a university), the presence of psychosocial problems, and individual delivery (versus self-help or group). Lower-quality studies found greater effects.
Mazzucchelli et al. (2010)	Behavioral activation interventions for well-being: A meta-analysis	20 RCT studies, 1,353 participants	Behavioral Activation (BA) interventions were effective with moderate effects for well-being ($g = 0.52$) in both non-clinical participants and those with depressive symptoms, indicating that BA can be useful for non-clinical populations alongside its more common setting as a treatment for depression.	N/A
Sin and Lyubomirsky (2009)	Enhancing well-being and alleviating depressive symptoms with positive psychology interventions: A practice-friendly meta-analysis	51 studies, 4,266 participants	PPIs were effective with moderate effects for well-being (mean $r = .29$) and depressive symptoms (mean $r = .31$).	Moderators included: self selection to participate in the PPI, older age (versus younger), depression status, individual therapy (versus group), and relatively longer duration (versus shorter).

Small to moderate effects were characterized by the following benchmarks for Hedge's g, Cohen's d, SMD, and δ: small = 0.2, medium = 0.5, large = 0.8, and for r: small = .1, moderate = .3, and large = .5 (Cohen, 1988).

those that used a placebo led to greater effects than those that used a waitlist design (Sin and Lyubomirsky, 2009; Dickens, 2017; Curry et al., 2018; Carrillo et al., 2019; Slemp et al., 2019; Carr et al., 2020; Tejada-Gallardo et al., 2020). However, these control group findings were not replicated by all meta-analyses (Weiss et al., 2016; Dickens, 2017; Curry et al., 2018; Hendriks et al., 2018). Lastly, the study recruitment method showed mixed results with Carr et al. (2020) finding that those with participants who were referred to the study had greater effects than those with participants who self-selected into it, yet Sin and Lyubomirsky (2009) found the opposite.

Small Sample Bias

One criticism of some of these meta-analyses is that they are limited by small sample bias. For example, White et al. (2019) reanalyzed two highly cited meta-analyses (Sin and Lyubomirsky, 2009; Bolier et al., 2013) and corrected their findings for small sample size bias. While the effect sizes of PPIs on well-being were smaller (approximately $r = 0.10$) after the adjustment, both meta-analyses still demonstrated a statistically significant improvement of well-being (White et al., 2019).

Exemplar PPIs

The fourteen promising PPIs identified by this review based on the highest-quality RCTs were all conducted in WEIRD countries. Overall, there were fewer studies from non-WEIRD countries in the sample analyzed for this review and they were of moderate or low quality so were not included in the most promising PPIs. Out of the highest-quality interventions, four exemplars were identified as the most promising PPIs for generating well-being in a global pandemic (see **Table 3**). All of the Four Most Promising PPIs were conducted with

TABLE 2 | Small to moderate well-being effect sizes in positive psychology intervention meta-analyses.

Outcome	Effect size
Well-being	$g = 0.28$ (Van Agteren et al., 2021)
	$g = 0.39$ (Carr et al., 2020)
	$g = 0.40$ (Geerling et al., 2020)
	d+ = 0.325 (Carrillo et al., 2019)
	SMD = 0.36 (Lomas et al., 2019)
	$r = .10$ (White et al., 2019)
	$\delta = 0.28$ (Curry et al., 2018)
	$g = 0.24$ (Chakhssi et al., 2018; Dickens, 2017)
	$g = 0.46$ (Theeboom et al., 2014)
	$g = 0.52$ (Mazzucchelli et al., 2010)
	mean $r = .29$ (Sin and Lyubomirsky, 2009)
Subjective well-being	$g = 0.34$ (Hendriks et al., 2020)
	d = 0.22 (Koydemir et al., 2020)
	$g = 0.24$ (Tejada-Gallardo et al., 2020)
	$g = 0.48$ (Hendriks et al., 2018)
	SMD = 0.34 (Bolier et al., 2013)
Psychological well-being	$g = 0.39$ (Hendriks et al., 2020)
	d = 0.08 (Koydemir et al., 2020)
	$g = 0.25$ (Tejada-Gallardo et al., 2020)
	$g = 0.40$ (Hendriks et al., 2018)
	$d = 0.31$ (Davis et al., 2016)
	$d = 0.44$ (Weiss et al., 2016)
	SMD = 0.20 (Bolier et al., 2013)

adult samples. Three of the promising PPIs used samples relevant to vulnerable populations during a pandemic: individuals with low to moderate well-being (Schotanus-Dijkstra et al., 2017) mild to moderate depression (Ivtzan et al., 2016), and stressed employees (Feicht et al., 2013).

The four exemplar PPIs are all MPPIs that focus on training, improved well-being with medium to large effect sizes, and can be feasibly implemented during a global pandemic and beyond. The most popular topics were strengths, gratitude, positive relationships, positive emotions, and mindfulness. A variety of measures were used to measure well-being. This variety reflects the lack of consensus on a universal definition of well-being in the positive psychology literature (Diener et al., 2018), which can make it challenging to compare the impact of different interventions. In addition to increasing well-being, three of the PPIs were also effective at reducing negative outcomes, such as perceived stress, depression, and anxiety (**Table 3**). In terms of training design and content, all of the PPIs are long (ranging from four to 12 weeks) with weekly modules that focus on one topic per week. The Promising PPI topics and exercises can be viewed in **Table 4**. However, it should be noted that while the four exemplar PPIs share commonalities that can help inform future PPI design, there were also differences in theories, features, and duration.

Although all four exemplar studies were among the highest-quality RCTs in our sample, there were some methodological limitations present. All four studies used samples that were subject to self-selection bias and consisted of mostly educated females. All four RCTs also used waitlist control groups, which can create expectation effects, and all experienced participation attrition. In addition, all four studies used self-report measures although one study (Feicht et al., 2013) also used objective measures. Finally, long-term follow-up measurement was lacking with the longest follow-up measurement at 12 months (see **Table 3**).

Experimental evidence of the highest quality suggests these PPIs may be promising exemplars for future intervention design during the global pandemic and beyond, and seem promising for future implementation and evaluation in non-WEIRD contexts. However, it is important to emphasize that future PPIs guided by the findings of these exemplars should also be tested in a rigorous manner to make sure they are also efficacious and effective for more diverse populations in need, including populations in non-WEIRD countries. We acknowledge although we have identified some of the most valid causal evidence available for generating well-being with PPIs, the samples used in the most rigorous studies were not as diverse as we would have liked to be confident these PPIs will naturally generalize to different populations and non-WEIRD contexts. Nevertheless, we have identified the most promising causal evidence for guiding the design of PPIs for non-WEIRD countries, with appropriated adaptations to fit the specific context.

DISCUSSION

The aim of this review was to review existing systematic reviews and meta-analyses and identify the most promising PPIs for generating well-being based on the most rigorous experimental evidence available in the peer-reviewed literature. Four exemplar PPIs were identified from these meta-analyses, all of which were MPPIs in the form of self-administered training that can be administered to teach a variety of positive psychology topics and skills over the course of multiple weeks that participants can use to improve their well-being.

Implications and Recommendations

The findings of meta-analyses as well as the most promising PPIs identified by this review provide a base of scientific evidence to inform the future design of PPIs for generating well-being in both pandemic and non-pandemic times. A major advantage of examining the distributions of PPI effects across many rigorous RCTs is that it provides a good sense of what one might expect when designing or replicating a PPI to generate well-being. It also provides some conditions of the format and study design that may bolster or diminish effects. Although using a no-intervention or placebo control group and having a lower-quality study may lead to greater effects, these are not the type of takeaways we hope designers replicate. Instead, we hope these findings underscore the importance of designing a high-quality PPI so as to achieve effects even with a strong active comparison group and high-quality study design.

TABLE 3 | Promising PPIs for generating well-being in a global pandemic.

Reference, Country	Drozd et al. (2014), Norway	Feicht et al. (2013), Germany	Ivtzan et al. (2016), UK	Schotanus-Dijkstra et al. (2017), Netherlands
Sample	Healthy adults	Employees experiencing stress and high work demands at an insurance company	Healthy and mildly depressed adults (educators, office workers, meditators)	Adults with low/moderate well-being
PPI	"Better Days" multi-component training	Online multi-component "happiness training" for employees	Positive Mindfulness Program – mindfulness and positive psychology training	Multi-component, guided "positive self-help intervention" with email support
Delivery	Online	Online	Online	In person, online
Sessions, Duration	13 10-min sessions, 4 weeks	10–15 min weekly for 7 weeks	Approximately 30 minutes for each of 8 weekly sessions weekly over 8 weeks	Four hours per week for each of 9 weekly sessions, over 9 to 12 weeks
Assessment	Pre, post at 1-month, 2-month and 6-month follow-ups after intervention onset	Pre, post at 7 weeks, 4-week follow-up	Pre, post at 8 weeks, 1-month follow-up	Pre, post at 3 months, 6-month and 12-month follow-up
Topics Covered	Gratitude, engagement and pleasant activities, character strengths, acts of kindness, gratitude, mastery and reattribution, optimism, flow, gratitude, adaptation and attribution, stress and mindfulness	Gratitude, positive relationships, mindfulness, flow, strengths, good deeds, joy	Self-awareness, positive emotions, self-compassion, self-efficacy, strengths, autonomy, meaning, positive relationships, engagement (savoring)	Positive emotions, discovering strengths, use of strengths, flow, optimism, hope, self-compassion, resilience, positive relations
Well-being Measures	SHS, PANAS, LOT-R	VAS, WHO-5, FS	PHI, GQ6, SCS-short, APWB, GSE, MLQ-P, COS	MHC-SF, FS
Well-Being Outcomes	Improved happiness at post: $d = 0.65$ (medium) Improved ratio of positive to negative affect at post, and 2- and 6-month follow-ups. No significance for optimism as a mediator.	Improved Happiness: Post: $d = 0.93$ (large) 4wks: $d = 0.92$ (large) Improved Satisfaction: Post: $d = 1.17$ (large) 4wks: $d = 1.10$ (large) Improved Flourishing: Post: $d = 0.42$ (medium) 4wks: $d = 0.25$ (small) Improved Quality of Life: Post: $d = 1.06$ (large) 4wks: $d = 0.94$ (large)	Improved at one-month follow-up): Well-being: $\eta p2 = 0.124$ (medium) Gratitude: $\eta p2 = 0.083$ (medium) Self-compassion: $\eta p2 = 0.165$ (medium) Compassion for others at post only. No significance for self-efficacy.	Improved well-being: Post: $d = 0.68$ (medium) 6-month: $d = 0.66$ (medium) No significance for flourishing.
Other Measures	N/A	REQ, SWS, ANT	BDI-II, PSS	HADS- D; HADS-A
Other Outcomes	N/A	Reduced perceived stress at post, no significance in recovery experience, saliva, or attention networks.	Decreased perceived stress and depression at post and 1-month follow-up.	Decreased anxiety and depression at 3-month post, and 6-month and 12-month follow-ups.
Control Group	Waitlist	Waitlist	Waitlist	Waitlist

Well-being measures: APWB, Psychological Well-being Autonomy Subscale; COS, Compassion For Others Scale; FS, The Flourishing Scale; GQ6: Gratitude Questionnaire, 6-item Form; GSE, Generalised Self-efficacy Scale; LOT-R, Life Orientation Test-Revised; MHC-SF, Mental Health Continuum-Short Form; MLQ-P, Meaning in Life Questionnaire-Presence Subscale; PANAS, Positive and Negative Affect Schedule; PHI, Pemberton Happiness Index; SCS-short, Self-compassion Scale; SHS, Subjective Happiness Scale; VAS, Visual Analog Scale; and WHO-5, WHO Well-being Index.

Other measures: ANT, Attention Network Test; BDI-II, Beck's Depression Inventory-II; HADS-A, Hospital Anxiety and Depression Scale-Anxiety Subscale; HADS- D, Hospital Anxiety and Depression Scale-Depression Subscale; PSS, Perceived Stress Scale; REQ, Recovery Experience Questionnaire; SPT, Subjective Probability Task; and SWS, The Stress Warning Signals Scale.

Looking at specifics of design by "following the science," MPPIs can be administered as a training to help people improve their own well-being by giving them knowledge and skills that will support them in daily life. The most promising PPIs we found illustrated that providing opportunities to learn, practice, reflect, relate, and plan can help ensure effectiveness (see **Table 5** for a detailed description).

When designing a training, a variety of topics, exercises, and skills based on the science of positive psychology and MPPIs can be provided to target multiple dimensions of well-being, both hedonic and eudaimonic. Since MPPIs can also decrease stress, depression, and anxiety (Hendriks et al., 2020), the reduction of these symptoms can also be targeted to help people who may be struggling with these symptoms during the pandemic. A design that incorporates mutually reinforcing activities can also amplify positive effects (Rusk et al., 2018). For example, incorporating the practice of mindfulness can enhance and sustain the positive benefits of positive psychology training (Ivtzan et al., 2016).

Successful interventions appear to be informed by scientific evidence and are tailored to fit the specific needs and contexts of participants (Donaldson and Chen, 2021). The most promising PPIs identified by this review can provide ideas for designing a curriculum (see **Tables 3–5**) and PPI meta-analyses point

TABLE 4 | The most promising PPI training topics and exercises.

Drozd et al., 2014, p. 380	Feicht et al., 2013, p. 2	Ivtzan et al., 2016, p. 1400	Schotanus-Dijkstra et al., 2017[a]
1. "Introduction - Content: About BD, positive psychology, and happiness test" 2. "Gratitude - Content: How happy people habitually notice and appreciate the positive in life - Exercises: 'Three good things' - Homework: Practice 'three good things.'" 3. "Engagement and Pleasant Activities - Content: What do happy people do to have a good day? - Exercises: Make a list of pleasant activities; Plan pleasant activities for the next day - Homework: Carry out a pleasant activity" 4. "Character Strengths - Content: About character strengths and their practical use - Exercises: Identify personal character strengths - Homework: Find new ways of using character strengths" 5. "Acts of Kindness - Content: Acts of kindness and how they influence well-being: - Exercises: Plan three kind acts - Homework: Carry out acts of kindness" 6. "Gratitude - Content: The pleasant life involves positive emotions about the past, present and future - Exercises: 'Three good things' - Homework: Write a gratitude letter" 7. "Mastery and Reattribution - Content: How to deal with adversity? - Exercises: Instructions for expressive writing - Homework: Write about a negative event the next four days Cognitive restructuring ('ABCDE' exercise)" 8. "Optimism - Content: Optimism in everyday life and its effects on mental and physical wellbeing - Exercises: 'Best Possible Life'"	1. "Basic Principles (i). How do you feel? Check your state of mind." (ii) What hindered you in the past from being happy? (iii) Write a happiness-diary! Note three things that made you happy today." 2. "Joy of Community (i) Get some body's contact in a way that is comfortable for you. (ii) Identify your best friends and meet them this week. (iii) Write a thank-you letter." 3. "Joy of Luck (i) Tell three people your wishes. (ii) Rejoice somebody by doing an unexpected favor. (iii) Let fortuity decide to do something new and give favorable opportunities a chance." 4. "Joy of Pleasure (i) Eat a meal mindfully. (ii) Be mindful and capture happy moments with your camera. (iii) Challenge yourself with exercises/sports." 5. "Joy of Flow (i) Identify your strengths. (ii) Use them in a new way." 6. "Joy of Bliss/Beauty (i) Give little presents to make somebody happy. (ii) Write a gratitude-diary and note three things a day you are thankful for. (iii) Enjoy ten minutes of silence every day."	1. "Self Awareness - Video: Introduction to mindfulness, self awareness, positive psychology and meditation - Meditation: Introductory meditation focusing on awareness of breath, body and emotions - Daily practice: Keeping aware of thoughts and reactions throughout the day" 2. "Positive Emotions - Video: Discussion of the benefits of positive emotions and gratitude - Meditation: Gratitude meditation focusing on who or what one appreciates - Daily practice: Expressing gratitude for positive situations' 3. "Self-compassion - Video: Explanation of the self-compassion concept, research review and methods to increase self compassion - Meditation: Adapted version of Loving Kindness meditation focusing on self compassion (Neff and Germer, 2013) -Daily practice: Replacing internal criticism with statements of kindness" 4. "Self-efficacy - Video: Introduction to character strengths and self-efficacy including enhancement methods - Meditation: Meditation focusing on a time when participant was at his/her best and using character strengths - Daily practice: Completing the Values in Action (*VIA*) character strengths survey and using strengths" 5. "Autonomy - Video: Introduction to autonomy and its connection with well-being - Meditation: Meditation on authentic self and action - Daily practice: Taking action in line with one's values and noticing external pressure on choices"	1. "Positive Emotions - Diary of pleasant emotions: What happened, who was there, what did you feel, what did you think? - Three good things: Think about three things that went well today and savor those moments." 2. "Discovering Strengths - Overview of your strengths: Which of the 47 strengths do you have and which of these give you energy and pleasure? - Identify your strengths I: Answer the 10 questions (ie, who inspires you?) that will help you to discover your strengths. - Identify your strengths II: Which strengths do you recognize in answering the 10 questions? - Vision of others: Ask 3–5 people about your top 5 strengths with examples from daily life. - Top 5 strengths: Based on all previous exercises, choose your top 5 strengths that also give you energy and pleasure." 3. "Use of Strengths, Flow - Change 'must' into 'want': Make a list of things you do not like but must do. What are underlying intrinsic motivations? - Flow: Have you experienced flow and why? - Flow at the moment: How much flow did you experience the preceding week? When, how? - Challenge yourself: How can you create more flow in your life? Use your strengths in a new way." 4. "Optimism, Hope - ABC-Diary: What do you think and do when something negative happens? How can you challenge favorite pessimistic thoughts? - Imagine your best possible self: Visualize yourself in the personal, relational, and professional domain." 5. "Self-compassion - Wish yourself something good: Be mindful and identify your greatest need at this moment. Use your inner voice to repeat your compassionate wish. - Develop a compassionate inner voice: Write 5 min about situations in the preceding week wherein you showed self-compassion."

(Continued)

TABLE 4 | Continued

Drozd et al., 2014, p. 380	Feicht et al., 2013, p. 2	Ivtzan et al., 2016, p. 1400	Schotanus-Dijkstra et al., 2017[a]
9. "Flow - Content: How to use flow to create engagement and intrinsic motivation - Exercises: Identify personal flow activities; Plan a flow activity Homework: Carry out a flow activity"	7. "Final (i) Detect your favorite happiness exercises. (ii) Be a happiness messenger and tell your favorite exercises to other people. (iii) Reward yourself for your happiness-work during the last week and give yourself a treat."	6. "Meaning - Video: Discussion of meaning and wellbeing. Completion of writing exercise, Best Possible Legacy adapted from obituary exercise (Seligman et al., 2006) - Meditation: Meditation on future vision of self, living one's best possible legacy Daily practice: Acting according to best possible legacy. Choosing meaningful activities"	6. "Resilience - Coping style: Take the test to identify your prominent coping style(s). - Expressive writing: Write 15 min on at least 4 days about emotions, thoughts, and feelings around a negative or positive event. - Needs: What are your specific needs at this moment? Who should know your needs?"
10. "Gratitude - Content: How to enjoy small everyday moments of pleasure - Exercises: Instructions on how to share and savor small positive' moments and to be proud of your achievements"		7. "Positive Relations with Others - Video: Discussion of benefits of positive relationships and methods for relationship enhancement - Meditation: Loving Kindness Meditation - Daily practice: Bringing feelings of loving kindness into interactions"	7. "Positive Relations (I) - Active-constructive responding: Respond positively to good news shared by others. Use active communication skills, how does the other react? - Listen compassionately: Try to use elements of compassionate listening, such as 'What feelings and needs does the other express?" - Expressing gratitude: Write a gratitude letter and/or read it aloud to the person you are thankful to."
11. "Adaptation and Attribution - Content: How people (e.g., lottery winners) quickly adapt to their situation - Exercises: Instructions for attributing success to stable, global, personal characteristics, and failures to temporary, specific, situational characteristics"		8. "Engagement/Conclusion - Video: Introduction to engagement and savouring and their connection with positive emotions - Meditation: Savouring meditation focusing on food - Daily practice: Using savouring to engage with experiences - Conclusion: Summary of the program. Discussion of personal growth and invitation to keep meditating"	8. "Positive Relations (II) - Relaxation/meditation: Relax by doing a 'body scan', physical exercise, or 'stand like a tree'. - Reflect on your needs: What are your intrinsic goals, needs and motives? Do you live those needs and why (not)? - Acts of kindness: Rejoice somebody by performing an unexpected act of kindness or by doing volunteer work."
12. "Stress and Mindfulness - Content: How prolonged stress can affect mental and physical well-being - Exercises: Practice mindfulness by focusing on one's breathing"			
13. "Summary - Content: Happiness test and blueprints for increasing well-being - Exercises: Summary of important tasks and exercises"			

[a]*Description from Schotanus-Dijkstra et al. (2015), pp. 6–7.*

TABLE 5 | Five components that can be incorporated into PPI design.

PPI Component	Objective	Description
Learn	Knowledge and awareness	Develop an awareness and understanding of topics and oneself.
Practice	Behavioral skills	Practice simple skills and exercises that can be incorporated into daily life.
Reflect	Sense-making and reinforcement	Practice reflection after exercises to encourage sense-making and reinforcement of new skills.
Relate	Engagement and accountability	Clarify understanding with experts and relate to peers to amplify effects and reinforce accountability.
Plan	Sustainability	Set goals and create a plan to practice new skills in daily life to encourage long-term sustainability.

to theories and activities that have been shown to improve well-being across many studies (see **Table 1**), such as practicing gratitude (Davis et al., 2016; Dickens, 2017), kindness (Curry et al., 2018), mindfulness (Lomas et al., 2019; Slemp et al., 2019), and best possible self (Carrillo et al., 2019), as well as job crafting, strengths, and PsyCap in the workplace (Donaldson et al., 2019a). The curriculum of these interventions can be adapted to fit the needs and contexts of participants, including those from non-WEIRD countries.

Other aspects of intervention design can also be tailored to suit participants' needs and contexts. Flexibility can encourage adherence and help meet a variety of participant needs and motivations across different contexts. Participants can choose where and when they complete the modules based on their schedule or tailor their learning by choosing the topics or activities that resonate with them. Longer PPIs have been found to be more effective than shorter ones (Koydemir et al., 2020), yet a large amount of time does not need to be devoted to activities to be effective as demonstrated by the four most promising PPIs. Providing flexibility can be helpful for people with heavy workloads, like frontline and essential workers, or parents who are working from home while balancing childcare responsibilities. Similarly, giving individuals the opportunity to self-select by engaging in activities that are more intrinsically motivating or well-suited can amplify the positive effects (Deci and Ryan, 2000; Sin and Lyubomirsky, 2009; Lyubomirsky and Layous, 2013). Providing reminders and opportunities to check progress can also be added to further encourage adherence and engagement.

Within the context of a global pandemic, the delivery mode of PPIs is an important consideration. For example, face-to-face interactions may no longer be as feasible to implement in a pandemic-impacted world. Online PPIs, particularly automated online self-help interventions, can be used while social distancing and implemented cost-effectively on a larger scale than face-to-face interventions (Muñoz, 2010). Although individualized interventions tended to show greater effects than self-help or group interventions across meta-analyses (Sin and Lyubomirsky, 2009; Weiss et al., 2016; Carr et al., 2020), three out of four of the most promising PPIs were online and were all self-administered with success. Some research has found many searching for well-being programs tend to be inclined to seek online PPIs (Parks et al., 2012, p. 1). A combination of automated content supplemented by live expert or peer support can also be considered. Although online interventions can reach more people, it is important to recognize that a "global digital divide" exists where access to technology is a barrier for those from lower socioeconomic backgrounds (Pick and Azari, 2008, p. 1). Therefore, in non-WEIRD countries that may have larger populations from lower socio-economic backgrounds, alternative modes of delivery can be considered to make PPIs accessible to those who lack adequate access to technology and the Internet. Physical self-help lessons or workbooks can be used and supplemented by additional guidance and support *via* email (Schotanus-Dijkstra et al., 2017). These materials can be mailed to meet social distancing guidelines and if participants do not have access to email, support can be provided *via* telephone.

Finally, we recognize that a multi-week training will not be feasible for everyone, especially those heavily impacted by the pandemic. The science of positive psychology also points to several effective smaller-dose mono-PPIs that can be used by anyone at any time. For those lacking time and resources, our recommendations based on the most promising PPIs and PPI meta-analyses provide simple yet effective exercises that anyone can try.

Strengths and Limitations

This review makes several contributions to the positive psychology literature. First, we focused on the most rigorous research of PPIs, in the form of high-quality RCTs, using some of the most valid causal evidence available to identify the most promising PPIs for generating well-being. Second, this is the first systematic review of PPIs that makes use of the exemplar method. The exemplar approach is naturally aligned with the spirit of positive psychology, identifying exemplars in the upper bounds of what is possible as opposed to being limited by what is typical. We hope this unique approach can also serve as a model for future reviews in this field. Third, we believe this review will serve as an especially useful resource for practitioners since it provides practical, evidence-based recommendations for designing effective PPIs that will generate well-being.

There are also several limitations that should be acknowledged. First, there are no clearly defined universal criteria for what constitutes an exemplar (Bronk, 2012). We defined our own criteria to identify exemplary PPIs, but there may be other approaches that could be further explored with the longer-term goal of achieving consensus on what constitutes exemplarity among PPIs that target well-being and the RCTs that test their efficacy. Furthermore, it should be noted that how exemplarity is defined in a study will also influence results (Bronk, 2012). Second, our inclusion criteria were limited to RCTs while inclusive of all PPI types and features, samples, well-being measures, and well-being theories. RCTs test efficacy under

highly controlled conditions, but more research is needed to draw conclusions about effectiveness in real-world settings. The variability in our sample also means that the PPIs, RCTs, and effect sizes we looked at are not perfectly comparable. Therefore, further research is needed to confirm generalizability and replicability of our findings. Future reviews of PPI studies can also explore the use of narrower inclusion criteria and more homogenous samples to confirm efficacy. Future research is needed to further test the effectiveness of the most promising PPIs and our recommendations for designing PPIs in real-world settings, including different contexts and with different populations. Finally, the samples used to test the most promising PPIs were from WEIRD countries and were mostly White and female, demonstrating a need for rigorous scientific PPI studies to use more diverse samples that include more non-WEIRD countries. None of the four exemplars came from non-WEIRD countries since there were fewer non-WEIRD studies to include and more non-WEIRD studies were rated lower-quality, even though they showed greater effect sizes in meta-analyses (Hendriks et al., 2018, 2020; Carr et al., 2020).

The Importance of DEI for the Future of PPI Science

Our findings are consistent with previous research that found that the majority of RCTs on PPIs were conducted in WEIRD countries on samples that were mostly highly educated with a higher income (Hendriks et al., 2019). Among the RCTs identified in this review, there was also no mention of diversity, equity, or inclusion in the titles or abstracts of these papers. Positive psychology has been criticized for not attending much to issues of diversity, equity, and inclusion. Rao and Donaldson (2015) found that although women are overrepresented as participants in empirical studies, they are underrepresented as first authors, and discussions of issues relevant to women and gender are relatively scarce. Further, empirical research studies conducted across the world are based largely on White samples, and there is little research focused on race and ethnicity or individuals at the intersections of gender, race, and ethnicity. Rao and Donaldson (2015) suggested pathways for addressing these deficits and encouraged future positive psychology researchers to seek a better understanding of DEI issues related to positive psychology. Harrell (2018) and Pedrotti and Edwards (2017) extended this seminal DEI work and provided additional frameworks for understanding positive psychology concepts and interventions in cultural context, with diverse and marginalized groups, and with a focus on collective well-being. Warren et al. (2019) provided a detailed conceptual map for navigating and planning future research on well-being and flourishing through positive diversity and inclusion behaviors and practices. These prior efforts to encourage more emphasis on DEI are useful guides for adapting the most efficacious PPIs we found in this paper to meet the specific needs of the marginalized and vulnerable populations. But we would also like to point out that we cannot assume that the promising PPIs we have identified will necessarily have the same effects. Future efforts to examine PPIs in diverse, marginalized, vulnerable populations, and in non-WEIRD contexts are sorely needed to better understand how to reduce disparities and generate well-being for all (Bolier et al., 2013; Curry et al., 2018; Hendriks et al., 2018).

CONCLUSION

We followed the positive psychology intervention science and discovered that the most rigorously tested PPIs clearly suggest how we might generate well-being in global pandemic and non-pandemic times. These experimental findings provide us with causal evidence that medium and longer-term well-being outcomes can be achieved with PPIs. It has also revealed the conditions under which PPIs are most likely to be effective and underscored the importance of conducting more rigorous PPI research in non-WEIRD contexts and designing the next generation of PPIs to better serve diverse, marginalized, and the underserved populations who are most likely to be the most negatively affected by a global pandemic.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, and further inquiries can be directed to the corresponding author.

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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Improving Health of People With Multiple Sclerosis From a Multicenter Randomized Controlled Study in Parallel Groups: Preliminary Results on the Efficacy of a Mindfulness Intervention and Intention Implementation Associated With a Physical Activity Program

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Objectives: The objective of this study is to investigate the efficacy of psychological Interventions – Mindfulness or Implementation Intention – associated with a Physical Activity program, delivered via internet, in reducing Multiple Sclerosis symptoms.

Method: Thirty-five adults were randomly assigned to one of the three groups: a Mindfulness-Based Intervention group ($N = 12$), Implementation Intention group ($N = 11$), and a Control Group ($N = 12$). All the groups received the same Physical Activity program. The Mindfulness condition group received daily training in the form of pre-recorded sessions while the Implementation group elaborated their specific plans once a week. Mobility, fatigue, and the impact of the disease on the patient's life were measured. Two measurement times are carried out in pre-post intervention, at baseline and after eight weeks.

Results: Overall, after 8 weeks intervention, results show that there was a significant increase in Walking distance in the three groups. In addition, the within-group analysis showed a statistically significant improvement between pre and post intervention on the physical component of the Disease Impact scale in the Implementation Intention group ($p = 0.023$) with large effect size, in the Mindfulness-Based Intervention group ($p = 0.008$) with a medium effect size and in the control group ($p = 0.028$) with small effect size. In the Implementation Intention group, all physical, psychosocial and cognitive Fatigue Impact subscales scores decreased significantly ($p = 0.022$, $p = 0.023$, and $p = 0.012$, respectively) and the physical component was statistically and negatively

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correlated *(r = −0.745; p = 0.008)* when Implementation Intention group practice a mild to moderate physical activity. In the Mindfulness-Based Intervention group, the physical component (MFIS) showed a statistically significant improvement ($p = 0.028$) but no correlation with moderate-to-vigorous physical activity (MVPA); the control group outcomes did not reveal any significant change.

Conclusion: The results of this study are very encouraging and show the feasibility of Mindfulness interventions associated with physical activity to improve the health of people with MS. Further study should assess Mindfulness interventions tailored to MS condition and using both hedonic and eudemonic measures of happiness.

Keywords: multiple sclerosis, positive psychology interventions, mindfulness, implementation intention, physical activity, quality of life

INTRODUCTION

Multiple sclerosis (MS) is an autoimmune disease of the central nervous system (CNS) with physical, emotional, and cognitive symptoms that substantially reduce participants' overall quality of life (Amato et al., 2001; Benedict et al., 2005). Patients typically present with a relapsing-remitting course of the disease that is characterized by periodic exacerbations, followed by recovery and stretches of relative stability (Lublin and Reingold, 1996; Ajzen, 2013). The spectrum of the disease itself generates a range of manifestations and severities which mainly concern the central nervous system (Hauser and Oksenberg, 2006; Trapp and Nave, 2008).

Physical Activity (PA) may be interesting in people with MS. Initially, PA was discouraged in people with MS due to concerns about fatigue and temperature sensitivity (Petajan et al., 1996; Dalgas et al., 2008). However, a number of clinical investigators revealed that exercise is, in fact, beneficial for MS patients' as it may slow down the disease process and ensure the stability and management of its symptoms (Hessen et al., 2006; Motl and Gosney, 2008; Khan et al., 2014) as long as it is designed to "activate working muscles, but avoid overload that results in conduction block" (Petajan and White, 1999). Physical activity is considered as a possible behavioral approach for managing MS symptoms and secondary health problems associated with an inactive lifestyle (Petajan et al., 1996; Dalgas et al., 2008; Motl and Gosney, 2008; Asano et al., 2009; Motl and Pilutti, 2012; Carter et al., 2014; Sá, 2014; Turner et al., 2015).

Recent MRI studies carried out on Murine animal models (Jensen et al., 2018) and human models (Negaresh et al., 2019) tend to demonstrate that PA practice would enhance axon remyelination. Moreover, PA participation may increase general self-efficacy (Kasser, 2009). The latter affects positively the psychological, psychosocial and cognitive outcomes (Barnwell and Kavanagh, 1997; Dlugonski et al., 2012; Ellis and Motl, 2013; Hughes et al., 2015). And yet this population is largely sedentary and inactive compared with the general population (Motl et al., 2006), even if they are mildly affected by MS (Ng and Kent-Braun, 1997; Stuifbergen and Roberts, 1997) and 80% of them do not meet recommended levels of moderate-to-vigorous physical activity (MVPA) (Motl, 2014). Research efforts have implicated several physical, mental and environmental barriers limited their participation in PA (Crayton et al., 2004; Dodd et al., 2006; Kerdoncuff et al., 2006; Aminian et al., 2019).This reality highlights the importance of developing behavior change interventions aiming at helping the patients to initiate and sustain his practice.

Many psychological interventions used with people with chronic conditions such as MS propose a deficit-oriented model in which psychotherapists assess and treat psychopathology and disease associated symptoms, without exploring and developing patients' resources, strengths and positive emotions. Few interventions have explicitly attended to the positive resources of people with MS. The field of Positive Psychology (PP) proposes several empirically based interventions that focus on clients' positive attributes, strengths, and positive emotions (Csillik, 2015). Positive psychology interventions (PPIs) are treatment methods or intentional activities that aim to cultivate positive feelings, behaviors, or cognitions. These forms of interventions (e.g., positive psychotherapy, well-being therapy, mindfulness based-interventions, etc.) consist mainly of structured forms of volitional activities (Sin and Lyubomirsky, 2009). Positive psychology interventions refer to systematic approaches to overcome everyday challenges and life's difficulties and psychopathology by using clients' strengths and by cultivating positive emotions. The aim of the PPIs is thus both to relieve suffering and psychopathology and increase well-being. PPIs essentially involve the reeducation of attention and memory (Rashid, 2009), by practicing mindfulness, kindness and forgiveness, expressing gratitude and using personal strengths etc. The PPIs have shown their effectiveness in increasing well-being, both in the general population and clinical samples (Sin and Lyubomirsky, 2009; Bolier et al., 2013). To date, to our knowledge no published study assessed the efficacy of positive psychology interventions associated with physical activity in people with MS. One of the first positive psychology interventions, Mindfulness or Meditation, "a family of self-regulation practices that focus on training attention and awareness in order to bring mental processes under greater voluntary control" (Walsh and Shapiro, 2006, p. 228), has shown encouraging results in relation to improving physical and mental health problems and increasing well-being (Brand et al., 2012; Davidson and McEwen, 2012; Willekens et al., 2018). One of the

most popular meditative practices nowadays is mindfulness meditation, which cultivates a state of non-judgmental awareness of the present moment. Mindfulness is a practice that originate from ancient Buddhist meditation techniques, but have since been empirically tested, manualized, and adapted for use in a diverse range of clinical settings (Kabat-Zinn, 2003) so that it is now part of mainstream psychotherapeutic interventions (Williams and Kabat-Zinn, 2011).

In the context of MS, Mindfulness may help people to become conscious of repetitive perceptions about the past or disturbance thoughts about the unknown future without necessarily engaging or pursuing them. Nydahl (2012) has shown that the mindfulness training program has a positive effect on MS patients. When studying the idea that emotions are transitory and constantly changing, the intervention generates confidence in their ability to shape their lives. This training can minimize the emotional and psychological impact of chronically ill patients and help improve clinical conditions, such as reducing fatigue (Trojan et al., 2007; Bol et al., 2009). Furthermore, Mindfulness might be a way of dealing with varying common visible (mainly physical) and hidden MS symptoms at the same time (Senders et al., 2014). Indeed, Mindful people with MS reported reduced emotional distress (Hart et al., 2005; Mohr et al., 2007; Van Kessel et al., 2008; Bogosian et al., 2015), improved balance (Mills and Allen, 2000; Burschka et al., 2014), reduced pain (Tavee et al., 2011), improved quality of life and reduced depression and fatigue (Grossman et al., 2010). Mindful based-interventions (MBIs) might also positively affect accuracy of perception, acceptance of intractable health-related changes, realistic sense of control, and appreciation of available life experiences.

Implementation intention (II) (or if-then plan) was introduced by Gollwitzer (1999). The concept of II is rooted in the theory of self-regulation (Leventhal et al., 1998). The latter is so distinguished from the concept of goal intention. Goal intention specify what one wants to achieve (i.g., "I intend to achieve X!"). However, using this strategy people generally fail to translate their intention into action as research has perceived a pervasive gap between the intention formulated and the desired behavior (Ajzen, 1991). II, defined as a self-regulatory strategy in which a psychological link is established between a predefined future situation and a desired goal-oriented response (Gollwitzer, 1993, 1999), involves specifying the behavior one will perform in the service of the goal and the situational context in which one will enact it (e.g., "If I encounter situation X, then I will initiate action Y!") (Sheeran et al., 2005). The success of II is assumed to be based on two processes. First, by making the critical situation highly accessible (i.g., the 'if' component), and second, by leading to the automatic initiation of the specified behavior (the 'then' component) (Webb and Sheeran, 2004). This strategy is centered on designating anteriorly, rigorously, and explicitly where, when, and how a goal-directed response will be executed, resulting in facilitated goal attainment (Gollwitzer and Sheeran, 2006; Cohen et al., 2007; De Vet et al., 2011). The II strategy have shown its effectiveness in promoting goal achievement (Sheeran and Orbell, 2000), with an effect size on goal achievement for health-related behavioral change estimated as medium to large (Gollwitzer and Sheeran, 2006). Numerous interventions have used II strategy in different fields and among varied populations even in people with chronic conditions such as cancer and diabetes (Verplanken and Faes, 1999; Sheeran and Orbell, 2000; White et al., 2012; Bélanger-Gravel et al., 2013). Findings were promising and positive, and all support the fact that II is a powerful strategy designed to facilitate goal attainment. For people with MS, If-then plans are advantageous in terms of planification and programming of action. In fact, patients' knowledge, skill, walking speed, quality of life and confidence in managing their health or chronic condition were improved after an II intervention conducted by (Kersten et al., 2015). Also, Electroencephalography (EEG) and functional Magnetic Resonance Imaging (fMRI) studies have shown that II strategy modulates our perceptions and produces less activity in brain regions involved in effort-motivated behavioral control (Wieber et al., 2015).

The aim of our clinical study was to explore the efficacy of two types of psychological interventions – Mindfulness and Implementation of Intention (II) – delivered via internet among people with MS when associated and compared to a physical activity program. We investigated the hypothesis that combining a PA program with Mindfulness or Implementation Intention may be more beneficial than PA alone in decreasing fatigue and improving mobility and quality of life in people with MS.

MATERIALS AND METHODS

Design

This study is a randomized controlled pilot trial of a brief intervention combining Physical activity, Mindfulness training and Implementation intention to decrease fatigue and improve mobility among people with MS. The primary outcomes, fatigue, mobility and quality of life, were examined at baseline prior to randomization, and then 8-weeks after the intervention (following the online intervention).

Participants

Participants were recruited from two hospitals in the Parisian region, in France receiving outpatient services for MS at a regional medical center. Thirty-five patients (N = 28 Females) were recruited and gave their written consent to participate to this study. Inclusion criteria for the study included (1) a diagnosis of MS, (2) not currently engaged in rehabilitation, therapy or PA program and able to undertake PA without risk-factors (3) aged between 18 and 65 (4) able to give informed consent and to understand French. We excluded those who were receiving drug treatment for fatigue started less than three months ago or acute hospital or nursing home, those who were having psychiatric disorders. All participants had a definite diagnosis of MS (diagnosed 12 months previous and relapse free in previous 90 days). Of the 35 patients, 25 were diagnosed with relapsing-remitting MS: 7 in II group; 8 in MBI group and 10 in the CG (control group); three were diagnosed with primary progressive MS: 1 in II group 1 in MBI group and 1 in the CG; seven were diagnosed with secondary progressive MS: 3 in II group; 3 in MBI group and 1 in the CG. They had a mean score of disability of [3.24, Expanded Disability Status Scale (EDSS) <5.5] and were

able to consult at the outpatient clinic. Patients were persevering in Physical Activity. Only, three of them dropped out the PA program before the end.

Procedure

This clinical and multicentric trial took place from July 2017 to January 2020, in two hospitals in the Parisian Region, France (Hospitals – CHI Poissy St Germain-en-Laye and R. Poincaré, Garches). The procedures for this study were approved by research ethics committees (CPP) «Ile de France XI » (ID: 2016-A00537-44), authorized from The National Agency for the Safety of Medicines and Health (ASNM) and registered under the identification number ID: NCT03785483. For this study, individuals were approached by the study coordinator and asked if they would be willing to participate in it. All participants provided written informed consent and underwent a neurological exam by two physicians who provided EDSS scores considered as a clinical measure of disability (Goodin, 1998). Participants initially completed demographic and clinical evaluation (including age range, gender, diagnoses and mobility). Transmission and reception of the adhesion to the psychological and motivational interventions and assessment were carried out due to TailorBuilder tool[1]. TailorBuilder is an online tool used to develop programs for creating and conducting web-based questionnaires and designing tailor-made programs (Ruffault et al., 2016a,b, 2019). Such connected tools guarantee traceability and securing the data collected. They are also beneficial since they permit to collect subject's subjective experiences as close as possible to the event and provides information regards their behavior moment by moment. All measurements were carried out at two phases of the study T1 (baseline) and T2 (eight weeks after randomization). A specialized trainer in adapted physical activity delivered experimental interventions and the telephone calls. Outcomes and information collected from the telephone calls sessions were recorded on a data sheet, different for each participant.

Participants completed an intake screening online questionnaire. Baseline demographic information (e.g., age, gender, education) and disease information (e.g., years with MS, mobility disability, fatigue, cognitive functioning) were obtained at intake. Following completion of baseline, individuals were individually and aleatory affected to one of the three groups. Randomization list was then delivered to the trainer. Prior to assignment, treatment condition was unknown to the project coordinator to ensure concealment of allocation.

Individuals participated in either a combination of PA and daily Mindfulness or a combination of PA and Implementation Intention. Mindfulness-Based Intervention group (MBI) ($n = 12$) received daily Mindfulness training in the form of prerecorded sessions (6 sessions of 10 minutes each equal to one hour/day) using TailorBuilder (TB) application, aiming at developing awareness of emotions and sensations. Mindfulness practice took place individually at home six times per week, without any assistance. Implementation Intention group (II) ($n = 11$) was asked to establish a concrete if-then plan (the 'if' component followed by the 'then' component) once a week and share them through the TB application. These combinations were intended to decrease fatigue and improve mobility among people with MS. PA consists of the combination of four activities per week: 40 minutes of walking, 40 minutes of muscle building, 20 minutes of stretching and 20 minutes of coordination and balance, with a frequency of 2 hours weekly. The PA intervention sessions were scheduled at a time and place of the participant's choosing and connections to the site checked. Practicing sessions were conducted under the supervision of a physical and sports activity trainer specializing in sports training. Participants were randomly assigned to one of the three experimental groups: MBI group, II group or Control Group (CG) ($n = 12$). Participants in the control group were not guided to develop if-then plans and they did not receive any mindfulness training, however, they received the same PA program over a period of eight weeks. All participants were analyzed in the group to which they were designed and ignored the existence of the other study groups. According to the recommendations of McCoy (2017), concerning the randomized controlled trials and the assess of the psychological interventions efficacy all the patients of the study were analyzed. The missing values in session 2 (one MBI and two CG) were replaced by the group average.

Participant's clinical characteristics are provided in **Table 1**.

Instruments

Demographic Information

Age, gender, marital status (currently married vs. all other) and education level (in years) were all obtained from single-item queries.

After medical history screening, mobility, fatigue, quality of life and the impact of the disease on the patient's life were measured by 6 min Walking Test (6MWT) (Guyatt et al., 1985) Modified Fatigue Impact Scale (MFIS) (Téllez et al., 2005),

TABLE 1 | Clinical characteristics of the 35 participants (Median ± Interquartile Range).

	Group		
	II($n = 11$)	**MBI($n = 12$)**	**CG($n = 12$)**
6MWT (meter)	435.00 [287.50–477.50]	429.50 [264.75–476.25]	458.50 [353.25–515.00]
MFIS (Cognitive component)	19.00 [13.00–23.00]	16.00 [4.50–25.75]	17.50 [11.50–22.00]
MFIS (physical component)	23.00 [21.00–28.00]	20.50 [14.75–26.75]	22.50 [16.75–23.50]
MFIS (Psychosocial component)	4.00 [2.50–6.00]	5.00 [1.50–2.25]	4.00 [2.75–4.25]
MSIS-29_(physical component)	47.00 [41.50–52.00]	43.00 [30.75–54.00]	48.50 [32.00–57.50]
MSIS-29_(psychological component)	25.00 [20.00–26.00]	25.00 [13.75–33.75]	22.00 [17.75–26.25]

Values presented are median [interquartile range] for each characteristic. II = Implementation Intention, MBI = Mindfulness Based Intervention, CG = Control Group, 6MWT = 6 Min Walking Test, MFIS = Modified Fatigue Impact Scale, MSIS-29 = Multiple Sclerosis Impact Scale-29.

[1]https://www.tailorbuilder.com/en/about.html

Health-related quality of life measured with EuroQoL (EQ5D-3L) (Goodwin et al., 2019) and Multiple Sclerosis Impact Scale (MSIS-29) (Hobart, 2001), respectively.

Expanded Disability Status Scale

Expanded Disability Status Scale (EDSS) (Kurtzke, 1983), a widely used and extensively validated physician-rating tool that estimates disease-related impairment in persons with MS was used.

Modified Fatigue Impact Scale

Fatigue was measured with the Modified Fatigue Impact Scale (MFIS). The original MFIS assesses the impact of fatigue in physical, cognitive, and psychosocial domains (Fischer et al., 1999). Participants rate the frequency of impact upon daily life in the past 4 weeks using values ranging from 0 (never) to 4 (almost always). The Modified Fatigue Impact Scale was translated and culturally adapted into French. The psychometric properties of this new instrument, called EMIF-SEP composed of 40 items are good. Four dimensions of this scale (cognitive, physical, social role and psychological) were identified by factor analysis, each with a high internal consistency (Cronbach's alpha = 0.94, higher than 0.80 in APA standard). The test-retest reproducibility was very satisfactory (ICC = 0.93); intra-class correlation coefficients were all above 0.70. EMIF-SEP is the first scale for assessing MS-related fatigue which has been adapted to French-speaking patients.

The Multiple Sclerosis Impact Scale

The Multiple Sclerosis Impact Scale (MSIS-29) is a measure of the physical and psychological impact of multiple sclerosis from the patients' perspective. The MSIS-29 satisfied all psychometric criteria. Item test-re-test reliability was high (r = 0.65–0.90) and scale scores could be generated for >98% of respondents. Item descriptive statistics, item convergent and discriminant validity, and factor analysis indicated that it was legitimate to generate scores for MSIS-29 scales by summing items. MSIS-29 scales showed good variability, small floor and ceiling effects, high internal consistency (Cronbach's alpha = 0.93) and high test-re-test reproducibility (ICC > 0.90).

The 6-min Walk Test

Originally developed to assess disability in patients with chronic obstructive lung disease, the 6-min walk test (6MWT) has since been extensively studied and used with older persons and patients, also in people with MS.

Initially, developed to assess disability in people suffering from chronic obstructive pulmonary disease, the 6-min test (6MWT) has still been widely studied in the elderly, as well as in people with MS (Eng et al., 2002; Newman et al., 2003). The 6MWT has the advantage of potentially being able to demonstrate motor fatigue in people with MS, that is, slowing of ambulation at the end of the 6-min test. The 6MWT is a feasible and reproducible measure in MS (Goldman et al., 2008), and it has high reliability (ICC: 0.95–0.99) in people with MS even after a single repetition of the test (Fry and Pfalzer, 2006) in addition, it is sensitive to changes in deteriorating status among people with MS (Paltamaa et al., 2008).

EQ-5D-3L

The EuroQoL (EQ-5D-3L) is often used as a quantitative measure of health outcome that reflects the patient's own judgment (Szende et al., 2014). It has five dimensions (mobility, self-care, usual activities, pain/discomfort, anxiety/depression). Each dimension has 3 levels: no problems, some problems, and extreme problems. The patient is asked to indicate his/her health state by ticking the box next to the most appropriate statement in each of the five dimensions. The EQ-5D is widely used in economic evaluations, recommend as the preferred measure of health outcomes for cost effectiveness analyses (Jones et al., 2013).

Accelerometry

The Actigraph GT3X accelerometer (Health One Technology, For Walten Beach, Fla.) was used to measure participants' PA practice at T1 and T2 in their daily lives. Data were collected during the day for 7 consecutive days, before and immediately after eight weeks of the PA program. The GT3X was worn at the waist, a suitable fit for measuring the amount of PA in people with MS (Weikert et al., 2010). Participants were shown how to wear the device. In addition, detailed written instructions were delivered, containing all the necessary information on wearing the equipment provided. Participants were instructed to wear it constantly except for sleeping, swimming, and when washing. The ActiGraph software was used to measure the time spent in Moderate Vigorous Physical Activity (MVPA) (min/day) according to the cut points determined by Sandroff's study (Sandroff et al., 2014) and validated for people with MS regarding their EDSS score. Accelerometer recorded wear time was examined and only valid days ($\geq$ 10 h of wear time without periods of continuous zeros exceeding 60 min indicative of non-compliance) were used in the analysis.

Interventions

Physical Activity Program

The three groups received the same PA program, which was controlled for contraindications and delivered by a neurologist (OH) at Poissy CHI Hospital (France) and a specialist in physical medicine and rehabilitation (DB) at Raymond-Poincaré Hôpital – Garches (France). The PA program was manualized and available as a booklet. This program initiated after the primary actimetry measurement and maintained for 8 consecutive weeks with a frequency of 2 h weekly. Practicing sessions took place at home under the supervision of a physical and sports activity trainer specializing in sports training. Patients combined four activities per week: 40 min of walking, 40 min of muscle building, 20 min of stretching and 20 min of coordination and balance. Progression in terms of duration and intensity were proposed. First, an increase in exercises duration and then an increase in intensity (associated with a decrease in duration if necessary). This progression respects the classic rules of applied in sport science. The exercises aimed to induce mild to moderate fatigue and were stopped if they engender excessive fatigue which was based on the feeling of the patient and on his own evaluation.

Mindfulness Intervention

MBI participants received daily mindfulness training in the form of prerecorded sessions (6 sessions of 10 min each equal to 1 h/day) using TailorBuilder application, aiming at developing awareness of emotions and sensations. Mindfulness practice took place individually at home without any assistance six times per week. Participants were asked to listen to the prerecorded sessions and to follow the instructions (e.g., Breathing rhythm, number of steps during walking exercises, speed of execution of the movement). Participants also received a weekly telephone call lasted up to 15 min, during which a detailed report concerning the session(s) was reviewed and adapted if required. Participants were asked to describe their sessions and to specify the number and duration of each one. Moreover, they were asked to describe the sensations and to evoke any event or situation that made the exercise easier or even harder to perform.

Implementation Intention

Intention Implementation Participants were asked to develop a concrete if-then plan (the "if" component followed by the "then" component) once a week and share them through TailorBuilder app. Subjects were asked to specify the conditions (e.g., *when*, *where*, *how, what*) in which the behavior is expected to be performed. Participants were able to modify their plans depending on their physical condition and availability. These plans were verified and approved by the trainer. Implementation Intention assessment was carried out weekly via internet questionnaire. Participants also received a weekly telephone call lasted up to 15 min, during which a detailed report concerning the session(s) performed was reviewed and refined if required. Participants were asked to specify the number and duration of each session, sensations, facilitators, and barriers encountered to sustain their practice.

Statistical Analyses

We used non-parametric tests due to the small sample sizes which deviate from the normality and equal variance assumptions. First, the Kruskal-Wallis test was used to analyze the homogeneity of groups in relation to sociodemographic characteristics. Second, comparisons between pre and post intervention were analyzed in each group using the Wilcoxon signed-ranked *t*-test for within-group differences, and effect sizes were given by the matched rank biserial correlation (Kerby, 2014), interpreted as Person's *r*. We used Spearman's rank correlation test, corrected for multiple comparisons, to assess the relationships between MVPA and fatigue. Statistical analysis was carried out using JASP version 0.14.1 software, with a significance level of $p < 0.05$.

RESULTS

Demographic Analysis and Quality of Life

Most of our study sample was female ($n = 28$), reflecting the general higher distribution of females among people with MS (Rotstein et al., 2018). The analysis of sociodemographic characteristics did not reveal any significant differences in age, EDSS scores and MS duration among the three groups (**Table 2**).

TABLE 2 | Results of the homogeneity of groups according to Age, EDSS, and MS duration of the patients.

	Group			*p*
	II(*n* = 11)	**MBI(*n* = 12)**	**CG(*n* = 12)**	
Age (years)	43.00 ± [34.50–51.00]	44.00 ± [41.75–47.00]	44.50 ± [40.75–47.25]	0.96
EDSS (0 – 5.5)	4.00 ± [2.25–4.75]	3.50 ± [2.00–4.12]	3.50 ± [2.00–4.00]	0.84
MS duration (years)	12.00 ± [10.00–21.00]	17.50 ± [11.75–22.25]	17.50 ± [14.75–18.75]	0.57

Values presented are median [interquartile range] for each characteristic. II = Implementation Intention, MBI = Mindfulness Based Intervention, CG = Control Group, EDSS = Expanded Disability Status Scale (score), MS = Multiple Sclerosis, P values assessed by Kruskal-Wallis test (ANOVA).

Also, concerning the quality-of-life scale (EQ5D-3L), we didn't find any significant differences in each of the groups examined.

The pre-intervention and post-intervention data for each group at week 1 and 8 is presented below in **Table 3**.

Six-Minute Walk Test (6MWT)

Several within groups significant changes appeared between baseline (T1) and the end of the program (T2) for each examinate group. For the 6MWT there was a significant increase in the walked distance for the Mindfulness group ($p < 0.001$), Implementation Intention group ($p = 0.002$) and for the control group ($p = 0.009$).

Multiple Sclerosis Impact Scale (MSIS-29)

The Wilcoxon signed rank test showed a statistically significant difference in change scores across the three groups for the MSIS-29 physical component (**Table 3**).

Modified Fatigue Impact Scale (MFIS)

Concerning the MFIS score, we noted a significant decrease in the Implementation Intention group for the cognitive ($p = 0.012$), physical components ($p = 0.022$) and Psychosocial components ($p = 0.023$), a statistically significant decrease was revealed alone for the physical dimension in the MBI group ($p = 0.028$), whereas MFIS scores remain unchanged for the control group.

MFIS-MVPA

When we associate the MFIS score with the duration of the practice of the physical activity within the sessions, we noted, in the II group, no correlation at T1 between MFIS (physical component) and time spent in moderate to-vigorous physical activity (MVPA) per day by accelerometry. In contrast, we found at T2 a statistically significant negative correlation ($r = -0.745$; $p = 0.008$) between MFIS (physical component) and MVPA. Also, at T2, we found a weak negative correlation ($r = -0.237$) with the psychological component of MFIS, but not statistically

TABLE 3 | Pre-intervention and Post-intervention values (Median ± interquartile range) for 6 minutes walking test (meter), MFIS and MSIS-29.

Variable	Mindfulness based intervention group				Implementation Intention group				Control group			
	Pre	Post	*p*	RBC	Pre	Post	*p*	RBC	Pre	Post	*p*	RBC
6MWT (meter)	429.50 [264.75–476.25]	470.00 [429.500–516.750]	<0.001	−0.974	435.00 [287.50–477.50]	470.00 [423.00–519.00]	0.002	−0.970	458.50 [353.25–515.00]	506.50 [475.75–540.25]	0.009	−0.833
MFIS (Cognitive component)	16.00 [4.50–25.75]	11.00 [7.50–19.25]	0.563	0.212	19.00 [13.00–23.00]	14.00 [9.00–17.50]	0.012	0.909	17.50 [11.50–22.00]	14.00 [8.75–19.25]	0.116	0.526
MFIS (physical component)	20.50 [14.75–26.75]	16.00 [10.50–20.50]	0.028	0.731	23.00 [21.00–28.00]	19.00 [12.00–22.00]	0.022	0.836	22.50 [16.75–23.50]	16.50 [14.25–18.50]	0.185	0.491
MFIS (Psychosocial component)	5.00 [1.50–2.25]	2.50 [1.75–4.00]	0.166	0.485	4.00 [2.50–6.00]	3.00 [1.50–4.00]	0.023	0.917	4.00 [2.75–4.25]	3.00 [1.75–3.25]	0.057	0.722
MSIS-29_(physical component) (0–100)	43.00 [30.75–54.00]	36.50 [22.75–39.500]	0.008	0.885	47.00 [41.50–52.00]	39.00 [32.50–42.50]	0.023	0.788	48.50 [32.00–57.50]	37.00 [31.00–41.25]	0.028	0.800
MSIS-29_(psychological component) (0–100)	25.00 [13.75–33.75]	18.50 [13.50–22.50]	0.107	0.538	25.00 [20.00–26.00]	19.00 [17.00–25.00]	0.264	0.394	22.00 [17.75–26.25]	18.50 [17.25–20.50]	0.286	0.379

6MWT = 6 Min Walking Test, MFIS = Modified Fatigue Impact Scale, MSIS-29 = Multiple Sclerosis Impact Scale-29, P values assessed by Wilcoxon signed-rank t–test, RBC = Rank-Biserial Correlation.

significant. This result may indicate that PA combined with a psychological intervention such as II decreases fatigability among people with MS and could improve PA practice (sustainability).

In MBI group, we noted no correlation in T1 and T2 between MFIS (physical component) and the time spent practicing PA (MVPA). Finally, in control group, we found at T2 a statistically significant positive correlation ($r = 0.640$; $P_{uncorrected} = 0.025$) between MFIS (physical component) and MVPA, but this correlation did not survive when applying stringent adjustment for multiple comparisons across the correlations.

Adhesion

The descriptive data of the adhesion to the psychological and motivational intervention follow up for each group eight weeks after randomization is presented in **Table 4**.

DISCUSSION

The aim of this study was to assess the efficacy of a PA program compared to two types of psychological interventions – Mindfulness and Implementation Intention – delivered via internet, in reducing consequences of MS. Effects of practicing were unrelated to degree of impairment (i.e., EDSS level).

TABLE 4 | Descriptive statistics of the adhesion to psychological and motivational support questionnaire percentile after eight weeks intervention.

	Implementation intention group (*n* = 11)	Mindfulness-based intervention group (*n* = 12)
Median	100%	53%
Minimum	88%	18%
Maximum	100%	82%
Interquartile range	6%	24.7%

Following the eight weeks intervention, the results of this study revealed that our PA program led to significant changes in the mobility of people with mild to moderate MS (EDSS < 5.5) in the three groups. The significant increase in distance covered in the 6-min walk test reflects these improvements. In their study, van Asch (2011) found that worsening locomotion was a major concern for both short and long-term MS patients (Heesen et al., 2008; van Asch, 2011). This indicates one of the most debilitating dysfunctions encountered by patients with MS (Motl et al., 2010). Mobility is impaired in up to 90% of people with MS (Zwibel and Smrtka, 2011), increasing the rates of falls and injuries (Nilsagård et al., 2009; Gunn et al., 2014) that may pose a threat to this population (Peterson et al., 2008; Cameron et al., 2011). Therefore, there is still a need to find strategies to increase mobility and maximize autonomy of these people, and the PA program has helped achieve this goal. This represents a significant extension of treatment options.

There was a significant decrease in the MSIS-29 physical component scores in the three groups, indicating a decrease of the impact of MS on patient's day-to-day life. A broad range of studies have assessed the effects of exercise and PA on MSIS-29. Results revealed improvement in MSIS-29 subscales relative to controls (Tollár et al., 2020). Our findings are in line with the results found in the literature. However, our study provided evidence that a PA program combined with mindfulness and motivational interventions may be more promising and present more advantages in terms of amelioration of MS symptoms. Although our analysis did not reveal a significant change in the psychological component of MSIS-29, we noticed a decrease (about 20%) in the average scores, indicating that a longer practice over time may lead to significant changes in this component.

A contribution of this study was to observe that an Implementation Intention carried out in conjunction with the PA program resulted in significant reductions in Modified

Fatigue Impact Scale (MFIS) for all factor scores (physical, cognitive, psychosocial) reviewed by some authors to be three important sub-scales in people with MS (D'Souza, 2016). It might be that fatigue had less impact on patients' lives for the Implementation Intention group during the past 8 weeks. Finally, when it comes to the likelihood and speed of performance, the Implementation Intention intervention (if-then plan) seems to be more effective than simple intentions ("I intend to reach *!"). In fact, specific plans for when, where, and how to initiate behavior and solve difficult tasks almost automatically generate behaviors that help individuals translate their intentions into behaviors (Schwarzer et al., 2008). More specifically, the mental representation of the action becomes highly activated and thus more easily accessible (Gollwitzer and Sheeran, 2006). In contrast, Mindfulness Intervention associated with the PA program produced significant changes only in the physical component. There are many benefits of Mindfulness interventions mentioning the prevention of deteriorating of working memory during stressful periods (Jha et al., 2010).

In people with MS, impairments in working memory appears at the early stage of the disease (Pelosi et al., 1997). In addition, Mindfulness practice can elicit improved visuospatial processing efficiency (Kozhevnikov et al., 2009), enhanced attention (Brefczynski-Lewis et al., 2007) and reduce mind wandering caused by a reduced activation of the default mode network (Mrazek et al., 2013). According to literature (Wayne and Kaptchuk, 2008), mindfulness-related practices (e.g., tai chi) may more commonly engender the rehabilitation and prevention benefits after many years of practice. Thus, larger sample sizes and longer session durations (> 8 weeks) may lead to the discovery of statistical significance improvement of cognitive and sociopsychological factors. In addition, it is important to adapt Mindfulness Interventions to chronic condition such as MS since it may be challenging to find 1 h per day and focus. Some other forms of Mindfulness interventions such as Loving Kindness Meditation, a rich behavioral intervention easier to practice and implement (Galante, 2014) may be more suitable for people with MS. Moreover, the scores of the three components were unchanged for the control group who did not receive any psychological Intervention. Results indicate that 8 weeks Physical activity program by itself was not sufficient to produce modifications relating to the impact of fatigue in the patient's life.

Fatigue is one of the most common symptoms, and studies conducted in patients with MS confirm that about 50–60% of them suffer from this most troublesome symptom (Costello and Harris, 2003; Trojan et al., 2007). Fatigue is defined as "a subjective lack of physical or mental energy that is perceived by the individual or caregiver to interfere with activities of daily living" (Kos et al., 2006). It can be caused by peripheral neuropathy (e.g., impaired neurotransmission) (Fisk et al., 1994). In addition to its negative effects on cognitive functions, decreasing individuals' attention and concentration, fatigue may limit people with MS activities of daily living (Mollaòlu and Üstün, 2009) and pose a serious barrier to rehabilitation (Michael, 2002). Furthermore, fatigue may contribute to decline in cognitive performance (Krupp and Elkins, 2000). For the above-mentioned reasons, elaborating instant and effective strategies to reduce fatigue in people with MS must be a priority.

When it comes to MVPA, numerous studies provided clear evidence that people with MS are less physically active than healthy subjects (Motl et al., 2005; Sandroff et al., 2012). People with MS do not engage in sufficient amounts of MVPA recommended by the American College of Sports Medicine. This is a concern, since studies have demonstrated that people with MS only accrue health benefits when practicing MVPA (Garber et al., 2011). Klaren et al. (2015) exhibited the existence of a reconcilable link between MVPA (minutes/day), but there is no such case regarding light physical activity or sedentary behavior, and whole brain gray/white matter and deep gray matter structures including hippocampus, thalamus, caudate, putamen, and pallidum volumes. Those with MS who had high levels of MPVA (minutes/day) had also higher amounts of white matter and deep gray matter structures (Klaren et al., 2015). The deterioration of these subcortical structures occurs in people with MS (Hulst and Geurts, 2011; Gh Popescu and Lucchinetti, 2012). Such deterioration was associated with disability status (Shiee et al., 2012) and cognitive dysfunction (Rao et al., 1989; Sanfilipo et al., 2006) in people with MS. On the other hand, literature in this area have identified MS-related fatigue as the main cause of this restriction to participation in PA in MS (de Groot et al., 2005, 2008). Here, we provided data indicating that II combined with a PA program decreases fatigability among people with MS and that fatigue was strongly negatively associated to the time spent practicing MVPA in people with mild to moderate MS for the II group which was not the case with the control group. This result may indicate that PA combined with a psychological intervention such as II decreases fatigability among people with MS which allows the subject to spend more time in MVPA to better benefit from the multiple advantages previously mentioned in order to improve his condition.

STRENGTHS AND LIMITATIONS

This is the first with randomized controlled trial (RCT) assessing Mindfulness Interventions associated with physical activity with people with MS, a clinical population difficult to recruit due to the numerous impairments produced by the disease. There are no other clinical trials known to the authors that have reported the effects of combining PA with mindfulness and motivational interventions in people with MS. The results of this study show that such interventions are usable for people with MS, as they may improve mobility and other measures impaired by disease (e.g., fatigue) achievable in a very short period, and at a very low cost.

Nevertheless, this research has several limitations. Firstly, a small sample size and the lack of follow-up data to check the stability of the results over time. Additional studies with larger sample size and follow-up assessments are needed to confirm these initial findings, in order to add to the existing literature on combined interventions among people with MS. Finally, we emphasized the lack of follow-up of the Mindfulness training proper conduct. Unfortunately, the only information

that was at our disposal is that patients were connected to the application. First, we do not know if they were really listening to the recordings, because being connected does not give reliable information, and if so, whether they listened to all the recordings or whether they were able to focus their attention on the instructions. Indeed, the cognitive impairment associated with the MS condition can make it really challenging to follow this type of Mindfulness training. Our application was not sufficiently developed to provide us all this type of information. In addition, for this pilot study, six pre-recorded sessions of 10 min each delivered via an internet application were used, six days per week. The training program was diversified, composed of a large number of situations aiming at developing one's proprioception, situations aiming at developing balance and posture and finally situations aiming at developing awareness and rhythm while walking or breathing. However, 6 h home training per week seems to be a long and challenging activity for people with MS. Some other forms of Positive psychology interventions such as Loving Kindness Meditation may be more adapted to this population since there is a dose effect and equivalent result in a much shorter period (10 min per day), (Kirby and Laczko, 2017). Therefore, the procedure used for our MBI method should be reviewed to make it less burdensome for the patient. Additionally, in order to increase motivation, further studies may consider using live video sessions shared by several patients instead of using pre-recorded sessions. We also propose the use of daily reminders and boosters to encourage him to participate in the session. Finally, we also indicate that the actimetry was used "blind" for the patient who did not have access to his amount of daily physical activity. It would be better, in a future study, to inform the patients of the amount of daily physical activity and enable the set of daily goals. Finally, the disposition to full consciousness was not taken into account in this study which explains some of the results in the MBI group which would have made it possible to obtain results larger than the only physical component.

CONCLUSION AND PERSPECTIVES

This randomized clinical trial clearly indicates that a PA program tailored to people with MS associated with psychological interventions could be beneficial for people with MS across a broad range of variables. This study reveals that PA could improve mobility and MSIS-29 physical scores in people with mild and moderate MS. Moreover, PA accompanied with Mindfulness Intervention seems to be effective in improving mobility and reducing the impact of the disease in patients' life. Nevertheless, the mechanisms by which Mindfulness achieves these benefits remain unclear (Grossman et al., 2010). On the other hand, Implementation Intention associated with PA is also effective in enhancing mobility, but more beneficial in decreasing fatigue among people with MS. Another conclusion that we could draw from this study is that II was an activity that is easy to perform, and its practice does not require a long period of time, this was reflected by the percentages of the adhesion to the II questionnaire which were very high within the group. Our study showed that each of the two psychological interventions associated with a PA program has beneficial but different effects among people with mild to moderate MS. Clearly, results revealed that each combination induced a reduction of the specific disease symptoms.

We further propose two ways for improving this research in people with MS as an extension of this work. In this study, we did not seek to understand the mechanisms by which these psychological interventions achieve benefits. Functional magnetic resonance imaging (fMRI) may be a good way to identify the mechanisms by characterizing the brain regions and functional connectivity involved in these psychological states to shed light on its mechanisms of action. A neuroplasticity induced by a Mindfulness intervention has been observed in brain structures and functions. Gotink et al. (2016) showed, using a Mindfulness intervention, an increased connectivity and volume of the prefrontal cortex related to meta-awareness, emotion regulation (anterior cingulate cortex), body awareness (insula) and memory (hippocampus). The brain regions which were influenced by Mindfulness may induce changes that are of significance to emotional modulation and that might be pertinent to improve cognitive functions in people with MS (Willekens et al., 2018).

This is the first study to assess the efficacy of a positive psychology intervention associated with physical activity in people with MS. MS is a severe condition with multiple impairments (cognitive, chronic fatigue, mood disorders) and psychological interventions may be challenging for people with MS and need adjustments. A recent study assessed the feasibility and acceptability of a 5-week group positive psychology intervention for patients with MS. The results are promising, as they revealed a significant improvement in fatigue and depression after the intervention ($P = 0.016$ and 0.049, respectively). In addition, they showed the feasibility and acceptability of this type of intervention among MS population (Leclaire et al., 2018). However, the study was not randomized nor controlled, with a small sample ($n = 17$). A very recent RCT (Freedman et al., 2021) examined the feasibility, acceptability, and impact of a 5-week, telephone-delivered positive psychology (PP) intervention for individuals with Multiple Sclerosis (MS). The PP intervention was associated with significantly greater increases ($p < 0.05$) in positive affect, optimism, state and trait anxiety, general health, and resilience in the intervention group versus the control group (waitlist control). Moreover, the results were stable in time, since half of the PP participants maintained at least 50% of the improvement at 10 weeks. Randomized controlled trials (RCT) are thus necessary to further explore the effectiveness of the positive psychology interventions with people with MS.

We believe that positive psychology is a very promising method of psychological intervention for people with MS as they propose attractive and easy to implement strategies and focus on positive aspects. Studies assessing the effectiveness of the PPIs have shown a high level of heterogeneity: there is a wide

variability in effect size across PPIs. It is therefore necessary to examine the specificities of the different interventions included in the PPIs (Csillik, 2015). Classical Mindfulness Interventions address both positive and negative aspects of human functioning. In recent years, Positive Psychology Interventions (PPIs) that integrate mindfulness elements have shown promising outcomes (Lomas and Ivtzan, 2016). Still, there is a lack of clarity in the implementation of Mindfulness-Based Positive Psychology Interventions (MPIs) and their impact on positive human functioning. A recent review aimed to find and analyze the mindfulness-based interventions from the existing literature which have also shown potentials to be a positive psychology intervention (Allen et al., 2021). The outcomes point out the positive potentials of MBIs and the endless possibilities of empirical studies on the application of MPIs and, emphasizes the need of future studies paying attention to positive outcomes when measuring the effects of Mindfulness Based Interventions. In line with these recommendations, we aim to further assess the effects of MBIs adapted to people with MS on other positive outcomes that are more sensitive to change such as eudemonic and hedonic well-being in addition to the quality-of-life measures that are less sensitive to change and to not specifically focus on the people's own feelings and perceptions of their levels of happiness and well-being.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Ile de France XI (ID: 2016-A00537-44) authorized from the National Agency for the Safety of Medicines and Health (ASNM) and registered under the identification number ID: NCT03785483. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

ED, JS, ET, AC, M-CG, OH, DB, and GDM: organization and execution of the research project and review and critique. ED, JS, and ET: data collection. GDM, ET, and AC: statistical analysis and writing manuscript. All authors contributed to the article and approved the submitted version.

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Positive Psychology Interventions as an Opportunity in Arab Countries to Promoting Well-Being

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INTRODUCTION

Extensive research on Positive Psychology Interventions (PPIs)—defined as activities that focus on promoting positive feelings, thoughts, or behaviour (Sin and Lyubomirsky, 2009)—has been found to be generally effective in promoting well-being and reducing mental illness (e.g., Chakhssi et al., 2018; Hendriks et al., 2020). In a recent review of 347 studies, PPIs had a significant effect on promoting quality of life and well-being and reducing anxiety and depression (Carr et al., 2020). While the ratio of non-Western to Western randomised controlled trials (RCTs) evaluating PPIs has improved quite dramatically in the past decade, most of these studies (82%) remain narrow in focus in terms of the culture of their participants, having been developed and tested in Western Educated Industrialised Rich Democratic (WEIRD) countries (Hendriks et al., 2019). Therefore, they may not be as effective in other countries such as the Arab countries where there are various cultural differences. Culture can play a very important role in enhancing PPIs engagement, acceptability, and eventually, effectiveness (Hendriks and Graafsma, 2019).

Arab countries, home to 5% of the world's population, have a burden of mental health problems above global levels (GBD 2015 Eastern Mediterranean Region Mental Health Collaborators, 2018). Prevalent stigma, war and conflict were some of the contributors (Maalouf et al., 2019). Thus, to properly address this cultural stigma against mental health problems, PPIs could provide an additional role alongside traditional psychology approaches (e.g., Cognitive Behavioural therapy - CBT). Further, in light of the political conditions that some Arab countries are going through and the negative effects that they cause, it has become necessary to use the method of *prevention* that is the focus of PP and not only of *treatment* as a strategy for applications and practise. It has been noted that the mental health care system in the Arab region focuses highly on illnesses treatment and neglects the significant role that PP plays in enhancing human potential and well-being. The Arab population is becoming more influenced by many global issues, including the COVID-19 pandemic which is having a negative impact on mental health and well-being (Salari et al., 2020). In response, Waters et al. (2021) have recently argued how positive psychological factors can play a significant role in buffering mental illness, enhancing mental health throughout the pandemic, and building positive processes and capacities that can help to promote future mental health.

In developing indigenous and culturally sensitive PPIs (Lambert et al., 2015) among the Arab region, there are important cultural factors that should be considered. These include spiritual traditions and interdependent cultural concepts including collectivistic ideas of the self, emotions and values which differ quite dramatically from western cultures.

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ARAB CULTURE

The "Arab World," which comprises 5% of the world's population, refers to Arab countries in the Middle East and North Africa. Despite the increasing pace and progress of different businesses in many Arab countries, individual communities are still limited in certain prominent economic places. Arab people rather gather in collective communities. They generally share the same Arabic Islamic culture, speak the same language, and descend from the same Arab families when going back in history, no matter what nationality they have nowadays. Yet, very many changes came to communities before borders were drawn between countries and after. For instance, geography, topography, demography, and socio-economic status affect peoples' nature of jobs and lifestyles. For example, Arabs in the east, west, or the middle have similar tongues; however, almost every Arab country has its accent. Therefore, people need to go back to the formal Arabic language "Fus-ha" or learn more about different Arabic dialects when communicating cross-countries.

According to Hofstede (2011) based on the individualism-collectivism dimension, the Arab countries (Eastern society) have been classified as a collectivist culture, where their identity and decisions are influenced by social systems. In contrast, the United States (Western society) has been classified as an individualist culture focusing on individual decisions. Although there are degrees of individualism among Arabs in certain countries, they still share collective common characteristics. Here, we explore the meaning of collectivistic conceptions of the self, emotions, values, and religion in Arab countries and how they differ from those in individual Western cultures.

The Self

Since the field of PP focuses on the development of *self*, it is vital to recognise that self-concept varies across cultures. Individualism generally emphasises the self-directed and autonomous individual (Realo et al., 2002). People in individualist countries focus primarily on their personal characteristics (e.g., motives, abilities) to build their self-concept. On the other hand, collectivism refers to several social structures that highly value the groups to which people belong, such as family and tribe (Realo, 2003). People in collectivist countries such as the Arab countries focus primarily on their relationships with others to build their self-concept (Markus and Kitayama, 1991). Hence, research from Arab countries should focus on the core elements of collectivism when implementing PPIs to make a significant, meaningful impact. For example, people from a collective culture may experience a greater enhancement in well-being when practising interventions that are more prosocial and group-oriented such as compassion, performing acts of kindness, writing a gratitude letter, and using character strengths in everyday context including social context, compared with self-oriented interventions such as *identifying* character strengths.

Emotions, Value, and Religion

Research shows that Western culture emphasises the goal of maximising positive emotions, while Eastern culture emphasises embracing and balancing positive and negative emotions (Leu et al., 2011). To illustrate, culture plays an important role in influencing perceptions of happiness. People in individualist countries value happiness highly. In contrast, people from collective countries value low arousal positive emotions (Leu et al., 2011) and exhibit a fear of happiness (Joshanloo, 2013; Joshanloo and Weijers, 2019). Hence, the influence of positive emotions plays a limited role in the mental health of Eastern society. Speaking of Value, for an Arab, the family is the centre of honour and the most important social unit. This loyalty has an impact on every part of an Arab's life. Arabs honour their families and highly value their friendships. Therefore, future research could shed more light on group-oriented interventions (e.g., kindness) that focus more on the relationship with family, friends, and community.

When it comes to religion, Arab society has a rich culture in values and beliefs that place a particularly high emphasis on spirituality. Religion is the most important and distinctive aspect of Arab culture. Arab countries vary in terms of religion, with Islam being predominant. Interestingly, the Islamic religion may influence PP. For example, forgiveness "al'afwu," aligns with Islamic teachings (Warsah, 2020), having strong philosophical and religious roots (Peterson and Seligman, 2004). While this concept is highly recommended in PP to be cultivated for psychological health and well-being (Wulandari and Megawati, 2020), it is also encouraged to be embedded in ourselves, according to Islamic teachings. This confirms how both PP and Islam clearly propose the importance to cultivate forgiveness both towards ourselves and others (Warsah, 2020).

Well-Being (Hedonic and Eudaimonic)

It is necessary here to clarify what is meant by hedonic and eudaimonic definitions of well-being. While the term "Hedonic" is based on the pursuit of maximum levels of pleasure (feeling good), the term "Eudaimonic," on the other hand, is based on meaning and the development of virtues (functioning well; Keyes and Annas, 2009). Research indicates that cultures are not equally supportive of hedonic and eudaimonic aspects (Joshanloo and Jarden, 2016). In comparison to collectivism, hedonism appears to be more congruent with individualism (Joshanloo, 2014). Pleasure and positive emotions are considered a way to pursue happiness in Western culture, while this method is not highly favoured in Eastern cultures (Lee et al., 2013); Because they consider suffering and negative emotions as contributing factors to spiritual development. Therefore, the eastern perspective is more in line with a eudaimonistic view which emphasises virtues, meaning, and feeling of belongingness. However, although we believe that both approaches can be found to a certain level in both cultures, the differences suggest that there are different routes to happiness.

POSITIVE PSYCHOLOGY IN THE ARAB REGION

Positive psychology - "the scientific study of what makes life most worth living" (Seligman and Csikszentmihalyi, 2000) - is one of the newest branches of psychology. It focuses on three main pillars: (1) positive subjective experiences (such as happiness and

love); (2) positive individual characters (such as gratitude and compassion); and (3) positive institutions (for the application of positive principles within institutions and organizations; Seligman and Csikszentmihalyi, 2000). Some of the main topics of interest in positive psychology include character strengths, gratitude, hope, happiness, mindfulness, optimism, positive thinking, and resilience. Within the applications of this science, various domains of well-being (such as happiness, engagement, positive emotions, and meaning) can be enhanced by practising positive psychology interventions (Sin and Lyubomirsky, 2009). Interestingly, these interventions have also produced benefits beyond well-being, such as reduced mental health issues (Chakhssi et al., 2018; Hendriks et al., 2020).

Nowadays, PP is increasingly noticed in the Arab world (Rao et al., 2015; Lambert and Pasha-Zaidi, 2019). In recent years, there has been a great effort to explore the PP field across Arab countries. Several initiatives have emerged aimed at promoting well-being and flourishing. For example, the Middle East Journal of Positive Psychology published its first volume in 2015. On the International Day of Happiness in 2017, United Arab Emirates University launched its Emirates Center for Happiness Research. Meanwhile, Effat University in Saudi Arabia started the first Positive Psychology and Well-being Research Lab, the first symposium, and the first PP course. In 2019, Louise Lambert and Nausheen Pasha-Zaidi published the first regional text entitled "Positive Psychology in the Middle East/North Africa." There are other efforts spent in the region as well; such as the work conducted in Egypt. Ibrahim Younus established the Arab Association for Positive Psychology https://www.psycholearn.com/en/associative.php which provides several courses on PP and also published a book entitled "The Power of Positive Psychology" (Younus, 2017).

Despite this development, nothing can compare to the quantity and even quality of research in other countries. In light of our observations, the few PP studies may be attributed to the lack of awareness of the constructive approach and prevention compared to problem-solving. An Arab dentist once said: "people do not come to me until they are badly in pain." In any case, many studies have taken place in Arab countries in the last decade, more of which are descriptive and less of which experimental. For example, Abdel-Khalek (2010) found positive correlations between quality of life, subjective well-being, and religiosity among students in Kuwait. Abdel-Khalek (2016) developed "the Arabic Scale of Religiosity," which significantly correlated with PP variables among students in Algeria, Kuwait, and Egypt.

Recently, empirical studies on PPIs have been conducted in Arab-Islamic countries. More attention has been placed on promoting well-being and alleviating the high burden of mental health problems in the region (GBD 2015 Eastern Mediterranean Region Mental Health Collaborators, 2018). For instance, several studies have examined the effectiveness of mindfulness among university students (e.g., Thomas et al., 2016; Al-Ghalib and Salim, 2018; Awad, 2019), parents of children with autism (Rayan and Ahmad, 2016) and addicted adults (Al-Rashidi, 2018). These interventions were found to have positive effects on health and well-being outcomes. Participants who practised mindfulness reported reduction in stress and depression as well as improvement in well-being and resilience. Moreover, the results of a recent pilot study found positive impacts on enhancing emotional regulation and reducing stress among Arab teachers (Berkovich-Ohana et al., 2020). Some studies have also begun to examine various interventions targeting character strengths (Basurrah et al., 2020; Chérif et al., 2021), self-compassion (Elaiwah, 2017), positive thinking (Haddad, 2014; Mohammed et al., 2014), and hope (Zaki, 2016) among adults and university students. Interestingly, a recent study by Lambert et al. (2019) has examined the impact of PPIs on fear of happiness (a belief that happiness or positive emotions can bring forward negative consequences; Joshanloo, 2013) among people from collective countries. Lambert et al. (2019) provided evidence that a 14-week PPIs programme has an impact on reducing the fear and fragility of happiness beliefs among university students in the United Arab Emirates.

Since Arab countries place great emphasis on spirituality, several authors have considered the aspect of religion when implementing PPIs (e.g., Saeedi et al., 2015). For instance, an empirical study by Al-Seheel and Noor (2016) found that expressing gratitude towards God "Allah" increases the happiness of the Muslim more than the usual gratitude intervention. Additionally, Al-Ghalib and Salim (2018) examined a religiously sensitive mindfulness-training programme with university students and found a positive effect on life satisfaction and a slight reduction in stress, depression, and anxiety. Hence, the role of religion is vital to make the interventions more relevant to Arab culture where people can connect Islamic philosophy with PP theories and practises. These studies reviewed here provide further support for the need for culturally sensitive interventions among the Arab population.

More recently, the first systematic review of PPIs in Arab countries was conducted by Basurrah et al. (2021; the protocol has been published in *BMJ Open* and the final manuscript has been submitted for publication). Reviewing a total of 39 RCTs and quasi-experimental studies, the most commonly studied interventions were mindfulness, positive thinking, and resilience. Only a handful of studies examined gratitude, character strengths, forgiveness, self-compassion, savouring, or finding flow. Risk of bias analysis revealed that most studies from Arab countries have several methodological limitations. This included a lack of protocol guidelines, few well-designed randomised controlled trials (RCTs), blinding issues, small sample sizes, lack of active control groups, and lack of research into certain populations (e.g., teachers, employees, and people in distress in refugee camps). These are important methodological issues that need to be considered in future research.

DISCUSSION

PP was founded on an individualistic framework (Christopher and Hickinbottom, 2008). To ensure that PPIs are culturally meaningful, this paper includes some cultural elements of the Arab region that should be considered to serve the needs of the Arab population. In the Arab world, some people may believe that PP is solely about happiness and being positive. If

so, it is important to educate the public about the findings of rigorous studies evaluating PPIs such as gratitude, hope or flow on health, well-being and performance. To explain the value and effectiveness of these evidence-based approaches, examples might include studies linking gratitude with benefits for people with heart disease (Cousin et al., 2021), or how PPIs can promote quality of life in cancer patients (Casellas-Grau et al., 2014).

There is some evidence about PPIs being effective in improving well-being in the Arab region, but research in this region is still in its infancy and little information is available regarding PPIs and the experience of Arabs participating in such interventions. Hence, there is still much more to investigate in this regard. Future research should empirically examine the effectiveness of various unstudied interventions such as savouring, gratitude, self-compassion, character strengths or finding flow. A combination of quantitative and qualitative approaches is required to provide an in-depth understanding of Arabs' experience and impressions of PPIs and how and why they work. This may provide useful information to inform the appropriate design of PPIs to suit Arab culture and needs. In addition, since it has been reported that published positive psychology empirical studies were largely overrepresented by female participants (Rao and Donaldson, 2015; Hendriks et al., 2019), it would be important for future research to consider the effect of gender when developing PPIs.

Furthermore, while some research on PPIs has been carried out in the region, most of these studies have been of poor quality that suffered from small sample sizes, confounding factors, and a high degree of bias. To overcome these issues, future research should improve research quality, including protocol guidelines and well-designed RCTs. In particular, research should include randomisation, allocation, blinding, power analysis to determine adequate sample size, active control groups to reduce bias, and follow-up periods of at least 12 months.

Among the most popular resources that future PP practitioners may refer to are the International Positive Psychology Association (IPPA) and the International Positive Education Network (IPEN). Also, we recommend the Middle East Journal of Positive Psychology and the first regional book (Lambert and Pasha-Zaidi, 2019). To develop and/or adapt a multi-component PPIs, we would recommend referring to Character Strengths (Peterson and Seligman, 2004), the theory of well-being (PERMA Model: Positive Emotion, Engagement, Relationships, Meaning, and Accomplishment; Seligman, 2011), and the Five Ways to Well-being: Connect, Be Active, Take Notice, Keep Learning, and Give (Aked et al., 2008). Finally, single-component PPIs are based on theories like Broaden-And-Build (Fredrickson, 2004), Hope (Snyder et al., 2002), and Self-Determination (Deci and Ryan, 2012) can be also considered.

Two other concepts that would be usefully applied are "Savouring" (Bryant and Veroff, 2007) and Phillip Zimbardo's Time Perspective (Stolarski et al., 2015). For instance, savouring has a positive temporal orientation to reminiscing the good memories from the past, enjoying the hedonic present moments, and willing proactively to make a better future. Now, what is even maybe more interesting for Muslims is "Transcendent Future" where all intentions, words and actions are devoted to that life after death.

In addition, there is a model already prepared for the clinical purpose called Positive Psychotherapy (PPT). Tayyab Rashid and Martin Seligman published a PPT manual for clinicians in 2018. And for cross-cultural applications, including Muslim Arab culture, Rashid and Al-Haj Baddar (2019) have written a paper presenting PPT and its efficacy. PPT overview in detail shows sessions, themes, skills, practise, and cultural considerations where a mixture of PPIs based on PERMA, Strengths, and other PP concepts can be found.

Regarding PP measurements, it is highly recommended to generate indigenous tools based on cultural backgrounds reviewed here in the article. An example of this is a tool for measuring Muslim well-being by including domains beyond what is found in Western literature. So far, in the Arab region, several attempts have been made to adapt PP tools. For example, Marei Salama-Younes (Salama-Younes and Massoud, 2018) validated the Arabic versions of different measures of well-being (e.g., satisfaction with life scale, the subjective vitality scale). Other validated scales as well-include the self-compassion scale (Alabdulaziz et al., 2020), and the passion scale (Salama-Younes and Hashim, 2018).

CONCLUSION

This paper has discussed the cultural aspects of Arab countries and the need of developing culturally sensitive PPIs. The past decade has seen an increase in mental health problems in the Arab region. Stigma and lack of awareness have been always there. Among the issues are also wars, conflicts, and displacement in many Arab countries such as Iraq, Lebanon, and Palestine (Hassan et al., 2016). These indicate an urgent need to prevent mental illness and promote well-being. Indeed, we highlighted the importance of integrating culture with PPIs, following the guidelines for the cultural adaptation of PPIs (Hendriks and Graafsma, 2019) and the ethical guidelines for PP practise (Jarden et al., 2020). Another significant contribution of this paper is to highlight the importance of improving the quality of research conducted in Arab countries. In brief, this paper has several practical implications. It is an open invitation for researchers, policymakers, and practitioners alike to be more exposed to PP; as well as to better conceptualising and adapting interventions and measurement tools to the local culture in different sectors to maximise their effectiveness. And as we consider it as an invitation for us too, here we are starting a PPIs practise guide in Arabic language and for Arab practitioners. The insights gained from this paper may be useful for placing well-being on top of priorities for achieving individual, organisational, and optimal national functioning in different sectors. There

is also a need to change the stigma or negative beliefs about seeking health for psychological support, which is an issue for countries in the Middle East (Baess, 2019). It is hoped that this article will encourage researchers and practitioners to investigate and integrate culturally sensitive positive psychology interventions and practises so that people of Arab cultures can benefit from these.

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AB, MA-H, and ZD participated in the conception of the article. AB and MA-H drafted the article with support from ZD. All authors contributed to the final version of the manuscript, critically revised the article, provided feedback, and approved the final version to be published.

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Flourishing Beyond Borders: Facilitating the Well-Being of Accompanying Expatriate Partners

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One of the leading causes for failing at expatriate assignments is the accompanying expatriate partners' (AEPs) unhappiness with life abroad or inability to adjust to the challenges of the host country. Strength-based therapeutic interventions have the potential to increase individuals' mental health and well-being. The current study formed part of a multimethod study consisting of three related but independent sub-studies. The first sub-study identified the strengths of Gratitude, Curiosity and Hope to be positively associated with AEPs' resilience and well-being. These results were used to construct a quantitative model that illustrates the interplay between these constructs. In the second sub-study, the proposed model was qualitatively reviewed by a smaller group of AEPs to inform and enrich our understanding of AEPs' personal experiences of these constructs. In the current study, a panel of practicing psychologists who provide counselling services for South African expatriates and AEPs were asked to qualitatively review a proposed quantitative model. A cross-sectional, interpretive descriptive research design, applying purposive sampling was used to identify and recruit participants. The objective for the current study was firstly to ascertain why participants thought strengths of Gratitude, Curiosity and Hope featured so prominently in the model. Secondly, the study aimed to determine how these participants would, from their experience in working with AEPs, enhance these strengths and AEPs' resilience in therapy, and ultimately facilitate greater well-being and successful adjustment abroad. Participants completed an online questionnaire consisting of two semi-structured, open-ended questions. The data were analyzed using primary and secondary cycle coding to ultimately develop themes. Results indicated that strengths of Curiosity, Gratitude and Hope featured prominently because these strengths include elements that form part of the process of expatriation. Participants were able to suggest practical strength-based therapeutic techniques which would assist in enhancement of strengths, resilience and ultimately well-being. It is proposed that the therapeutic techniques and approaches suggested in this study could contribute to the success rate of expatriate assignments.

Keywords: accompanying expatriate partner, character strengths, expatriation, flourish, therapeutic techniques, resilience, well-being

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INTRODUCTION

While the expatriate employee deserves research attention, especially from a human resource perspective, it should be said that these employees are more often than not accompanied by their life partners and families. Harvey (1985) states that the employee's family "has a profound impact on the success of the international assignment" (p. 84). Almost four decades later it is still the case, with an increasing focus on the role that so-called "accompanying expatriate partners" (AEPs), who may be a male or female, play in determining the success or failure of expatriate assignments (Lauring and Selmer, 2010; McNulty, 2012; Föbker and Imani, 2017; Lämsä et al., 2017). Numerous possible challenges that AEPs experience have been cited in recent research looking into the reasons for failed assignments. In most cases, the AEP has to give up a career in her[1] home country "to follow the interests of her husband's career" (Teague, 2015, p. 139). In addition, the AEP has to give up her home, social network and family in her home country, as well as establish a routine and find new pastime activities in the foreign country (Van den Berg-Overbreek, 2014; Lazarova et al., 2015; Teague, 2015). While the challenges faced by AEPs have received explicit research attention (Caligiuri and Bonache, 2016; Shortland, 2018; Arar, 2019; Harry et al., 2019), and the impact that AEPs have on the outcome of international assignments is a known fact, there has been a call for greater emphasis on protecting the mental health of AEPs (Wiese, 2013), especially through psychological interventions before international relocation.

It would therefore be in the interest of multinational companies (MNCs) and their human resource managers, as well as psychology practitioners, counsellors or business coaches working with AEPs, to understand what the positive predictors of the AEP's well-being might be and how to facilitate the development of these predictors in AEPs' lives. This could help equip AEPs with the necessary skills to confront the challenges that they might need to overcome in the host country in order to successfully adjust to life abroad (Naude and Vögel, 2018).

Although extensive research has been done on the pivotal role that AEPs play in the outcome of expatriate assignments, no study has been done where the enhancement of their character strengths, resilience and ultimately their well-being have been explored. This study aims to target this gap in the extant body of research.

MATERIALS AND METHODS

Research Approach and Strategy

The current study forms part of a multimethod study (Morse, 2003) consisting of three related but independent phases of research that form part of a larger research project (Botha, 2020). These phases are graphically illustrated in **Figure 1**.

During the *first phase* of the study the character strengths, levels of resilience and self-perceived well-being of South African AEPs ($n = 110$) from 17 host countries were measured using the Virtues in Action Inventory of Strengths (*VIA*-72; Peterson and Seligman, 2004), the Resilience Scale (RS; Wagnild and Young, 1993) and the Mental Health Continuum – Short Form (MHC-SF; Keyes, 2002; Keyes et al., 2008). Structural equation modelling was used to construct a model indicating the associations between these constructs. During the *second phase* of the study, a smaller sample group ($n = 17$) representing seven of the original host countries was asked to qualitatively review the quantitative model that emerged during Phase 1, in an effort to gain greater understanding of their subjective experiences as AEPs and thereby enrich our understanding of the model.

The current study represents the *third and final phase* of the overall study where independent psychologists who provide counselling services for expatriates and AEPs were invited to share their thoughts and comments on the proposed model (see **Figure 2**). The objective was firstly to ascertain why these psychologists thought the strengths of Gratitude, Curiosity and Hope featured so prominently in the model. Secondly, the study aimed to determine how these psychologists would, from their experience in working with AEPs, enhance these strengths and AEPs' resilience in therapy, and ultimately facilitate greater well-being and successful adjustment abroad. These results could potentially form the basis of an intervention framework for practitioners working with prospective or current AEPs. Since MNCs clearly have a vested interest in supporting not only the working partner (expatriate), but also the AEP and other family members, the insights and views expressed by experts in the field have the potential to effectively be used to increase the success rate of expatriate assignments.

Entrée and Establishing Research Roles

Four psychologists were invited to participate in this phase of the study. The first author approached the participants by e-mail and explained the aims of the study, as well as what would be expected of them. Participation was completely voluntary and no costs were involved for the participants, nor were remuneration given. Due to the fact that the entire study was web-based, an informed consent document was sent to participants by e-mail. Informed consent was obtained from each participant before data were collected. The relevant background information regarding the previous phases of the study, as well as a simplified version of the reduced model (**Figure 2**), were shared with all the participants.

Research Participants and Sampling Methods

Purposive sampling was used to recruit participants (Babbie, 2016). Participants were identified based on their knowledge

[1]"She" or "her" are used as personal pronouns referring to the AEP. The authors' intent is non-sexist.

Abbreviations: AEP, Accompanying Expatriate Partner; MNC, Multinational Company.

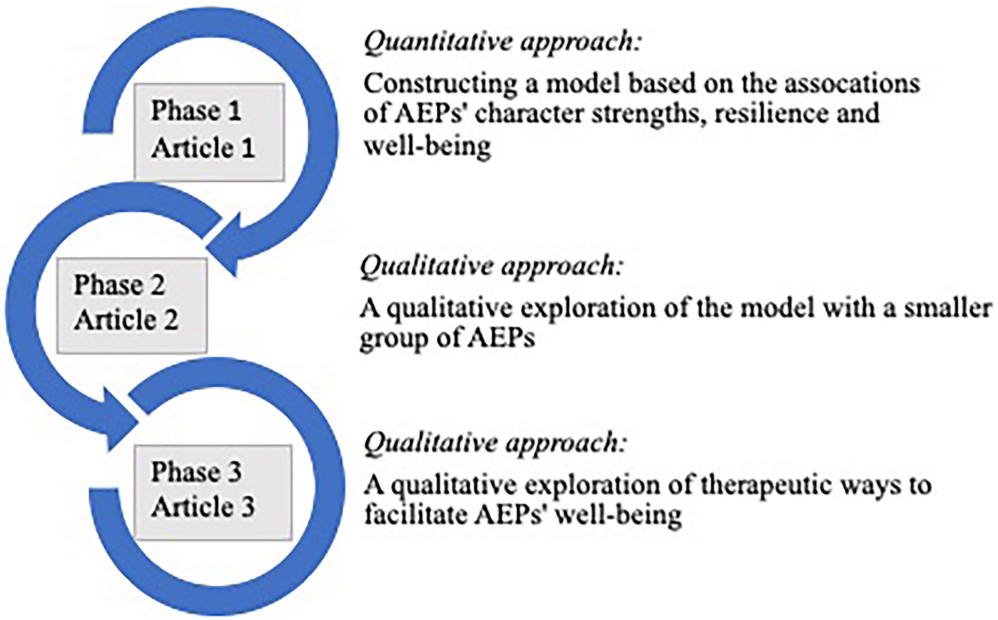

FIGURE 1 | A graphical illustration of the multimethod research approach.

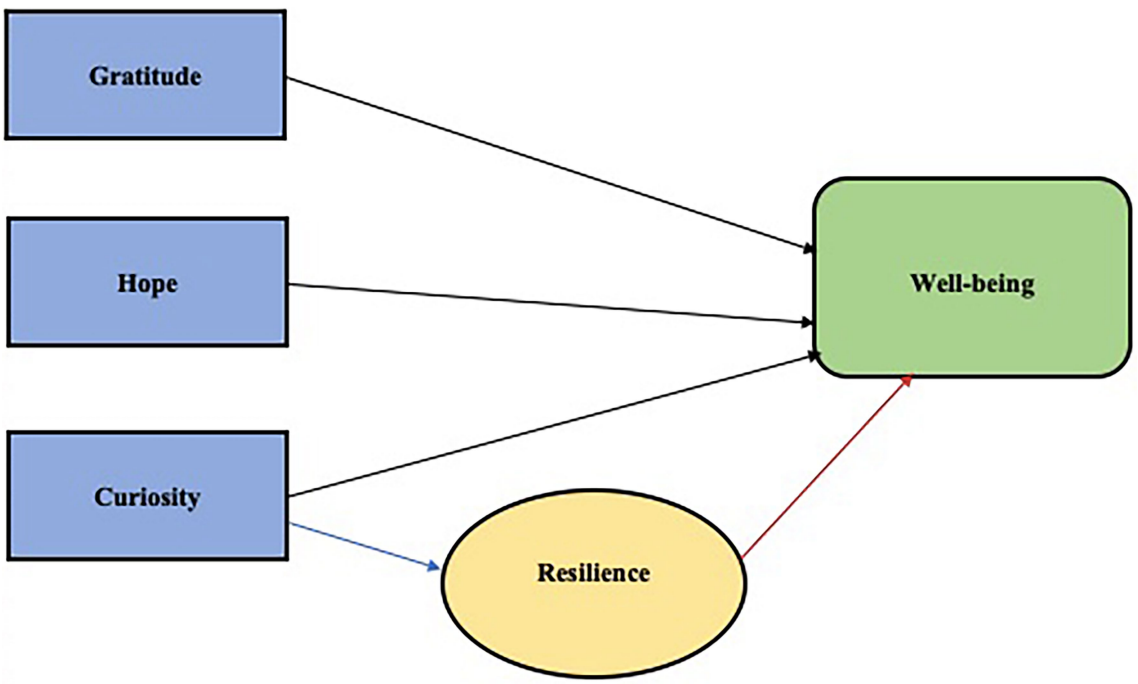

FIGURE 2 | A graphical illustration of a simplified version of the reduced model presented to the panel of practicing psychologists.

and practical experience in working with expatriates, AEPs and their families. The four psychologists who participated were all registered with the Health Professions Council of South Africa (HPCSA), South African citizens and representative of three categories within psychology, namely industrial ($n = 1$; female), clinical ($n = 1$; female), and counselling ($n = 2$; 1 male and 1 female). Three of the psychologists were practicing in South Africa, and one psychologist was practicing abroad.

Data Collection Methods

The entire study was web-based. A qualitative questionnaire containing two semi-structured, open-ended questions was used for data collection and sent to participants by e-mail.

With reference to the simplified version of the proposed quantitative model constructed based on the first two phases of the study (**Figure 2**), participants were asked the following questions:

- In your opinion and with your expertise, what might be possible explanations (or motivation) for Gratitude, Curiosity and Hope to be the three strengths that correlated positively with AEPs' resilience and well-being, specifically bearing in mind the challenges faced by AEPs?
- If approached by an AEP/family about to embark on an expatriate assignment, how would you therapeutically address the enhancement of these character strengths and ultimately the resilience and well-being of AEPs? Please do not hesitate to be very practical in your reflections.

Strategies Employed to Ensure Data Quality and Integrity

According to Hadi and Closs (2016), it is imperative for qualitative research findings to have *integrity*. The only way to ensure quality and integrity in qualitative data is by demonstrating *rigor*. Noble and Smith (2015) concur, and furthermore state that research integrity is essential if findings "are to be utilized in practice" (p. 34). The researchers employed a number of strategies to ensure data quality and integrity in this study. *Validity* was ensured by using purposeful sampling to meet the aims of the study (Smith and Noble, 2014) and continuous checking of data, coding of data, and interpretation of findings. The researchers furthermore used continuous self-reflection by keeping a reflective journal (Long and Johnson, 2000; Morse, 2015; Hadi and Closs, 2016); making code, theoretical and operational notes (Babbie, 2016); and acknowledging possible biases in the research process (Smith and Noble, 2014). *Reliability* was ensured by keeping an audit trail (Morse et al., 2002; Morse, 2015; Hadi and Closs, 2016) and appointing an external code reviewer to reduce research bias and to confirm the dependability of research findings. According to Noble and Smith (2015), an "independent researcher should be able to arrive at similar or comparable findings" (p. 34) for reliability of findings to be confirmed. In the current study, the data were coded by two independent experts in qualitative research, where after the coding, notes, analysis and interpretation were compared.

Data Analysis

The data were analyzed using two phases (primary and secondary cycle coding) to develop themes (Tracy, 2013; Saldaña, 2016; Creswell and Poth, 2018). First cycle coding included open-coding and descriptive coding to explore and explain psychologists' descriptions of the connection between strengths of Hope, Gratitude and Curiosity with resilience and well-being of AEPs. Second cycle coding entailed conceptual level analysis to consider the relationship between the different therapeutic approaches on which psychologists rely to enhance AEPs' character strengths, resilience and ultimately their well-being. In order to ensure rigorous, systematic analysis, the coding techniques and principles of Saldaña (2016) were applied. Coding was facilitated using ATLAS.ti (Version 8; Friese, 2019).

Reporting Style

In order to honor participants' anonymity and ensure that their responses were dealt with in a confidential manner, no identifying elements were included in the data and the researchers' notes were stored securely. Psychologists who participated in the study were identified as "Participant 1″, "Participant 2″ etc. The participants' categories of registration in psychology were as follows: Participant 1 (counselling; female), Participant 2 (clinical; female), Participant 3 (counselling; male), and Participant 4 (industrial; female).

Ethical Clearance

Ethical approval was obtained from the Health Research Ethics Committee (HREC) of the NWU (ethics approval number NWU-00362-16-A1). Throughout the entirety of the study, the researcher adhered to the ethical guidelines of the North-West University's Health Research Ethics Committee (NWU-HREC) as well as the Health Professions Council of South Africa (HPCSA: Health Professions Act 56 of 1974).

RESULTS

Four distinct themes and eight sub-themes emerged from the participants' perspectives on the role that these character strengths play on AEPs' resilience and well-being abroad, as well as therapeutic approaches or techniques that could enhance these constructs. The main themes were labeled: (1) Perspectives on Curiosity, Gratitude and Hope; (2) The positive impact of strengths; (3) Therapeutic engagement and goal-setting; and (4) Facilitating well-being through strengths and resilience. The sub-themes were labeled: (1a) Elements of strengths and (1b) The time frame of strengths; (2a) Positive experiences of strengths and (2b) Personal growth; (3a) Assessment of context and (3b) Setting goals; and (4a) Cultivating strengths and resilience and (4b) Organizational support and other supportive relationships.

The themes and sub-themes are graphically illustrated in **Table 1** and described below, with supportive evidence cited from the data transcripts (quotation references in parenthesis, e.g., Participant number; Quote number).

Perspectives on Curiosity, Gratitude and Hope

In addressing research question 1, the participants provided their own description or working definition of what these strengths involve and contextualized it with reference to the

TABLE 1 | Themes and sub-themes.

Themes	Sub-themes
1. Perspectives on Curiosity, Gratitude and Hope	Elements of strengths
	The time frame of strengths
2. The positive impact of strengths	Positive experiences of strengths
	Personal growth
3. Therapeutic engagement and goal-setting	Assessment of context
	Setting goals
4. Facilitating AEP's well-being through strengths and resilience	Cultivating strengths and resilience
	Organizational support and other supportive relationships

reality of the AEP. They also indicated how the presence of these three strengths could not only assist in AEPs' successful adjustment in the host country, but also contribute to greater well-being. Perspectives on Curiosity, Gratitude and Hope involves the elements and time frame participants ascribe to these strengths.

Elements of Strengths

Participants pointed out that the strength of *Curiosity* encompasses an open-mindedness and excitement about experiencing new things and exploring new possibilities. Participant 2 suggested that "curiosity can encourage a person to learn and think in different ways" (Participant 2; Quote 3). Participants highlighted that not only does curiosity encompass inquisition about all things new, it also promotes a sense of adventure and exploration, which clearly relates to AEPs' decision to embark on expatriate assignment. According to Participant 3, "the positive rewards for curiosity is a wider world view and deeper and more meaningful experience of well-being" (Participant 3; Quote 18). Further, in the context of expatriation, Participant 3 proposed that "… [seeing] and subjectively [becoming] part of something new would seem more positive than being bored with the familiar" (Participant 3; Quote 17). Participant 2 concurred by stating: "Life is never boring for a curious person" (Participant 2; Quote 5).

The participating psychologists describe *Gratitude* in many different ways. One participant stated that gratitude "represents a willingness or ability" (Participant 1; Quote 5) to recognize what is good in life. Another participant proposed that gratitude refers to "a general state of thankfulness and appreciation" (Participant 2; Quote 13) and furthermore adds that it is a "life orientation that helps you notice and appreciate the world around you" (Quote 15). Further, one participant stated that gratitude makes it possible to recognize "good beyond [the] self" (Participant 4: Quote 11). Another participant agreed, adding that "the source of goodness lies at least partially outside themselves" (Participant 2; Quote 20), which "helps people connect to something larger than themselves as individuals — whether to other people, nature, or a Higher Power" (Quote 21). The reality is that AEPs are faced with numerous challenges prior to as well as during international relocation. In line with this, one of the practicing psychologists added: "I have found that some clients who have experienced, and are currently experiencing challenging times, seem to naturally move, or choose gratitude as a coping skill" (Participant 3; Quote 5).

As suggested by Participant 1, *Hope* "represents a motivation to look and expectation to find positive and beneficial details in one's presence and future" (Participant 1; Quote 6).

Participant 2 and Participant 3 concurred, and stated that hope acts as a motivating factor to take positive actions and therefore "seems to create the platform from which they can launch their choices for their lives" (Participant 3; Quote 25). In addition, hope "develops people's capacity for persistence and long-term efforts that makes them authors of their [own] lives" (Participant 2; Quote 27). This participant added that hope is "a vital coping resource against despair" (Participant 2: Quote 28b), as this strength prompts efforts to "seek improvement of unsatisfactory situations" (Quote 28a). It was evident that participating psychologists felt that when people have hopeful attitudes, they naturally trust and have faith that things will work out, despite their current reality of approaching the unknown. With regard to the role that hope plays in therapy with AEP clients, Participant 3 summarized it well, saying: "In my experience clients who have a clearly defined sense of future, that manifests in hope for a good future, are far more resilient than those who have vague ideas of what they want for their lives" (Participant 3: Quote 22).

The Time Frame of Strengths

In this sub-theme, participants appeared to connect the strengths of Curiosity, Gratitude and Hope to either the past, present, future, or a combination of these time frames. This seems to inform how psychologists use them in therapy, which is brought into focus later on in this section. Participants agreed that *Curiosity* is situated in the present moment as well as in the future. Participant 2 stated that [curiosity] "helps you focus on the positive in the here and the now" (Participant 2; Quote 18). Participant 3 added that "the strength of curiosity drives certain people into making life decisions that others would avoid" (Participant 3; Quote 19). Participant 1 stated that the strength of *Gratitude* is used when reflecting on personal achievements in the past, and appreciating the present moment. Participant 4 concurred, adding that "drawing up a list of achievements" (Participant 4; Quote 61) can act as emotional leverage when facing other challenges. *Hope* on the other hand entails envisioning what is yet to come. Participant 3 stated: "Hope seems to bring thought together in a coherent picture, or narrative, or plan for ordering their expectations for the future" (Participant 3; Quote 23).

Participants' perceptions of the strengths of Curiosity, Gratitude and Hope seemed to confirm the significance of these strengths and the role they play in the adaptation process of AEPs. Contextualized to the reality of the AEP, the reflections of participants suggest that each strength has a specific description or working definition and appears to be linked to a specific time frame.

The Positive Impact of Strengths

This theme is based on the positive impact that strengths of Curiosity, Gratitude and Hope have on AEPs' daily experiences as well as contributing to a sense of personal growth.

Positive Experiences of Strengths

Participants reported that positive experiences are associated with all three of the strengths mentioned above. One participant commented that "the positive experience of new things would soften the more severe challenges" (Participant 3; Quote 16), which suggests that the strength of Curiosity will have a positive effect on facing the daily challenges of adjusting to a foreign environment. International relocation signifies a traumatic life event that can often cause AEPs to feel uncertain, insecure, anxious and fearful (Botha, 2020). In line with this, another participant stated that Curiosity "acts as a positive counterweight to anxiety and fear" (Participant 2; Quote 11), suggesting that this strength plays a significant role in AEPs' successful adaptation abroad. With respect to the positive experiences that Gratitude fosters, it was said that "gratitude helps people feel more positive emotions, relish good experiences, improve their health, deal with adversity, and build strong relationships" (Participant 2; Quote 22). Hope appears to be the strength that counteracts despair by fostering optimistic expectations that ultimately lead to meaningful experiences (Participant 2; Quote 25).

Personal Growth

Personal growth related to both Curiosity and Gratitude entailed making informed life decisions and overcoming fear and anxiety. One participant shared that "curiosity can open new doors and help [the AEP] to explore new possibilities and therefore make better informed choices" (Participant 2; Quote 6). Participants suggested that Gratitude leads to coping better in the face of challenges and being more grateful due to exposure to negative life events. Another participant emphasized the "importance of gratitude as a dimension for happiness, personal growth and success" (Participant 4; Quote 4). In accordance with Participant 4, Participant 3 affirmed that practicing gratitude in the AEP's new environment, can result in "a possible growth experience through adversity and emotional memory recall - 'I can remember that when I was grateful that I felt better' or 'let me find something to be grateful for and then experience gratitude intentionally'" (Participant 3; Quote 12). Although participants assert that practicing these strengths contribute to personal growth, it was also mentioned that the "growth mindset of a person enhances her well-being and resilience" (Participant 2; Quote 8). Simultaneously, "it is often in the evaluation of a real event that the deep experiences are realized" (Participant 3; Quote 41).

Therapeutic Engagement and Goal-Setting

In addressing research question 2, therapeutic engagement refers to the aspects that practicing psychologists believe to be important when consulting with an AEP. Participants pointed out that a realistic initial assessment of context is imperative, and that it naturally leads to setting goals.

Assessment of Context

The first aspect of therapeutic engagement is an assessment of the AEP's context. Participant 2 suggested that the starting point of the therapeutic process should be a "realistic initial assessment of personal resources and of external conditions and resources; (Participant 2; Quote 60). Participant 4 echoed that it is very important to know what the current context of the AEP is, and especially "how much autonomy or choice the individual has to work with" (Participant 4; Quote 48). According to this participant, this information "would then set the tone with regards to how prepared the AEP can be prior to arriving to their new post, i.e., using their forethought to create their future" (Participant 4; Quote 49). Many AEPs feel like they are "trailing" partners whose needs are not considered in the assignment contract and have to become stay-at-home parents in the host country as they had to give up their careers in their home country (Botha, 2020). Participant 4 highlighted the fact that psychologists should "encourage the AEP to find out what the benefits [of the assignment] are so that she can be prepared for the adventure ahead and set up some goals" (Participant 4; Quote 50).

Setting Goals

In addition to the initial assessment, psychologists highlighted the importance of taking the next step in therapy, and that is setting goals with AEPs. In line with the time frame of Curiosity, Gratitude and Hope, goal-setting starts with a deliberate focus on the present moment and current context of the AEP. Thus: "Actively embrace the here and the now, creating a sense of future that allows the family to enjoy the new adventure" (Participant 3; Quote 43). Participant 1 highlighted: "AEPs who naturally (or deliberately) incorporate gratitude, curiosity and hope into their lives are more likely to notice the things that are going well, [and] assign more meaning to them and possibly act in ways that confirm and elicit further such experiences" (Participant 1; Quote 10 and 11). Participant 3 agreed and added that "the deliberate focus on life content that leads to gratitude leaves people feeling less vulnerable in times of challenge" (Participant 3; Quote 3), which suggests that conscious optimism in the present moment leads to feeling stronger in times of adversity. However, participants do not proclaim that a deliberate focus on all things positive will do away with challenges. Rather, in highlighting "intentional and mindful focus on what is good, would minimize the focus on the obvious challenges" (Participant 3; Quote 29).

Envisioning the goal connects the present with the future, similar to strengths of Curiosity and Hope. This enables AEPs to increase their awareness of what they wish themselves to achieve in the future, which is "one of the best ways to have hope" (Participant 2; Quote 53). In the context of being an AEP in a foreign country, one participant suggested that "AEPs should develop the mindset of approaching their situation with the intention of discovering something useful that can help them to live a more fulfilling and interesting life" (Participant 2; Quote 37). Participants emphasized the fact that AEPs have

their own hopes and dreams, that are just as relevant as the other family members' hopes and dreams. Envisioning the goal is to be aware of "what [the AEP] is hoping for and what [the AEP] would like from the experience" (Participant 3; Quote 39).

Facilitating AEPs' Well-Being Through Strengths and Resilience

The final theme that emerged from participating practitioners' reflections on the present model refers to the facilitation of AEPs' well-being through strengths and resilience. This theme is therefore directly related to research question 2.

Cultivating Strengths and Resilience

As can be seen from the results above, participating psychologists' reflection confirmed that the strengths of Curiosity, Gratitude and Hope as well as Resilience play vital roles in AEPs' adaptation process and life abroad. They furthermore concurred that these elements or concepts can be cultivated and suggested a number of practical ways in which this could be achieved through informed intervention. The four psychologists who participated in the study appeared to have different therapeutic approaches and techniques that they utilize when consulting with AEPs. All of these techniques are aimed at fostering strengths, resilience and ultimately well-being of AEPs. Approaches included solution-focused techniques such as *best hopes, resource talk, preferred future description, scaling questions* and *invitation to notice details*. Other techniques that participants used were, among others, vision boards, journaling, jar of visions, reading and gaining knowledge, and meditation. In addition to the therapeutic techniques mentioned above, participants pointed out alternate ways in which to cultivate strengths of Curiosity, Gratitude, Hope as well as AEPs' levels of resilience.

One participant stated that "*Curiosity* would probably the most obvious strength that I would expect to be present in this context [expatriation]" (Participant 3; Quote 14). According to another participant, "Curiosity can be cultivated by challenging clients to be open to new experiences and to remember to never stop learning and growing – which is the most exciting part of being alive" (Participant 2; Quote 36). Participant 2 furthermore suggested that psychologists can assist AEPs in cultivating curiosity in a number of ways, e.g., by motivating her to always ask questions and immerse herself in reading up on everything about the host country. Participant 3 agreed, and added that curiosity "can be enhanced by having sufficient information about where you are going, [and asking questions such as] 'What will we experience that is unique to our new destination?' [and] make a list of all the things that you want to do in your new city/country" (Participant 3; Quote 32). Once the AEP has arrived in the host country, one participant suggested that "families should be encouraged to participate in as many things as they can and to regularly talk to natives with the aim of trying to understand their world and viewpoints. Encourage families to form friendships. Demonstrating curiosity towards someone is a great way to build closeness with them" (Participant 2; Quote 38). In addition, the following: "The excitement and positive experience of travel and exposure to new cultures can of course just lead to easy and realistic gratitude. Just being grateful for the privilege and the experience could also be a logical explanation for the presence of gratitude" (Participant 3; Quote 13).

Participants proposed that *Gratitude* can be cultivated by introducing intentional, expressive practices to AEPs, such as rituals, mindfulness, deliberate focus on the positive, and also initiating self-care techniques. Participant 3 emphasized the importance of teaching AEPs that "intentional gratitude changes the emotions that they feel in the present and that it can be done wherever they are, the prerequisite being that they have to do it!" (Participant 3; Quote 30). Another participant echoed that gratitude can be cultivated, irrespective of where in the world they are, simply by "noticing details of x+1 [recognizing the positive] happening in their lives" (Participant 1; Quote 16). Further, participants pointed out that gratitude can be cultivated within the AEP's belief system, by prayer, meditation or a mindful focus on the feeling of gratitude. Another participant shared that she would "encourage the [AEP] to envision with hope … then sit in the gratitude of the present moment, get comfortable with the unfamiliar as the new knowledge the [AEP] gains in the unfamiliar will help her discover the 'how to's'" (Participant 4; Quote 63).

Hope can be cultivated by utilizing this strength as a personal resource or coping mechanism. Participants pointed out that most AEPs are able to find hope in something and that it is of great importance to "explore their best hopes from the expatriate assignment in detail" (Participant 1; Quote 11). Cultivating hope seems to correlate with goal-setting, as described in Theme 2. This is further highlighted by Participant 2, stating that "being able to see how the steps you are taking will lead to desired change is critical to having hope" (Participant 2; Quote 48). However, participants maintained that "in order to have hope, it is important to make sure that the vision the AEP has for herself is realistic. If not, it may cause hopelessness" (Participant 2; Quote 51). Other ways that appeared to cultivate hope, were to motivate AEPs to "practice mindfulness while doing acts of kindness and in your everyday life" (Participant 2; Quote 57), turn to their faith, and also spend time with people who have been through a similar experience.

There was only one participant who mentioned how the psychologist can assist in promoting the AEPs' levels of resilience, stating: "For bounce back ability I get them to draw up a list of achievements that they can leverage off emotionally when faced with a challenge" (Participant 4; Quote 61). This example suggests that by shifting the focus on the positive, the AEP will feel stronger.

In addition to the above-mentioned suggestions regarding therapeutic strategies for the enhancement of these strengths in AEPs and thereby increasing their adaptability to the expatriate context, participating psychologists identified two important

aspects. These included the important role of organizational support and the support received from other important interpersonal and community relationships.

Organizational Support and Other Supportive Relationships

In an attempt to help facilitate AEPs' well-being, participants referred to the role that organizational support and other supportive relationships play.

As previously mentioned, the AEP plays a pivotal role in determining whether the international assignment is successful or not. It is a known fact that expatriate failure has a detrimental effect on cost-to-company. Participants expressed the importance for organizations (henceforth referred to as MNCs) to offer psychological support to AEPs prior to expatriation as well as during the period abroad. However, participants however pointed out that there appears to be a lack of, or insufficient support being offered to AEPs. One of the practicing psychologists who participated in the current study had been an AEP until 2018. She stated the following: "I'm told that in the past there was a person at head-office that tracked and kept up to date on each expatriate and their family. This individual had an in-depth knowledge of each family and their needs and I'm told offered invaluable support to the spouses. Over time this person was either retired or made redundant. I suspect that this individual's role was merged into a general department and/or left to in-country personnel to deal with" (Participant 4; Quote 41). In addition, "I've never really received any company AEP type support" (Participant 4; Quote 42).

She furthermore pointed out that the contract of employment should be taken into account, stating that "[contractual information] is relevant though as it affects the AEP's experience" (Participant 4; Quote 27). According to this participant, contractual elements that appear to be important to AEPs included housing; transport; job security of the employee; living expenses; medical aid; tax deductions; security; schooling and opportunities such as studying, working or volunteering in the host country (Participant 4; Quotes 29–38). Participant 3 agreed and suggested that all of the above should be considered prior to expatriation, to "avoid leaving the post as an alternative to resolving the crisis there" (Participant 3; Quote 45).

Participants pointed out that there are other supportive relationships that also contribute to the facilitation of AEPs' well-being, such as shared AEP experiences, family relationships and building networks in the host country. This seems to correlate with the findings in the previous phase of this study (Botha, 2020). One participant stated that "the community becomes the support network that [AEPs] would have had back home" (Participant 4; Quote 44). Participants also emphasized the value of joining various expatriate groups in the host country and on social media. It appears as though fellow AEPs can motivate, empower and support one another (Participant 4; Quote 43). Most participants emphasized the importance of the family spending time together in the host country (Participant 2; Quote 38).

DISCUSSION

Outline of Results

The practicing psychologists' reflections and insights based on their professional experience highlighted the pivotal role that strengths of Curiosity, Gratitude and Hope and personal levels of resilience play in not only the AEPs' adjustment process abroad, but also on their mental health. It is clear from their reflections that each strength has a specific role to play within the context of expatriation and is connected to a specific time frame. Where Curiosity was situated in the present moment and in the future, Gratitude was used when reflecting on achievements in the past and appreciating the present moment. Hope entailed envisioning what is yet to come, and was thus associated with a futuristic time frame. As mentioned in the results section, when considering the time frame connected to the above-mentioned strengths, participating psychologists pointed out that interventions had to start with a deliberate focus on the present moment, i.e., the current context of the AEP. In practice, this would imply that by establishing the starting point of the intervention, the opportunity is created to reflect on previous achievements, ascribe meaning to them in the present moment and set goals for themselves (as AEPs). By reflecting on previous achievements and ascribing meaning to them, the strength of gratitude is used, whereas setting goals incorporate strengths of curiosity and hope.

In turn, an increased awareness of what AEPs' perceived as personal character strengths as well as challenges they successfully faced in the past, resulted in personal growth. This affirms that strengths can be cultivated and that the enhancement of strengths will have a positive effect on AEPs' levels of resilience and overall well-being. The findings of this study indicate that not many psychologists deliberately focus on the enhancement of resilience. Panter-Brick and Leckman (2013) describe resilience as "the process of harnessing biological, psychosocial, structural, and cultural resources to sustain well-being" (p. 333). As fellow psychologists we have to take note and challenge ourselves to explore ways to use our clients' unique resources with the purpose of enhancing resilience and ultimately increase well-being. Facilitating the strengths of curiosity, gratitude and hope seems to be especially relevant within the context of expatriation.

In addition to the enrichment of strengths and resilience to ultimately affect mental health, organizational support along with other supportive relationships (e.g., shared AEP experiences, family relationships and building networks in the host country) were considered as key elements in AEPs' adaptation process and their mental health abroad. Furthermore, the findings of this study indicate that MNCs could experience better business outcomes through particular AEP supportive interventions, as employee's performance at work is likely to improve when he receives moral support from the AEP and his family (Lauring and Selmer, 2010). This implies that supportive interventions for AEPs are of great importance, but also that it can possibly be an easy and cost- effective way for MNCs to increase their employees' productivity and to improve the company's financial

gain. Once again, the relevance of AEPs' mental health is affirmed. To be able to support the working partner, the AEP needs to feel strong.

Practical Implications

As mentioned earlier, the AEP plays a fundamental role in not only the decision-making process prior to relocation, but also during the period abroad. In order to ensure successful expatriate assignments, it is of utmost importance that MNCs consider the needs of AEPs in the contract between the company and the working partner and that they offer them the appropriate psychological guidance and support while abroad. The challenges that MNCs, the working partner, the AEP and the family face during expatriation cannot be underestimated. The findings of an international study done by Lazarova et al. (2015) indicated that AEPs felt that "the support they received was largely inadequate (p. 9). To our knowledge, only one study has been done exploring the preparation, support and training requirements of South African expatriates, their spouses and families (Vögel et al., 2008). More than 10 years later, the results of the above-mentioned study are still relevant, as South African AEPs neither receive the preparation nor the psychological support they need. Psychological guidance and support can be provided by psychologists who regularly consult with working partners, AEPs and their families. As mentioned above, it is important that psychologists start with a thorough assessment of the current context of the AEP, where after personal expectations and goals can be put forward. By creating a solid starting point for the therapeutic intervention, the foundation is laid to incorporate strengths, enhance resilience and increase well-being.

Limitations and Recommendations

It is important to note a few important limitations of this study. First, the sample group was relatively small ($n = 4$). Although the number was offset by the fact that there was representation from all three registration categories (i.e., clinical counselling and industrial psychologists) that often work with expatriates, and the large degree of overlap between practitioners' reflections indicated a degree of data saturation, the possibility exists that participants' respective reviews might not be as comprehensive as a larger sample groups' review would have been. Second, while not necessarily a limitation, it should be noted that only practicing psychologists were included in the sample group, thus excluding human resource personnel of the MNC, business coaches or other counsellors. Insights from the MNC and other counsellors were therefore not included in the study and they may have provided valuable insight. Another possible limitation was that a simplified version of the path model (see **Figure 2**) was provided to participants, and this model did not include the strength of Humility that appeared to be negatively associated with well-being (phase 1). Despite the negative association between Humility and well-being, the researchers wanted to explore constructs that contribute to greater mental health.

It can be proposed that this study be expanded by including influential role players and obtaining insight from a human resource perspective. Our results clearly suggest that MNCs consciously include AEPs in conversations and decision-making prior to relocation, and that they would benefit from being mindful of not only the factors that could have a negative effect on AEPs levels of resilience or well-being abroad, but also of the aspects that could potentially contribute to greater mental health. It is thus proposed that proactive attention to AEPs' mental health will benefit all parties involved, including the AEP, the working partner (expatriate), their children (if applicable). It is a well-established fact that the happiness or contentment of AEPs is a determining factor in the success or failure of the expatriate assignment. Perhaps most importantly from a business point of view, and especially within a context of an ever-increasing number of expatriate assignments, the mental health of AEPs should be regarded as top priority.

CONCLUSION

The aim of the current study was to qualitatively review a proposed quantitative model with a panel of practicing psychologists who provide counselling services for South African expatriates and accompanying expatriate partners (AEPs). The objective was firstly to ascertain why these participants thought strengths of Gratitude, Curiosity and Hope were positively associated with AEPs' personal levels of resilience and self-perceived well-being, and secondly, the study aimed to determine how these participants would, from their experience in working with AEPs, could potentially cultivate these strengths and AEPs' resilience in therapy, and ultimately facilitate greater well-being and successful adjustment abroad. Participants confirmed that within the context of expatriation, all three strengths play important roles in the AEPs' resilience and well-being abroad. The process of expatriation denotes change and embarking into the unknown. The strength of Curiosity is fueled by change and the exposure to new experiences. Gratitude referred to the ability to recognize the goodness in life, and was also described as a coping skill, especially during challenging times. Further, it was evident from participants' reflections that people who practice Hope, naturally trust and have faith that things will work out, despite their current reality of approaching the unknown. Participants furthermore pointed out that these strengths were characterized by specific time frames, connecting the AEP either to the past, the present, the future or a combination of these. As mentioned in the results section, the participants appear to have different therapeutic approaches and techniques aimed at fostering strengths, resilience and ultimately well-being of AEPs. However, it was evident that practical strength-based techniques were incorporated into all four participants' reflections. This study highlights the important role that both MNCs and psychologists should play in ensuring successful adaptation of AEPs. By providing AEPs with

sufficient guidance and psychological support, it is proposed that the practical therapeutic techniques and approaches suggested in this study possibly will contribute to the success rate of expatriate assignments.

AUTHOR'S NOTE

This article served as a partial requirement for the TB's PhD degree. JP was the promotor and KB the co-promotor.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Health Research Ethics Committee (HREC), North-West University (Potchefstroom Campus), South Africa. Ethics number: NWU-00362-16-A1. The participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

TB was responsible for setting up the research design, writing the literature review, as well as the process of data collection and data analysis. JP and KB guided the research process, edited and co-authored this article. All authors contributed to the article and approved the submitted version.

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Savoring Interventions Increase Positive Emotions After a Social-Evaluative Hassle

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Achieving a high quality of life is dependent upon how individuals face adversity. Positive psychological interventions are well-suited to support coping efforts; however, experimental research is limited. The purpose of the current research was to examine whether different savoring interventions could increase important coping resources (i.e., positive emotions) in response to a social-evaluative hassle. We completed an experimental mixed subject design study with a university student sample. All participants completed a hassle induction task and were then randomly assigned into different intervention groups. Positive emotion ratings were collected at three points in time (baseline, post-induction task, post-intervention). Results revealed a significant time x intervention interaction effect, such that individuals in the savoring the moment intervention reported higher levels of positive emotions (at post-intervention) compared to individuals assigned to the true control group, guided imagery control group, and savoring through reminiscence intervention. Such findings represent a significant extension to savoring theory and offer support for savoring the moment exercises as a primary prevention strategy to bolster effective responses to social-evaluative hassles.

Keywords: savoring interventions, stress, social-evaluative hassles, savoring dimensions, positive emotions

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INTRODUCTION

Rationale for Study

Positive psychological interventions (PPIs) are systematic attempts to foster a higher quality of life by activating and enhancing positive emotional states (e.g., joy, enthusiasm, pride) and character strengths [e.g., social intelligence, prudence, kindness (Seligman and Csikszentmihalyi, 2000; Quoidbach et al., 2015)]. Oftentimes, mental health clinicians employ PPIs through straightforward exercises including, but not limited to, guided imagery, narrative-based, and positive memory recall tasks (Bolier et al., 2013). Experimental findings pinpoint PPIs as effective mechanisms by which mental health practitioners can increase happiness and decrease depression (Seligman et al., 2005), reinforce social connectivity (Kerr et al., 2015), and minimize engagement in substance-use behaviors (Krentzman, 2013).

Interestingly, recent experimental evidence, stemming from randomized clinical trials (RCT), suggests PPIs are particularly effective in minimizing stress-related outcomes for different subpopulations

of people. Mindfulness, resilience, character strength, and happiness training programs are just a few PPIs effective in minimizing stress-related outcomes (Ferrandez et al., 2021). As a collective group, numerous meta-analytic studies reveal relatively stable effect sizes for the impact of PPIs on stress-related outcomes (Carr et al., 2020; Hendriks et al., 2020; Ferrandez et al., 2021). Despite slight variation in selection criteria and RCT study quality, evidence consistently indicates PPIs demonstrate a moderate effect size in minimizing stress-related outcomes and these beneficial gains are maintained for at least 3 months (Carr et al., 2020). Despite these findings, there are still large gaps in evaluating *how* PPIs contribute to different well-being outcomes, especially in the context of stress and adversity (Fjorback et al., 2011; Quoidbach et al., 2015).

Purpose of Study

Moving forward, identifying how PPIs foster mechanisms of action or internal resources to overcome stress and adversity is a key step in filling gaps in the positive psychological literature. Notably, emerging lines of examination suggests PPIs (e.g., Processing of Positive Memories Technique; Contractor et al., 2021) cultivate important psychological resources (i.e., positive emotions, adaptive thoughts, enhanced retrieval of positive memories) deemed useful in navigating through and growing from different facets of stress and adversity (Wong, 2011), yet little experimental research exists to corroborate this theoretical position. Guided by the tenets of the Broaden and Build model (Fredrickson, 2001), we examined whether different savoring strategies help individuals increase positive emotions after the experience of a social-evaluative hassle.

Positive Psychological Practices to Manage Hassles

Hassles, episodic and unexpected strains on daily living, substantially affect the stability of a person's cognitive-emotional functioning (Lazarus and Folkman, 1984; Serido et al., 2004). Research suggests the effects of hassles may provide a better explanation for the occurrence of debilitative psychological outcomes, when compared to negative life events (Lazarus and Folkman, 1984; Serido et al., 2004). Hassles are associated with a concerning set of psychological outcomes including relationship distress (Falconier et al., 2015), psychopathology (McIntosh et al., 2010), and reduced engagement in life-promoting behaviors (Jacob et al., 2014).

The emotional consequences of physiological strain are important in explaining the debilitative effects of hassles on different mental health outcomes. Research consistently demonstrates hassles contribute to diminished levels of positive emotions (e.g., Dowd et al., 2010). If these dysregulated emotional responses persist, individuals are more likely to exhibit vulnerability to a wide range of psychological difficulties (Sheppes et al., 2015). Given this pattern of findings, researchers are strongly encouraged to empirically examine mechanisms by which individuals can effectively regulate emotional responses to hassles (Robins et al., 2012; Cruess et al., 2015).

Currently, most positive coping programs are effective in reducing negative emotions through a wide array of interventions [e.g., loving kindness meditation (Feldman et al., 2010), mindfulness-based stress reduction (Keng et al., 2021) mindfulness smart phone applications (Economides et al., 2018), relaxation techniques (Hintz et al., 2015)]. Although the effects of positive coping programs on negative emotions are quite clear, there is mixed evidence to suggest mindfulness-based and relaxation-based stress management programs increase positive emotional outcomes. For instance, a handful of studies offer evidence for increases in positive emotions after completing different mindfulness (Economides et al., 2018) and meditation (Feldman et al., 2010) stress programs. However, other studies report decreases in positive emotions after completing short-term mindfulness-based and relaxation exercises (Lancaster et al., 2016). To explain these findings, researchers speculate some individuals may experience some mild discomfort because of a lack of familiarity with mindfulness or abstract components associated with brief mindfulness tasks, leading to small decrements in positive emotional outcomes (Lancaster et al., 2016). Considering these mixed findings, more research is needed to determine best pathways to increase and prolong positive emotional states after the experience of stress.

Savoring, Positive Emotions, and Hassles

Increasing and sustaining positive emotions are fundamental components of resilience and thriving (Tugade and Fredrickson, 2007). Yet, when compared to negative emotions, research is only just emerging on how positive emotion interventions help bolster well-being in the face of adversity (Folkman, 2008). According to the Broaden and Build model (Fredrickson, 2001), positive emotions broaden momentary thought-action tendencies, which are characterized by an openness to diverse perspectives and ways of responding to stimuli. Essentially, positive emotions alter individuals' cognitive processing style, making it more flexible, integrative, creative, considerate, and efficient in examining different options and opportunities for action. Moreover, broadened mindsets often build enduring personal resources (e.g., resilience, social support, positive re-appraisal skills), which individuals can use to manage future conflicts, challenges, and threats. These mindsets and resources are paramount in navigating hassles in a resilient manner (Tugade and Fredrickson, 2007). Specifically, marshaling positive emotions in the face of adversity increases resources needed to thrive (Zautra et al., 2005).

Unfortunately, the experience of hassles may restrict an individual's ability to generate and sustain positive emotions, which in turn undermines the psychological benefits (e.g., creativity, optimism) associated with positive emotions. Interestingly, the experience of hassles gives rise to both negative and, paradoxically, positive emotions (Zautra et al., 2001, 2005), though negative emotions accelerate at a higher rate. Because of this skewed ratio, individuals who experience of hassles, particularly those containing two or more social-evaluative stressors, often report decreases in the production of creative ideas and solutions (Byron et al., 2010), which leaves them vulnerable to maladaptive health outcomes (Cheng et al., 2014; Waugh and Koster, 2015). Findings such as these underscore the need for researchers to develop and empirically validate

programs designed to increase positive emotions in the face of hassles.

Savoring is an emotion regulation process whereby individuals generate, maintain, or enhance positive emotions through mindful appreciation of different life experiences (Bryant, 2003; Bryant and Veroff, 2007). Individuals can regulate positive emotions by employing savoring strategies associated with three different time dimensions: mentally reflecting upon past positive experiences (reminiscing), mindfully attending to positive experiences in the moment (moment), and contemplating positive experiences likely to occur in the future (anticipating; Bryant, 2003). Savoring is associated with several attributes known to promote a higher quality of life, especially resilience (Smith and Hanni, 2019). Moreover, research clearly highlights savoring as an important process in helping individuals maintain and increase positive emotions during minimal stress contexts (Jose et al., 2012).

However, evaluating the effects of savoring on stress is an emerging line of study and there is a stark need to understand how savoring affects positive emotions during adversity and challenge (Samios and Khatri, 2019). One reason for the lack of empirical investigation into savoring as a positive stress management strategy is the detrimental effects of stress; navigating through stress is cognitively taxing, making it difficult for individuals to notice, attend to, and savor positive emotions (Bryant and Smith, 2015). This position negates the idea of savoring as a central component in stress management efforts. Yet, meta-analytic and experimental studies highlight the beneficial effects of noticing, leveraging, and extending positive emotions in managing different types of stressors (Moskowitz et al., 2012; Zhang and Han, 2016). Considering how effective savoring strategies are at increasing the number and amplifying the intensity of positive emotions (Wilson and MacNamara, 2021), it seems warranted to evaluate savoring as an effective path by which people navigate through or overcome daily hassles.

Savoring interventions appear well suited to help individuals recover and extend positive emotions after a stressful event. Notably, savoring is part of the attentional deployment family of regulation tactics, those associated with selecting and modifying situations to increase positive emotions without changing the environment (Quoidbach et al., 2015). Such tactics often receive the most praise in terms of effectively regulating positive emotions across different contexts (Quoidbach et al., 2015). Second, savoring seems well suited to help individuals quickly access and increase positive emotions to initiate resilience-based processes during and after a social-evaluative hassle. Within the prevailing literature, the process of savoring generally coincides with effective efforts to cope with episodic stressors and hassles (Bryant and Smith, 2015). In fact, some researchers label savoring as a meaning-focused coping response, a method where individuals attend to positive events and emotions as a way to offset the debilitative effects of stressful life events (Folkman, 2008).

This emerging position is supported by a handful of studies. Specifically, coping with loss or managing challenging circumstances may paradoxically increase awareness and activation of positive attributes and strengths for individuals to savor. For example, a large proportion of caregivers are able to identify and celebrate unique aspects of their service duties amidst continuous hassles (Moskowitz et al., 1996). Specifically, caregivers demonstrate the capacity to savor positive experiences grounded in friendship and relish life's small delights (e.g., a sunny day), leading to increases in positive emotional functioning. Other studies suggest savoring small blessings and positive experiences during the course of episodic hassles increases positive emotions, which then can be used to bolster effective coping outcomes (Folkman and Moskowitz, 2000). Finally, the use of savoring through behavioral expressions (i.e., smiling, laughing) while mourning the death of a partner at 6 months post-loss reduces a wide range of stress and grief-specific symptoms (Bonanno and Keltner, 1997). Similarly, savoring symbolic memories and sharing positive experiences with others after the loss of a loved-one (Samios and Khatri, 2019) may help individuals change the meaning behind their experience of stress and grief and provide some temporary relief in the form of peaceful and warm emotions.

Current Study

Moving forward, experimental designs are needed to clarify if and how savoring contributes to positive coping efforts. Specifically, it is important to identify whether savoring can generate positive emotions in the face of social-evaluative hassles, events that threaten social esteem and status (Byron et al., 2010). To date, studies highlight savoring as an effective mechanism by which individuals can generate, maintain, and enhance positive emotions (e.g., Hurley and Kwon, 2013). However, most of these studies examine the effects of savoring in the context of positive life events. No known study has experimentally examined the causal link from savoring to positive emotions in the context of social evaluative hassles.

In addition, it is important to examine the effectiveness of different savoring strategies in increasing positive emotions after a hassle. To date, research is mixed regarding whether specific savoring strategies are more powerful in eliciting positive psychological outcomes. On one hand, research suggests practicing diverse savoring strategies is the best way to maximize well-being (Quoidbach et al., 2010); however, an emerging set of studies also highlight savoring in the present moment as more beneficial than savoring through the past (reminiscing) and future (anticipation). Time-foci interventions trigger different mechanisms for increasing positive outcomes (Wellenzohn et al., 2016). Differential time-foci effects appear particularly influential in short-term interval studies, although past-oriented interventions may be less effective in increasing positive emotions (Quoidbach et al., 2015). Taken as a whole, these findings highlight the potential benefits of using present-focused savoring interventions (savoring the moment) over past (savoring through reminiscence) and future-based (savoring through anticipation) interventions in eliciting short-term increases in positive emotions.

Given these findings, the purpose of the current study was to experimentally examine the differential effects of savoring dimension interventions (anticipation, moment, reminiscent) on positive emotions after a social-evaluative hassle. By evaluating

savoring in this context, we hope to provide an empirical foundation by which a unique set of positive psychological skills can enhance situation-based coping efforts and resilience development. In light of applicable theory and empirical work, we hypothesized that individuals participating in a savoring intervention after experiencing a social-evaluative hassle would report higher levels of positive emotions compared to individuals assigned to the control conditions. In addition, we predicted this effect would be strongest for individuals assigned to the savoring the moment intervention.

MATERIALS AND METHODS

Participants

The sample consisted of 145 students enrolled in a large southeastern university in the United States (US). In terms of inclusionary criteria, participants were required to be 18 years of age, which is the youngest age by which US citizens can provide consent to participate in research activities in the state in which the study took place. In addition, in order to ensure data quality, we included inclusionary criteria based on deviant response patterns. Specifically, to be considered in the final sample, participants needed to answer all validity check questions correctly and complete at least 90% of the survey items. All participants met these data quality criteria and were subsequently included in the final sample.

The sample included 107 (73.8%) women and 38 men (26.2%). Participants ranged in age from 18 to 25, with an average age of 19.35 ($SD = 1.41$) years. Participants self-identified as White/European American ($n = 88$, 60.7%), Black/African American ($n = 38$, 26.2%), multiethnic ($n = 14$, 8%), Mexican American/LatinX ($n = 4$, 2.8%), and Asian American ($n = 2$, 1.4%). In terms of academic information, a large majority of participants ($n = 117$, 80.6%) reported a desire to pursue a degree in psychology, with other students pursing degrees in other social science (e.g., sociology, criminal justice) and health-related (e.g., kinesiology, nursing) fields. Also, participants were dispersed across different years of their academic experience. Notably, participants identified as first-year students ($n = 47$, 32.4%), second-year students ($n = 62$, 42.8%), third-year students ($n = 28$, 19.3%), and fourth-year students ($n = 8$, 5.5%). Participants received course credit and/or extra credit for participating.

Procedure

The university's Institutional Review Board approved the study in advance of data collection. Data were collected in a secluded lab space containing a comfortable sofa and wall mounted video/audio equipment. Upon arrival, participants read and signed an informed consent sheet. They were told the study consisted of several self-report, verbal, and guided imagery tasks. Once participants decided to volunteer for the study, they completed the first administration of the Positive and Negative Affect Scale – Positive Affect (PANAS-PA; see below). Physiological biosensors were then clipped onto the participants' fingers (see below). After a two-minute adaption period, all participants completed the hassle induction task (see below). Following the completion of the hassle induction task, participants completed the second administration of the PANAS-PA and were randomly assigned to one of five intervention groups. Completion time for each intervention was 15 min. The final administration of the PANAS-PA was given after participants completed the intervention tasks. Finally, given the nature of the study's procedures, all participants were actively debriefed before leaving. As part of the active debriefing process, participants were given a list of free to low cost resources and engaged in a short stream of activity exercise effective in reducing minimal to moderate feelings of distress (Wilson and DuFrene, 2009). Participants completed all tasks in approximately 65 min.

Experimental Design

The study employed an experimental two-way mixed (between and within) subject design to evaluate variation in positive emotions scores. Considering the need to evaluate savoring practices in the face of stressor, especially with non-cross-sectional and correlational designs (Samios and Khatri, 2019), we chose to evaluate our hypotheses using an experimental framework. The underpinning of our design stems from previous experimental work in the positive psychology literature. Notably, given the preliminary nature of the research and the short-lived nature of emotions (Levenson, 2014), we employed a short-wave design consistent with like studies (Chen et al., 2021). Our design also mirrors work from emotion recovery and resilience researchers, who commonly induce negative emotions through a wide range of induction tasks to better determine how different positive psychological interventions can improve positive emotional outcomes (Fredrickson and Levenson, 1998; Tugade and Fredrickson, 2004). We slightly altered this framework to induce stress before manipulating savoring interventions to better understand variation in positive emotion scores. In terms of the stress induction task, we used a social stressor commonly employed in emotion recovery studies (Leger and Charles, 2020) and measured participants' cardiovascular arousal using multiple types of biosensors, consistent with best practices in stress-based experimental studies (Palumbo et al., 2017).

The hassle induction task employed was an adapted version of the Trier Social Stress Test (TSST; Kirschbaum et al., 1993), a common and effective means of eliciting moderate elevations in stress, consistent with the experience of a social-evaluative hassle (e.g., Tugade and Fredrickson, 2004). Participants were asked to prepare for a three-minute speech on an unrevealed topic. Then, participants were left alone for two minutes. When the experimenter returned, participants were informed of the theme of the speech: "Why I am an attractive person?" The participants were also informed their speech may be video recorded and recorded speeches may be shown to age-based peers in another study for evaluation. Then the experimenter left the participants alone for another 2 min. Once the experimenter returned, participants were asked to look into

the video camera and give their three-minute speech. Despite the presence of the video camera, no speeches were videotaped.

Interventions

Participants were randomly assigned to one of five groups: true control ($n = 30$), guided imagery control ($n = 28$), savoring through reminiscence ($n = 27$), savoring through anticipation ($n = 30$), or savoring the moment ($n = 30$). Group names reflected the nature and content of the activity immediately following the hassle induction and details of each intervention are outlined below. Each savoring intervention was targeted to the experience of joy as a means reduce threats to internal validity. Joy was chosen as the targeted emotional experience because aspects of it are well-captured under our identified measure of positive emotions (PANAS-PA). In addition, joy often produces a quieting functioning, a mechanism to minimize the negative effects and maximize the positive effects associated with social-evaluative hassles (Tugade et al., 2014).

True Control

Participants randomly assigned to the true control condition were not given a structured task to complete. The experimenter informed participants she needed to complete a few tasks important to the study and they should sit and process their experience. The purpose of the true control intervention was to simulate natural hassle processing without the aid of a structured exercise. In total, participants were left undisturbed for 15 min.

Guided Imagery Control

Participants randomly assigned to the guided imagery control intervention imagined taking a trip to the grocery store. The experimenter asked participants to find a comfortable position and close their eyes. Then, the experimenter used a script to guide participants through the imagery exercise. The script asked participants to cognitively process the acts of making a grocery list, driving, parking, and selecting needed groceries. A trip to the grocery store was chosen as the theme for the guided imagery exercise because of its common and neutral nature. Employing a guided imagery control is important as some evidence indicates even unremarkable interventions with calm and interactive features may affect relaxation and affective-control efforts (Leviton and Leviton, 2004; Trakhtenberg, 2008). By employing a guided imagery control, we attempted to control for basic intervention processes, which strengthens our ability to determine if savoring interventions positively impact positive emotional states after the experience of a social-evaluative hassle.

Savoring Through Reminiscence

Participants randomly assigned to the savoring through reminiscence intervention completed a memory-building exercise consistent with the practices outlined by Bryant and Veroff (2007, pg. 93). Participants were asked to:

> "Search for a moment where you've found sweetness and joy in your life. I'd like you to recall a memory when you felt really alive. When all struggle from the hassles of daily life just paused for a moment… a moment completely without effort… a moment where you knew yourself, and knew you belonged. It could be something recent or something in the past. Try to call to mind just one memory. It can be a really powerful time or it can be something really simple, just recall a time when you felt joy. See if you can just be there in that memory, just allowing yourself to fall back into that moment of sweetness… lingering just briefly. When re-imagining yourself in this memory, I want you think about why it is important in terms of joy. Recall the memory from the very beginning to the end. Reflect on each person, feeling, and event that contributed to your sense of joy. I would like you to stay within this memory for the next few minutes."

In this guided imagery exercise, participants were encouraged to reflect on unique features of their experience (e.g., personal strengths, interpersonal connections, thoughts) accentuating feelings of sweetness and joy. In total, participants spent 15 min completing the activity.

Savoring Through Anticipation

Participants randomly assigned to the savoring through anticipation intervention engaged in a planning for a positive event exercise (Bryant and Veroff, 2007, pgs. 120–121). Participants developed an itinerary for a weeklong vacation to a desired destination. Specifically, participants were instructed to:

> "Imagine what it would be like to plan the vacation of your dreams. When ready, identify potential destinations and explore what your time there may be like. Imagine what you will hear, see, smell, taste, and feel. Think about who might join you on this vacation and how their presence may contribute to your sense of joy and excitement. In addition, think about what types of activities you might want to engage in while on your vacation and how they might enhance the fun and joy you hope to experience. Finally, think about how this vacation might surpass other experienced vacations in terms of fun, pleasure, and joy. Please imagine yourself in this scenario."

In total, participants reflected on aspects of their planned vacation for 15 min.

Savoring the Moment

Participants randomly assigned to the savoring the moment intervention completed a heightened focus exercise (Bryant and Veroff, 2007, pgs. 116–119). Participants were asked to mentally review their emotions and how their emotions contribute to a good day. Then, participants were given a one page, strength-based passage, "*Your forces and how to use them*" written by Christian D. Larson. The passage consists of 24 lines broken into 6 stanzas, which includes themes of joy and

optimism. With the passage in hand, participants were instructed to:

> "Slowly savor every word and line of the passage deliberately and carefully. Let your mind pause, linger, and wonder over the meaningfulness of the passage. Read the words and lines over and over again to really let the feelings sink in. Again, take your time, be aware of the feelings that the words evoke, and savor the experience of those feelings."

Participants were also asked to specifically reflect on how three of the more joyful lines of the passage (e.g., "*look at the sunny side of everything and make your optimism come true*") strengthened emotions within them in the current moment. These lines were chosen to enhance the awareness and activation of savoring the moment processing. After 15 min, the experimenter ended the focus exercise.

Measures

Cardiovascular Assessments

At the beginning of the experiment, non-invasive biosensors were placed on the fingers of each participant's non-dominant hand to measure two components of cardiovascular activity: *heart rate (HR) and galvanic skin response (GSR)*. These measures were employed to evaluate whether the hassle induction task produced the intended physiological effect. HR is a common estimate of the heart's electrical activity. Elevations in HR are expected when an individual is exposed to arousing stimuli. One HR electrode was clipped onto the participants' ring finger and fluctuations in HR were measured in beats per minute (bpm). GSR is a measure of skin conductance, a process under the control of the sympathetic nervous system. During periods of arousal, individuals experience greater elevations in skin conductance (Villarejo et al., 2012). Two GSR electrodes were clipped onto the participants' index and middle fingers and variation in skin conductance was measured in Micro Siemens (μS) units. Both measures of cardiovascular activity were continuously recorded throughout the duration of the study.

Positive Emotions

At three points during the study (beginning, post-hassle-induction, post-intervention) participants self-reported on positive emotions using the PANAS-PA (Watson et al., 1988) survey. The PANAS-PA is a 10-item measure of positive feelings resulting from positive experiences in one's environment. The PANAS-PA assesses for state and trait indices of positive emotions. In the current study, participants rated the extent they felt interested, excited, strong, enthusiastic, alert, inspired, determined, attentive, proud and active in the current moment. The PANAS-PA is a commonly used measure of positive emotions in experimental studies evaluating the effects of brief positive psychological interventions on well-being outcomes (Feldman et al., 2010). The scale is one of the few measures effective in capturing short-term variation in different positive emotional states (Rogatko, 2009). Moreover, the scale is brief. This is an important consideration as longer surveys may dilute the intended effects of an intervention/manipulation while participants move in-between different tasks.

Participants were asked to rate the degree to which they experienced each dimension of positive emotion on a 100-point scale from 1 (*Very Slightly/Not at All*) to 100 (*Extremely*). The 100-point rating scale is an adaption from the original assessment, which used a 5-point scale. This adaptation was made in light of specific trends in college student responding to positive psychological surveys. Specifically, in some student samples responses to positive psychological surveys tend to be high, with a number of respondents reporting near-maximum or maximum scores (Klibert et al., 2019). This pattern of responding is consistent with the presence of a ceiling effect, which reduces the true range of scores, underestimates variability, and negatively affects estimates of reliability and validity for a specific measure (Uttl, 2005). In order to maximize variability in responses, we choose to adapt the rating scale. We adapted the scale in a manner that is consistent with clinical recommendations in estimating mood (e.g., Subjective Units of Distress Scale; Franklin and Foa, 2014). A total positive emotions score was calculated by summing individuals' responses on each dimension. Total scores ranged from 10 to 1,000 with higher scores reflecting greater positive emotional functioning. The PANAS-PA demonstrates solid internal consistency ($\alpha = 0.89$) and convergent validity with theoretically-related constructs (Rogatko, 2009). In the current study, the PANAS-PA demonstrated excellent internal consistency across different administrations ($\alpha = 0.87$–0.92).

RESULTS

The current study evaluated variation in cardiovascular activity (HR and GSR) at two points (Time 1 and Time 2). The study also evaluated variation in positive emotion ratings at three points [baseline (Time 1), post-induction (Time 2), post-intervention (Time 3)]. Mean and standard deviations for HR, GSR, and positive emotion scores across time points and intervention groups are depicted in **Table 1**.

Sociodemographic Characteristics by Intervention Group

Participants were randomly assigned to five intervention groups (True Control, Guided Imagery Control, Savoring through Reminiscence, Savoring through Anticipation, Savoring the Moment). **Table 2** provides a sociodemographic and academic breakdown of the participants randomly assigned into each group. Regarding gender, we evaluated whether groups significantly differed in terms of gender frequencies using a chi-square analysis. Results revealed no significant differences in gender frequencies for each group, $\chi^2\ (4) = 4.46$, $p = 0.35$.

TABLE 1 | Means and standard deviation scores for heart rate (HR), galvanic skin response (GSR), and positive emotions (PE) across time points and intervention groups.

Intervention group	Time 1			Time 2			Time 3		
	HR	GSR	PE	HR	GSR	PE	HR	GSR	PE
True Control									
Mean	75.929	28901.607	499.9	87.6897	44514.759	429.967	77.966	33341.9655	381.6
SD	15.981	8000.719	179.378	20.633	58721.919	176.389	15.661	5868.725	211.422
Guided Imagery Control									
Mean	81.308	31633.539	472.143	87.222	36110.407	418.454	77.889	35196.629	471.5
SD	20.894	6343.531	187.927	30.419	5021.807	241.324	20.554	5078.068	214.023
Savoring Reminiscence Intervention									
Mean	78.615	27030.039	489.222	75.52	34857.44	426.741	75.72	33819.04	495.852
SD	21.733	8257.114	178.191	21.608	6003.008	186.626	23.596	5277.638	230.439
Savoring Anticipation Intervention									
Mean	80.8	30,548	515.4	88.067	35877.233	462.067	76.9	35447.433	584.3
SD	15.829	7401.949	198.401	26.367	4738.523	233.345	19.148	4639.118	242.174
Savoring Moment Intervention									
Mean	74	28472.448	579.133	80.517	35415.897	510.967	69.8276	34239.931	633.167
SD	18.507	10619.94	190.328	24.423	6049.489	230.34	17.519	6079.216	214.915

TABLE 2 | Sociodemographic and academic class standing breakdown of participants by intervention group.

Demographic groups	Intervention groups				
	True Control ($n = 30$)	Guided Imagery Control ($n = 28$)	Savoring through Reminiscence ($n = 27$)	Savoring through Anticipation ($n = 30$)	Savoring the Moment ($n = 30$)
Gender					
Women	25 (83.3%)	21 (75%)	17 (63%)	20 (66.7%)	24 (80%)
Men	5 (16.7%)	7 (25%)	10 (37%)	10 (33.3%)	6 (20%)
Ethnicity					
White/European American	18 (60%)	20 (71.4%)	14 (51.9%)	19 (63.3%)	17 (56.7%)
Black/African American	11 (36.7%)	4 (14.3%)	9 (33.3%)	8 (26.7%)	6 (20%)
Multiethnic	1 (3.3%)	2 (7.1%)	2 (7.4%)	3 (10%)	4 (13.3%)
Mexican American/LatinX	0 (0%)	0 (0%)	1 (3.7%)	0 (0%)	3 (10%)
Asian American	0 (0%)	2 (7.1%)	0 (0%)	0 (0%)	0 (0%)
Academic Cohort					
1st Year Student	11 (36.7%)	13 (46.4%)	7 (25.9%)	8 (26.7%)	8 (26.7%)
2nd Year Student	12 (40%)	9 (32.1%)	10 (37%)	18 (60%)	13 (43.3%)
3rd Year Student	4 (13.3%)	5 (17.9%)	8 (29.6%)	4 (13.3%)	7 (23.3%)
4th Year Student	3 (10%)	1 (3.6%)	2 (7.4%)	0 (0%)	2 (6.7%)

Heart Rate

As shown in **Figure 1** (left panel), mean HR increased after the hassle induction for all interventions. These results were confirmed with a two-way mixed analysis of variance (ANOVA) on HR with Intervention (true control, guided imagery control, savoring through anticipation, savoring through reminiscence, savoring the moment) and Time (time 1, time 2) as factors which revealed only a main effect of Time, $F(1, 133) = 7.4$, $p = 0.008$, $\eta_p^2 = 0.05$. Neither the effect of Intervention, $F(4, 133) = 1.1$, $p = 0.36$, nor the interaction, $F(4, 133) = 1.2$, $p = 0.31$, were significant. These findings indicate that HR increased from Time 1 to Time 2 consistent with the intended effect and no pre-group intervention differences were detected for HR at baseline.

Galvanic Skin Response

As shown in **Figure 1** (right panel), mean GSR increased after the hassle induction for all interventions. These results were confirmed with a two-way mixed ANOVA on GSR with Intervention (true control, guided imagery control, savoring through anticipation, savoring through reminiscence, savoring the moment) and Time (time 1, time 2) as factors which revealed only a main effect of Time, $F(1, 133) = 12.87$, $p < 0.001$, $\eta_p^2 = 0.09$. Neither the effect of Intervention, $F(4, 133) = 0.61$, $p = 0.66$, nor the interaction, $F(4, 133) = 0.80$, $p = 0.53$, were significant. These findings indicate that GSR increased from Time 1 to Time 2 consistent with the intended effect and no pre-group intervention differences were detected for GSR at baseline. Taken together, these findings suggest the social-evaluative hassle was successful in inducing the desired

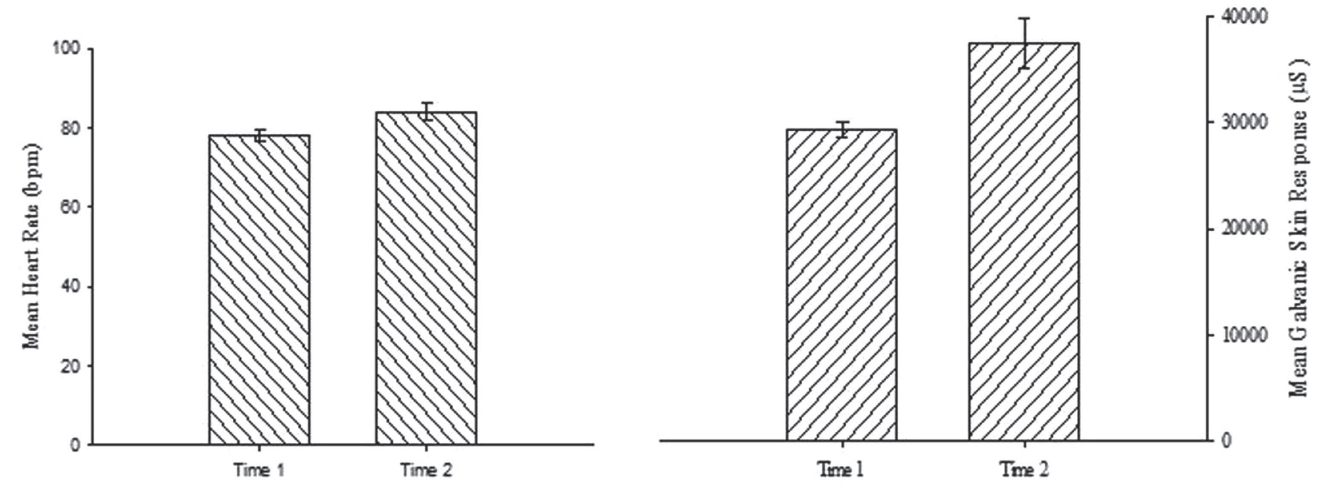

FIGURE 1 | Mean heart rate and galvanic skin response score across Time. Errors bars represent standard errors of the mean.

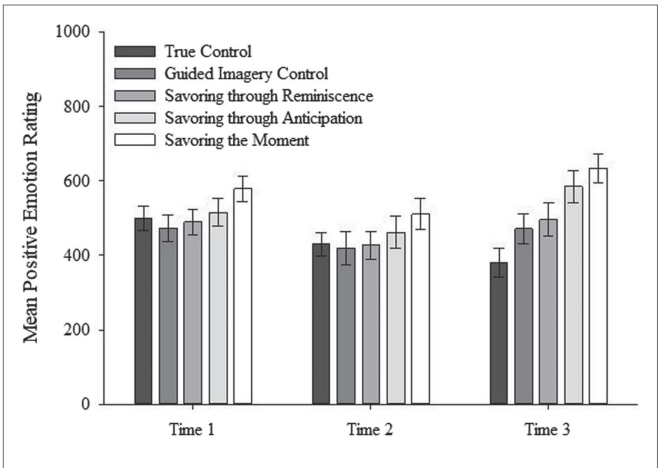

FIGURE 2 | Interaction effect between time and intervention on positive emotions. Errors bars represent standard errors of the mean.

TABLE 3 | Fisher's least significant differences *post -hoc* test at time 3.

	1	2	3	4	5
1. True Control	–	−89.9^{ns}	−114.25^{ns}	−202.7**	−251.57***
2. Imagery Control		–	−24.35^{ns}	−112.8^{ns}	−161.67**
3. Savoring Reminiscence			–	−88.45^{ns}	−137.32*
4. Savoring Anticipation				–	−48.87^{ns}
5. Savoring Moment					–

*ns =not significant, * = p <0.05, ** = p <0.01, *** = p <0.001.*

cardiovascular arousal, which significantly differed from baseline reports.

Positive Emotions

As shown in **Figure 2**, ratings of positive emotions did not differ between interventions for Time 1 or Time 2, but did differ between Interventions at Time 3. These results were confirmed by a two-way mixed ANOVA on positive emotions ratings with Intervention (true control, guided imagery control, savoring through anticipation, savoring through reminiscence, savoring the moment) and Time (time 1, time 2, time 3) as factors which revealed a main effect of Intervention, $F(4, 140) = 2.57$, $p = 0.04$, $\eta_p^2 = 0.07$, a main effect of Time, $F(2, 280) = 16.53$, $p < 0.001$, $\eta_p^2 = 0.12$, and a significant Intervention x Time interaction, $F(8, 280) = 4.53$, $p < 0.001$, $\eta_p^2 = 0.12$. Based on effect size measures (η_p^2), the interaction effect accounted for 16.6% of the differences in positive emotions scores. When the η_p^2 is converted to *Cohen's f* the effect equals 0.45, which is considered large in size (Cohen, 1988).

To isolate the source of the interaction, we conducted separate one-way ANOVAs for each Time with Intervention as a factor. There were no differences in Interventions at Time 1, $F(4, 140) = 1.42$, $p = 0.23$. This suggests participants randomly assigned to different intervention groups reported comparable scores on positive emotions at baseline. There were also no differences in Interventions at Time 2, $F(4, 140) = 0.92$, $p = 0.46$. However, results did reveal a significant difference between Interventions at Time 3, $F(4, 140) = 5.84$, $p < 0.001$. Results of Fisher's LSD *post hoc* tests are shown in **Table 3**. Results demonstrate a pattern of scores which highlights the beneficial effects of savoring, particularly savoring the moment, in generating higher levels of positive emotions post-intervention (time 3). Specifically, in response to a social-evaluative hassle, individuals in the savoring the moment group ($M = 633.17$) generated higher levels of positive emotions when compared to individuals in the true control group ($M = 381.6$), the guided imagery control group ($M = 471.5$), and the savoring through reminiscence group ($M = 495.85$).

In addition, results highlight mixed evidence regarding the beneficial effects of savoring through anticipation on positive emotions. Notably, post-intervention (time 3) results reveal individuals who participated in the savoring through anticipation intervention ($M = 584.3$) reported higher levels of positive emotions compared to individuals assigned to the true control

group (M = 381.6), but not individuals assigned to the guided imagery control group (M = 471.5). Individuals who completed the savoring through reminiscence intervention did not report higher positive emotion scores compared to individuals in the true control and the guided imagery control groups.

DISCUSSION

Recent evidence suggests PPIs are advantageous in terms of helping people thrive in the face of adversity (Wong, 2011); however, no studies, to date, offer experimental support for savoring as an effective method to increase positive emotions after a social-evaluative hassle. Guided by the tenets of positive emotional theories (e.g., Fredrickson, 2001; Zautra et al., 2005), we explored the impact of different savoring interventions in increasing positive emotions after a social-evaluative hassle. In our experimental study, all individuals experienced a social-evaluative hassle as indicated by increased HR and GSR following the hassle-induction activity. Importantly, individuals in the savoring the moment intervention reported elevated levels of positive emotions after experiencing a social-evaluative hassle when compared to individuals assigned to either of the control tasks. To our knowledge, this is the first study to examine the causal effects of savoring on positive emotions in the context of a hassle. Our findings demonstrate the flexibility by which savoring interventions can be employed. Of note, savoring is not only a means of capitalizing on positive life events, it may also be an important component, a meaning-focused coping response (Folkman, 2008), in how individuals increase positive emotions after a hassle.

Our findings also highlight differential effects by which savoring dimensions increase positive emotions in the face of social-evaluative hassles. Consistent with our expectation, savoring the moment appeared relatively superior in terms of increasing positive emotions. Individuals assigned to the savoring the moment task reported higher positive emotion scores when compared to individuals assigned to true control, guided imagery control, and savoring through reminiscence tasks; however, positive emotion scores did not differ between individuals assigned to the savoring the moment versus the savoring through anticipation task, though the difference between the two groups' scores (48.87) is trending in the expected direction.

Neither the savoring through anticipation nor the savoring through reminiscent task was able to consistently generate statistically higher levels of positive emotions compared to the control tasks. For instance, individuals who completed the savoring through anticipation intervention did report higher positive emotions scores when compared to individuals assigned to the true control group, but not to individuals assigned to the guided imagery control group. There are few clear reasons for this pattern of findings. It is possible that the effects of savoring through anticipation interventions may be smaller in size and our study was under-powered to such an extent, we could not detect these smaller effects. Future researchers should re-evaluate our findings with larger sample sizes to better determine if savoring through anticipation interventions are effective in producing higher positive emotion states after the experience of a social-evaluative hassle.

Delineated effects among the three savoring interventions are consistent with literature suggesting savoring in the present moment demonstrates stronger connections to positive psychological resources (Bryant, 2003); however, it is not completely understood why present moment strategies offer more practical benefits compared to other savoring techniques. One possible explanation for these differentiated effects is the manner by which forecasting (anticipation) and recall (reminiscent) guided imageries were constructed in our experiments. Imageability is a construct developed through the cognitive science field to describe the amount of contextual or perceptual detail needed to facilitate enriched memory recall of past events and projection of future events (Rasmussen and Berntsen, 2014). It is possible to manipulate the level of imageability through instruction (Williams et al., 1996). Specifically, recall and forecasting exercises that include more cued prompts are likely to facilitate enriched cognitive processing. For instance, when asking individuals to recall an event, it is important to instruct them to think about the following: (a) when the event occurred and in what context, (b) who was present during the event, and (c) what were salient feelings and thoughts experienced during the event. Including such cued prompts in guided imagery instructions may maximize the impact of memory recall and forecasting exercises on positive emotions. It is possible our anticipation and reminiscent interventions lacked enough cued prompts, which in turn mitigated their effects on positive emotions. Future research should consider the effects of imageability in maximizing the impact of anticipation and reminiscent strategies on positive emotions and other positive psychological outcomes.

The lack of a practically significant finding for the savoring through reminiscence intervention may also be explained by extreme variation in participant mood states. Notably, individuals who experience depression often report deficits in memory fluency and specificity, especially regarding the remembrance of positive autobiographical events (Hitchcock et al., 2020), making it difficult for these individuals to benefit from positive recall exercises. Moving forward, it is important for researchers to re-evaluate our findings, while using measures of depression as a covariate. Because we did not control for depressive symptoms, it is possible our research design could not adequately detect significant effects for our savoring through reminiscence and savoring through anticipation interventions.

In addition, the identified effects may be a result of differences in emotional experiences and qualities among the three savoring interventions. Although we made attempts to keep our savoring interventions parallel by orienting them to the experience of joy, it is possible that one intervention could have elicited a greater emotional range of experience. For instance, the passage component associated with our savoring the moment intervention may have strengthened greater emotions associated with pride and determination compared to the savoring through anticipation and savoring through reminiscence interventions. If this is the case, elicited emotional experiences may have moderated the degree to which savoring interventions impacted positive

emotions. It is important for future research to consider the effects of emotional experience and qualities elicited by each savoring intervention to better differentiate whether savoring the moment interventions offer more benefits in generating positive emotions after a social-evaluative hassle.

Finally, these findings may simply highlight savoring the moment interventions as the most effective strategy to increase positive emotions after a social-evaluative hassle. Savoring the moment interventions rely heavily on the mindful experience of positive stimuli contained within a specific life event (Bryant and Veroff, 2007). On the surface, this appears antithetical when examined in the context of a hassle, as most hassles stimulate an overwhelming series of negative stimuli; however, research consistently demonstrates the availability of positive stimuli during the course of a stressful encounter (Zautra et al., 2005). Our findings provide preliminary support for the position that if individuals are able to quickly identify and sharpen focus on positive stimuli through the use of savoring the moment strategies (e.g., heightened focus, intensifying the moment), they are likely to exhibit increases in positive emotions after experiencing a social-evaluative hassle.

Overall, strength-based theories highlight the beneficial effects of employing PPIs in the context of challenge, adversity, and conflict. Specifically, PPIs have the capacity to increase positive emotions which broaden the mindset and build enduring coping resources needed to combat the negative effects of stress and hassles (e.g., Fredrickson, 2001). Our results provide support for these theories and offer preliminary evidence for the beneficial effects of savoring as a mechanism by which positive emotions can be increased in the face of a social-evaluative hassle. Moving forward, it is important for researchers to examine the effects of savoring the moment interventions against other, more empirically validated methods of coping with hassles. Specifically, it is critical to compare the effects of savoring the moment to known effective interventions (e.g., Progressive Muscle Relaxation). Such direct comparisons are essential to determine if savoring the moment interventions provide any additive benefits not accounted for by other empirically validated methods.

Future Directions and Limitations

The current study offered an experimental perspective on how different savoring interventions increase positive emotions after a social-evaluative hassle. Although our study yielded interesting and promising findings, they are preliminary. Some methodological and sampling limitations need to be addressed before any conclusions drawn from the current research can be considered generalizable and critical to coping efforts. First, interpretations regarding the impact of savoring the moment should not extend beyond the scope of social-evaluative hassles. We did not assess for the effectiveness of different savoring interventions in increasing positive emotions after negative life events, trauma, or loss. Therefore, we can only suggest savoring the moment interventions may be helpful in producing important emotional resources in the context of relatively minor, episodic, and social forms of stress.

Second, because of the single post-intervention assessment nature of our design, we cannot infer whether the effects of different savoring interventions induce enduring levels of positive emotions. However, because the source of stress investigated was minor and episodic, the longer-term effect of savoring the moment was not germane to the core of our investigation. Studies investigating the longer-term benefit of savoring interventions against more chronic or long-lived forms of stress (e.g., trauma) are still needed.

Third, based on the findings offered, we cannot state that savoring interventions contribute to successful coping efforts. Instead, we can only state that savoring the moment can increase positive emotions in the face of social-evaluative hassles, which are important in the coping process, but alone may not account for complete coping success. In the future, it is important to determine whether savoring interventions can increase other important coping resources (e.g., coping self-efficacy, resilience) to better determine the impact of savoring on the entire coping process. In addition, it also important to determine how savoring interventions affect negative emotions and cardiovascular arousal. The intent of our study was to isolate the effects of savoring interventions on positive emotions after a social-evaluative hassle. Because of this focus, we did not measure whether savoring intervention could offset the effects of negative emotions or minimize cardiovascular arousal. It is important for future research to examine these lines to better facilitate theory on how savoring impacts stress recovery. Moreover, it is important to determine if the beneficial effects of savoring the moment interventions hold through these lines of inquiry.

Fourth, we sampled university students, which limits the generalizability of our findings to different subpopulations of people. Interestingly, research suggests savoring interventions, along with other PPIs, are most effective when employed with individuals who experience fewer positive life events (Hurley and Kwon, 2013). As a result, the use of a university sample may underestimate the effects of savoring in this context. It is important for researchers to validate our findings using diverse samples of individuals including clinical samples, individuals from lower SES backgrounds, and individuals who experience a larger amount of discrimination and oppression.

Fifth, the self-report nature of how we assessed positive emotions is susceptible to demand characteristics and social desirability concerns, although this effect theoretically was accounted for in the randomized design. Future research may want to consider evaluating the current research questions using observational and behavioral measures of positive emotions to increase the validity of our findings. For instance, instead of relying on self-report assessments, researchers may want to also consider using facial recognition programs to track facial expressions (e.g., smiling) specific to positive emotions in the context of different savoring interventions.

Sixth, because our savoring the moment intervention included a passage referencing a number of positive strengths, it may be useful to identify which of these elements is the strongest active ingredient in producing positive emotions. It may also be useful to generate and compare multiple savoring the moment interventions. This may lead to more focused or individually-tailored PPIs.

Finally, it may be fruitful to manipulate the experience of stress (high stress vs. low stress induction) instead of requesting all participants complete a social-evaluative hassle task. By

manipulating stress, researchers may be able to determine if different savoring interventions moderate the effects of social-evaluative hassles on different emotional outcomes. Uncovering such effects may be important in determining whether or not savoring can buffer or undo the negative effects of stress on emotional well-being.

General Conclusions and Practical Implications

Despite these limitations, the current research breaks new ground in several respects. This is the first study to find experimental support for the position that savoring the moment techniques are well suited to increase positive emotions after a social-evaluative hassle. In addition, there is some evidence to suggest brief savoring the moment exercises may be more effective in increasing positive emotions when compared to other savoring approaches. Taken as a whole, our findings highlight savoring the moment techniques as a promising primary prevention strategy to help manage episodic and unexpected hassle. From a practical standpoint, savoring the moment exercises can help individuals identify, focus on, and increase positive emotions that are already naturally occurring during hassles. Furthermore, these strategies are brief, easy to administer, and elicit heightened levels of enthusiasm and interest (Bryant and Veroff, 2007). Considering unresolved hassles are likely to decrease quality of life, employing savoring the moment techniques may be an important means of facilitating greater coping resources. We recommend mental health professionals develop outreach programs by which university and community members can learn about and practice employing savoring the moment techniques in the face of social-evaluative hassles.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Georgia Southern University – Institutional Review Board. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

JK, KL-L, AH, KS, and JW contributed to creation and design of the study. KL-L and AH took administer the procedures to participants. JK and BS were responsible for cleaning and analyzing the data. JK wrote the majority of the manuscript. BS contributed to the writing of the results and the development of the tables and figures. KL-L, AH, KS, and JW wrote pieces of the manuscript. All authors contributed to manuscript revision and approved the submitted version of the manuscript.

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Peer Helpers' Experience of Participation in an Adventure-Based Experiential Learning Program: A Grit Perspective

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The study focused on the adventure-based experiential learning (ABEL) component of the North-West University peer helper training program. The aim of this study was to explore and describe a group of peer helpers' subjective experiences of their participation in an ABEL program, with a focus on how these experiences related to the concept of grit. A total of 26 students at the North-West University, both male and female, participated in the study. A qualitative research approach with a case study research design was used. The participants completed daily reflective diaries for the duration of the three-day ABEL program. After 3 months of performing their duties as peer helpers, the same individuals participated in focus group interviews. Themes were identified through inductive analysis and discussed regarding their relevance to the concept of grit. The main themes that emerged from both phases of data collection included intra-, inter-, and transpersonal/transcendent aspects, within which participants regularly referred to elements of grit. It was concluded that ABEL, due to its unique nature and demands, provides an ideal mechanism for the facilitation of personal growth on various levels. More specifically, through its clear association with the improvement and/or development of participants' grit, it could equip these students to be more effective in their role as peer helpers.

Keywords: peer helper, adventure, experiential learning, grit, qualitative analysis

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INTRODUCTION

Peer helper programs have increasingly been used by universities to address the extensive range of difficulties that especially first-year students' experience. These programs have become a valuable resource that allows university counseling centers to serve more students (Lee and Bush, 2003; Lennox Terrion and Leonard, 2010). A peer helper is a registered student who has been selected, trained, and supervised to assist student counseling services in performing interpersonal helping tasks with persons of similar age or experience (De Jager, 2012). The most demanding period for fulfilling their duties is usually during the registration and orientation (R&O) program of the

Abbreviations: ABEL, adventure-based experiential learning; NWU, North-West University; R&O, registration and orientation.

first-year students, where peer helpers ordinarily assist with providing optimal support with the various adjustment difficulties first-year students may experience.

Despite the significant value added by peer helper programs, De Jager (2012) reports a number of challenges in maintaining these programs in higher education. Peer helpers sometimes have excessive responsibilities placed on them. Because peer helping is a voluntary process, peer helpers' commitment and continued motivation to perform their duties have become one of the main challenges. Research regarding the protective effect of various character strengths during times of adversity has however been receiving increasing attention, especially within the rapidly growing movement of positive psychology (Park et al., 2004; Gillham et al., 2011). The facilitation of psychological strengths among individuals who find themselves in challenging circumstances, such as these peer helpers, has been found to oppose the development of negative symptoms (Gillham et al., 2011; Niemiec, 2020). Niemiec (2020) added that character strengths play a central role during times of adversity, not only as a source of protection but it also offers a shift of mindset and helps to navigate and manage the struggles. Within the movement of positive psychology there are ongoing efforts to expand our understanding on the specific character strengths that may foster effective adaptation to adversity and assist individuals to effectively engage in important life activities (Buckingham and Richardson, 2021). As one of the most recent additions to this family of strengths, the possession of "grit" has shown itself to facilitate individuals' ability to maintain focus on their original goals in the face of adversity (Duckworth and Quinn, 2009). Described as the character strength of passion and perseverance in the pursuit of long-term goals, even when encountering challenges or adversities (Duckworth et al., 2007; Hochanadel and Finamore, 2015), grit is generally accepted as a multidimensional construct that includes elements such as resilience, perseverance, and commitment (Robertson-Kraft and Duckworth, 2014). However, no single model that distinguishes all the different components of this fairly new phenomenon currently exists. Incantalupo-Kuhner (2015) suggested a strong causal and positive relationship between grit and resilience but reiterates that these are not identical constructs. Georgoulas-Sherry and Kelly (2019) concur by emphasizing the importance of distinguishing similar constructs, like resilience, grit, and hardiness from one another. These authors cite compelling evidence that these terms, although often used interchangeably, constitute constructs that are empirically different from each other. Although grit, for instance, is a dimension of resilience in successfully adapting to overwhelming stress and adversity, Perkins-Gough (2013) reiterates that the reason why some individuals succeed at persisting towards their goals, while others ultimately give up, is that grit represents not only showing resilience when facing setbacks, but also remaining loyal to commitments.

Within existing peer helper programs, incentives like stipends or food are most often used to maintain peer helpers' commitment (De Jager and Ntlokwana, 2011). Showing grit however means possessing an intrinsic, future-orientated motivation to stay on one's course in the long term, even in the absence of any tangible reward or clear indicators that the hard work will be rewarded in due course (Duckworth et al., 2007). Grit therefore redefines the extent of effort that individuals are willing to put into reaching their goals. The strong inclination towards remaining goal oriented, together with the capacity for psychological regulation, allows the gritty individual to persevere despite tedious and frustrating circumstances. As a result, it also provides them with the ability to cope with more challenging and tough circumstances (Duckworth et al., 2011; Ceschi et al., 2016; Duckworth et al., 2016). Eskreis-Winkler et al. (2014) cite several studies across multiple domains that offer examples where grit appears as a significant predictor of success and conclude that individuals with higher levels of grit consistently show fewer dropouts from their respective life commitments. Recent studies affirm that grit has also been associated with a number of positive outcomes, including lower suicidal ideation during stressful life events (Blalock et al., 2015), successful completion of military training that involves a high degree of mental and physical stress (Farina et al., 2019), improved mental and physical quality of life (Traino et al., 2019), as well as academic achievement among university students in the wake of the unprecedented and challenging circumstances imposed by the COVID-19 pandemic (Ghanizadeh, 2021). Considering these findings, it is argued that grit reinforces positive coping and reduces the perception of threat (Buckingham and Richardson, 2021). It therefore seems reasonable to hypothesize that for the peer helper, and ultimately the peer helper system to function optimally, grit can be considered a fundamental characteristic.

One of the most significant objectives of positive psychology is the development and nurturance of character strengths (Ghielen et al., 2018). In line with this, Ris (2015) believes that grit is not a fixed quality and opines that it can be developed among students through facing adversity outside of academic traditions. Adventure-based experiential learning (ABEL) provides unique possibilities in this regard. The challenging nature of adventure activities that typically form part of ABEL programs represent an opportunity for fostering growth and change. These programs typically incorporate a variety of challenging adventure activities as a means of facilitating the development of physical, social, and mental competencies, thereby strengthening positive psychological characteristics (Sheard and Golby, 2006; Lee and Ewert, 2013) both within individuals and groups. More specific to our research group, the adventure component of ABEL has been found to engage the motivation and interest of participants, and that it develops participants' determination to persevere when situations become complicated (Sibthorp and Jostad, 2014). As Csikszentmihalyi and Csikszentmihalyi (1990, p.17) conclude, "challenge gives people vision and direction, focus, and perseverance. . ."—a statement that strongly refers to the concept of grit. Although no studies could be found that links ABEL to the development of grit specifically, existing research does therefore suggest that ABEL, due to its specific nature and demands, may be an ideal intervention for the facilitation of personal growth and, more specifically, the improvement and/or development of participants' grit.

When it comes to peer helpers specifically, Aladağ and Tezer (2009) state that their success mainly depends on the self-growth

and skills they develop through their training programs. ABEL, when included as part of this training, may therefore provide opportunities for the development of a variety of character strengths (Berman and Davis-Berman, 2005), including grit. The utilization of an ABEL program as a developmental intervention might be an efficient way for peer helpers to recognize and understand their own strengths, weaknesses, and personal resources, which could prove beneficial in terms of the numerous challenges they may face in successfully reaching their objectives (Sheard and Golby, 2006; Strydom et al., 2012). An improved understanding of the potential impact of such interventions on participants' grit may prove valuable for the development of training programs aimed at the improved functioning of peer helpers at universities.

The aim of the current study was therefore to explore and describe the subjective experiences of a group of peer helpers' participation in the ABEL program, with a specific focus on how these experiences related to the concept of grit.

MATERIALS AND METHODS

A holistic single-case, case-study design with a qualitative approach was used (Baxter and Jack, 2008). A case study is a bounded system and explores an existing phenomenon within its real-world context when the boundaries between the phenomenon and the context are not distinctly evident (Maree, 2007). It allows the researcher to focus on a "case" and hold onto a holistic perspective, while it aims at gaining greater insight and understanding of the dynamics of a specific situation (Maree, 2007; Yin, 2014). More specifically, the present study made use of a single-case (holistic) design, where different experiences are described within one group of participants finding themselves in the same context (Baxter and Jack, 2008). The researcher in this case concentrated only on the experiences of peer helpers of the NWU with respect to an aspect of their training program.

The peer helpers participated in a 3-day program that included the following activities: Upon arrival on the first day participants were divided into two groups. The one group received an introduction to whitewater paddling and participated in water games on the river with inflated rafts. At the same time the second group went rock climbing and abseiling on a 10-meter artificial abseiling wall. Groups were rotated after completion of these activities. The second day of the program involved a 15 km river rafting session, after which they did a 5 km hike into the mountain to their overnight site. Upon arrival participants had to set up camp and had to prepare their own food. On the last day, participants went on an early morning hike of about 8 km back to basecamp to conclude the program.

Demographics and Recruitment of Participant Group

Peer helpers are undergraduate students registered with the NWU, residing in on-campus residences. The peer helpers form part of a well-defined group of university students, who all partake in the same training program to prepare them for their responsibilities as peer helpers. Since the participants hold a defining characteristic that is needed for the data of this study, purposive sampling (a form of non-random sampling) was used in the selection of the participants, with a specific purpose in mind (Maree, 2007). The main aim for purposive sampling is the selection of a small number of people whose information will generate an in-depth understanding of the people, program and situation involved (Yilmaz, 2013).

The participating peer helpers from the NWU (Potchefstroom site) were pre-selected by the staff of Student Counselling and Development (SCD) for the 2017 academic year. A pre-determined question and case-study based selection process were followed by interviewing three peer helpers per residence. One peer helper was appointed per residence based on observed and reported character traits, emotional adjustment, and peer relevance identified during the selection interviews. Permission for data to be collected from the participants, specifically regarding their experiences of the ABEL component of their training program, was obtained from the acting director of SCD—the principal gatekeeper of the peer helpers—as well as from the Dean of Students (now Director Student Life) at the NWU. Further discussions were held with the staff members involved in the training of the peer helpers (as secondary gatekeepers to the peer helpers), as well as the staff responsible for the ABEL program. The training included the total population of 31 peer helpers, both male and female. The final sample size consisted of 26 participants, 11 of which were male and 15 female, who all voluntarily agreed to participate in the research.

Data Collection

Qualitative data regarding the individuals' experience of their participation in the ABEL component of their training program was collected in two phases—during, as well as after their training had taken place. The first phase of data collection required the participants to complete daily reflective diaries for the duration of the 3-day ABEL program. The diaries provided some guidance on the reflective process to make it as easy as possible for the participants, without providing too much structure that may potentially restrict the nature of data obtained. The diary entry started with *"My experience of today. . .,"* with adequate space provided for the participants to reflect on their own experiences in writing. Two incomplete sentences followed: "M*y favorite part of today's adventure activity. . .*" and "W*hat I have learned about myself . . .*"

The second phase of data collection commenced in the form of focus group interviews after peer helpers completed their training and had performed their duties as peer helpers for a period of three months. Morgan (2013) recommends that a focus group preferably consists of 6–10 individuals. Three focus group interviews were conducted, each of which lasted for approximately 60 min and consisted of 8–10 individuals. The questions of the focus group interviews were structured to obtain an informed understanding of the participants' experiences as peer helpers, and their reflections on the value that their participation in the ABEL program added to their current roles as peer helpers. The opening question of the focus group interviews was: *"What were your experiences of participating in the adventure-based component of your training program?"* This

opening question was followed by secondary questions, such as: *"What did you learn about yourself during the program?" "What value, do you feel, the adventure program added to your role as a peer helper?" "What experience in the last few months reminded you of your participation in the adventure program?"* and *"What personal growth do you feel might have resulted from your participation in this adventure program, if any?"* All interviews were audio-recorded and transcribed with the participants' permission.

Data Analysis

Thematic content analysis was conducted following an inductive approach. Thematic analysis can be described as the groundwork method of qualitative analysis, aimed at identifying and analyzing patterns in the content (Clarke and Braun, 2013). The main purpose of inductive analysis of the data is to allow research findings to emerge from the frequent, dominant, or significant themes and to develop concepts or a model inherent in raw data (Thomas, 2003; Maree, 2007). By using an inductive approach to thematic analysis, several steps were taken to analyze the data effectively (Clarke and Braun, 2013). Firstly, the researchers thoroughly familiarized themselves with the data from the diaries and focus group interviews after it had been transcribed. After immersing themselves in the transcriptions, they proceeded to generate initial codes by means of documenting where and how patterns occurred and reoccurred. Themes were then constructed from the patterns in the data relevant to the research question. After reviewing the themes, the researchers defined and further refined each theme and wrote a detailed analysis of each (Clarke and Braun, 2013). The data gathered from the participants' reflective diaries during the ABEL program and data from the focus group interviews conducted after they have performed their duties as peer helpers for a few months, was analyzed separately.

The validity of the process of data gathering and analysis were ensured by following the criteria proposed by Lincoln and Guba (1985) and Korstjens and Moser (2018). Firstly, *credibility* was ensured by means of data triangulation, with the researchers gathering data on the same topic from a diverse group of participants, using both personal journals and focus group discussions. Investigator triangulation was also used, with both the primary investigator and the second author involved in coding and analyzing the data obtained. Secondly, *transferability* was addressed by providing as detailed a description of the participants, the research setting and the research process as possible, ensuring the reader's ability to determine the relevance and transferability of research findings to his/her own setting. Thirdly, *dependability* (which refers to the stability of findings over time) was addressed through gathering data at two points in time, both during and after completion of the ABEL intervention. *Confirmability* was ensured by establishing a clear audit trail, which describes in detail the research steps taken from the start of the project to the reporting of the findings. Lastly, *reflexivity* was ensured by the primary researcher using a diary to document and examine her assumptions, values, and preconceptions.

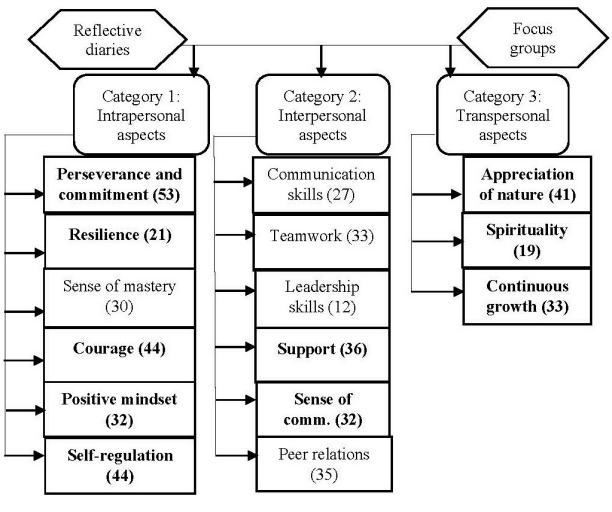

FIGURE 1 | Themes identified regarding peer helpers' experience of participation in adventure-based experiential learning (ABEL).

Ethical Clearance

Before the participants were invited to participate in the research study, ethical approval was obtained from the Health Research Ethics Committee (HREC) of the NWU (ethics approval number NWU-00361-16-A1). Throughout the entirety of the study, the researcher adhered to the ethical guidelines of the North-West University's Health Research Ethics Committee (NWU-HREC) as well as the Health Professions Council of South Africa (HPCSA: Health Professions Act 56 of 1974).

RESULTS

Following the completion of each phase of data collection, the themes and subthemes that emerged were found to represent three broad categories, which involved *intra-, inter-, and transpersonal/transcendent* aspects of participants' functioning. These categories were subsequently used to organize and report the emergent themes, which are graphically depicted in **Figure 1**. The frequency with which each of the themes were mentioned during the diary entries and focus group discussions are indicated between brackets. Due to the significant degree of overlap between the themes that emerged from the two phases of data collection, the findings will be reported in an integrated manner. *Intrapersonal aspects* that emerged included the themes of perseverance and commitment, resilience, sense of mastery, courage, positive mindset, and self-regulation. Within the category of *interpersonal aspects*, the themes that emerged were communication skills, teamwork, leadership skills, support, sense of community, and peer relations. *Transpersonal aspects* included appreciation of beauty, spirituality, and continuous growth.

As the objective of this study was to describe participants' experience with a focus on grit-related responses, only those themes that have been proven to bear a strong resemblance to the definition of grit (shown in bold in **Figure 1**) will receive explicit attention in the discussion that follows.

DISCUSSION

Category 1: Intrapersonal Aspects

The participants' experiences of being out of their comfort zones at various times during the ABEL program introduced a strong element of self-awareness which, during their reflections, were associated with the development of various intrapersonal strengths. In this respect, one participant reported, "*I learned so much about myself today. Above all I realized that growth happens outside of our comfort zone. That's exactly what today was: completely out of my comfort zone.*" After a few months, the participants also referred to a profound sense of self-discovery, which was facilitated through the ABEL activities: "*For me, the adventure program tested me a lot and I pushed myself further than I thought I can go*." This improvement in intrapersonal skills and strengths is supported by numerous studies conducted on the benefits of ABEL programs (Hattie et al., 1997; Cooley et al., 2014; Prince, 2021).

The prominent intrapersonal themes related to grit that emerged from the participants' reflections were the following.

Perseverance and Commitment

It is evident from the participants' remarks that the challenging activities inherent to the program was a test of their physical endurance. Consequently, these experiences served as a strong metaphor for the discovery and improvement of their own perseverance and commitment, as stated by one of the participants:

> *"I realized that although a breather is extremely important, that the best is to bite on your teeth, to stand up and to go on if you are tired. Keep on going. . . do not stop."*

After spending three months in their roles as peer helpers, participants' recollection of the challenging nature of the river rafting and hiking again elicited responses related to their perseverance and commitment in the achievement of goals. In this respect one of them remarked,

> *"I have learned—especially at the rapids that sometimes something looks really difficult and you are maybe scared to go through the situation, but. . . you will do everything in your power to get through it and when you get to the other side you then realize that it wasn't that bad after all. . . to just stay motivated and keep on going because you will get through it. . ."*

Ris (2015) as well as Christensen and Knezak (2014) state that the basic theme of grit is one of persistence in the face of challenge, as seen above. Perhaps the most prominent author on grit, Angela Duckworth, considers perseverance, as well as purposeful and continuous commitment as the essence of this construct (Duckworth et al., 2007). In support of these findings, a study conducted by Ewert and Yoshino (2011) on the influence of a short-term adventure education program on university students' levels of resilience, the improvement of perseverance was also one of the main themes that emerged when students were asked about their experience.

Resilience

During the ABEL program, participants became aware of their capacity to show *resilience* when faced with obstacles. One participant put is as follows:

> "*Today I have learned that I am stronger and braver than I thought. At times I was in the water before the difficult parts* (referring to the rapids)*—I was very scared and did not think I could do it, but I did it every time. I realized that I can still function well through tough times."*

Another participant remarked:

> *"The hiking was uphill and with times I wanted to stop and give up, but through renewing my thoughts and to focus on what is important, I was able to pull myself through and with help from above got to the top. Bad and difficult times will follow, and it is okay because after every storm there will be a rainbow."*

It is clear for the quote above that a number of participants related their ability to show resilience in these challenging circumstances to their religious beliefs:

> *"At first, I didn't want to hike because my chin and arms was burning blisters. But there was just one motivation that made me keep going and that was God. I was beyond my human strength and the power of God carried me. through."*

This aspect will receive more explicit attention later, under the theme of spirituality. Whatever the source of their resilience, though, the activities that participants engaged in during the ABEL intervention provided an opportunity for many of them to surprise themselves: "*I also learned I have strength for so much, although I underestimate myself easily.*" Perkins-Gough (2013) states, after an interview with Angela Duckworth that grit, amongst other things, involves showing resilience when faced with adversity. The emergence of this theme also confirms the results of Ewert and Yoshino (2011) who reported an improvement of resilience in university students that attended an adventure education program.

Courage

Courage refers to the ability to perform an action despite the presence of fear. In turn, when having to persist at a task, grit may be regarded as the courage to overcome the fear of failure (Lucas et al., 2015). Due to the nature of the ABEL experience, participants often had to call upon their *physical* courage to complete challenges successfully. This is defined by Pury and Kowalski (2007) as the ability to take action in the face of physical risk. As is clear from the following quote, team members' reciprocal support made significant contributions to the courage that they reported:

> *"Today's activities gave me the opportunity to conquer two of my greatest fears: spiders and heights. My teammate found a spider in the water and encouraged me to let the spider walk on my hand (it is amazing what a little encouragement can do!)"*

Participants' courage was also strongly associated with feelings of accomplishment, as illustrated by the following: "*We also climbed the wall, and I could feel my fear fading as I got higher.*" Rather than avoid the source of fear, one participant alluded to

the significant role that the adoption of positive mindset plays in showing courage:

> *"What I have learned was to take it on and finish it and not to avoid the problem because it seems impossible. Rather use every moment of fear as an opportunity to learn and get to know another part of yourself and with that to enjoy the moment."*

As can be seen in **Figure 1**, the importance of a positive mindset emerged on a number of occasions, which warrants its discussion as a theme on its own.

Positive Mindset

It is clear from the discussion of the theme of resilience, that a number of participants achieved this through adopting a positive mindset: *"If things get tough and difficult, I do not just seek the negative. I look for the positive and use it for my next step."* O'Brien and Lomas (2016) found that adoption of a positive mindset has immense implications for producing successful outcomes in the lives of young people. A few months after the completion of the ABEL intervention, the participants again associated their determination and courage with choosing to adopt a positive frame of mind. They explained that a good attitude and a positive mindset was a crucial factor in following through with the adventure activities, as well as their objectives as peer helpers:

> "*Yet again. . . it is one of those things that comes back to a positive attitude. . . you can partially choose if you will enjoy something or will not enjoy it. Like when we. . . it was the last day of hiking when we came to that moment, we didn't know whether we are going straight on the road or are we going up the mountain. . . then they told us okay no, we are going up the mountain, with our bags and everything. Then I was just like. . . "okay, okay, now I must choose, am I going to be negative now or do I go for it?" So, it was just one of those things that you realize again how you approach something will determine how it will be for you in the end. And it was. . . when we were on top, the view was. . . it was really worth the effort.*"

Another participant put it as follows, *"I have learned that your brain is your strongest but also your weakest link. Because it is your mind telling you what you cannot do and it sometimes limits you, but it is also your mind that gets you through something in the end."*

This supports the findings of Pappano (2013), who stated the approach to learning that individuals adopt during their participation in ABEL programs may be an integral part of what they learn. Individuals will be able to embrace challenges and learn from failures when they have a positive mindset, while possessing grit entails working strenuously toward challenges, despite encountering possible setbacks (Duckworth et al., 2007; Reed and Jeremiah, 2017).

Self-Regulation

The participants' realization of the value of a positive mindset was also associated with and built upon their ability of self-regulation. This required the intentional transformation of their thoughts, emotions, and behavior when experiencing demanding situations:

> "*. . . if you started something and you realize closer to the end that it is complicated you can always still find a way to achieve your goal. It may be different than your original plan, but it can also work—thus it is sometimes important to change your approach to something."*

Self-regulation optimizes the achievement of personal goals through the purposeful alteration of one's thoughts, emotions, and actions (Zimmerman, 2000). Ivcevic and Brackett (2014) consider grit as a self-regulatory trait. They clarify that to achieve challenging goals requires working hard and the ability to control impulses, and to manage emotions that are related to the pursuit of those goals. The importance of regulating impulses and emotions during the ABEL activities are illustrated well in the following quote from one of the participants' journals:

> *"There were moments where I had to convince myself (my thoughts) to finish the activity. I got so tired physically and I could not regulate it. But if my mind gets tired, I can regulate my thoughts and with that I could overcome the physical shortages."*

In summary, it is apparent from the participants' responses that these intrapersonal strengths were not experienced in isolation. When combining the above-mentioned character strengths, the large degree to which the participants' experiences reflected the essence of grit becomes clear. One participant's description of her learning experience illustrated the coherence between these themes quite well, "*If you are tired, persist. Look forward to reaching the top. Stay positive. Have courage. See the good in everything."* Goodwin and Miller (2013) also consider perseverance, tenacity, resilience, stamina, and persistence to be synonyms for grit. Each of these concepts could be independently regarded as a predictor of success, but a greater effect may result from the combination of qualities (Reed and Jeremiah, 2017), which yet again highlights the multidimensionality of grit.

Category 2: Interpersonal Aspects

Owing to the challenging nature of the ABEL program, the participants often needed to function as close social entities. In addition to participants' focus on the intrapersonal benefits of the program, they also brought attention to the interpersonal aspects they gained from their participation in ABEL. Interpersonal themes related to grit mainly involved the following:

Support

Participants explained that other individuals' support during the ABEL contributed to their ability to persevere. This made them acutely aware of the value of a support network to get through troubled times. *"I think you should have support from the right people, then you can do anything."* This awareness was still a strong theme that emerged from their responses during the focus group interviews, three months after completing the ABEL intervention: "*I think community is just really important. I did not realize what the importance of it is in your life, to have a support network. . . and I only realized it on the camp."*

The support that participants received from others played an imperative role in their ability to fulfill their roles as peer helpers effectively. Participants also explained that their interpersonal understanding regarding others' emotions and behavior increased through their participation in ABEL, and that this made them more effective in their role as peer helpers:

"I think the fact that the camp tested us a lot. . . up to a point where you felt you do not want to go on. . . it has taught us empathy, especially with the first years during the R & O period. That if they tell us they cannot go on anymore, we know we went through similar experience and how to motivate them. . . and that they must keep going."

This is supported by Neill and Dias (2001) who explain that experiencing challenges with a support network is positively linked to individual growth, and especially effective in building psychological resilience, which—as previously confirmed—is related to grit. The importance of support from group members was echoed in the study by Ewert and Yoshino (2011) that stated that group support was "inevitably important for them [the participants] to overcome adverse conditions and perhaps to better gain a sense of resilience in themselves."

Sense of Community

During the ABEL program, participants also started to experience the value of interdependence and belonging to a group:

"I think what contributed to my ability to keep on going and to persevere was because I was not alone in it, but that the whole group suffered together and especially that motivated me to go on and finish. I internalized the motivation around me and with that drove myself."

After a few months in their role as peer helpers, the participants acknowledged the impact of the ABEL program on the enhancement of their group cohesion. Although they represented different residences, they still experienced a sense of unity, as can be seen in the following:

"It feels to me as if you sometimes just go about in a professional capacity with each other and then it is that cold friction of "I do not really know you." But the moment when you get to know each other on such a personal level it helps that you function more optimally in a professional capacity as well."

This is confirmed in a study by Rhodes and Martin (2014) who found that an ABEL program improved the sense of community of participants in the workplace as observed by colleagues. Greffrath et al. (2013) also reported that the challenging situations created in ABEL contributes to a sense of community, with all the participants' experiences occurring in relation with others or with others' support. Regarding grit, Reed and Jeremiah (2017) ascribes its development not only on what is within us, but on being in the right circumstances with people we can trust, confirming the importance of a sense of community.

It is clear that these interpersonal aspects in combination are imperative to the facilitation of group cohesion, which is an essential component for the development of grit.

Category 3: Transpersonal/Transcendent Aspects

The participants' reflections on the ABEL program often went beyond intra- and interpersonal aspects, describing experiences that transcended their current personal functioning and context. Fontana and Slack (1996) defines the term "Transpersonal" as experiences that lie beyond the conditioned ego, recognizing a deeper and more enduring sense of being. Transpersonal psychology is further considered in three parts: psychology beyond ego; psychology of the whole person in an interconnected world and psychology of transformation (Hartelius et al., 2007).

The specific themes that emerged from the data in this regard, and could be related to grit, were the following.

Appreciation of Nature

Participants frequently highlighted the fact that their ABEL experience helped them develop an appreciation for a number of aspects that transcended the self: "[My favorite part of today's adventure activity was. . .] *the nice chats while we hike and the beautiful view. It makes you realize that there is something bigger out there.*" As described in the previous section, participants experienced a strong sense of interconnectedness with other participants. This connectedness clearly extended to the natural environment in which the ABEL intervention took place, and involved an awareness of how the self and others adapted to the novelty of being in a new and different environment:

"My favorite part was to listen how everyone experience an activity differently, to walk and listen to everyone's stories and just to experience nature around me. It is different to be in another environment and to see how everyone adapt to it."

Nature has been found to be an essential component in contributing to the facilitation of change (Taylor et al., 2010). In this study, it also emerged as an ideal context for the development of grit. One participant explained their closeness to nature as *". . .exhausting, nice, challenging, exciting. It was a day of falling into the river and surviving rapids to sitting peacefully and quietly in the field and realizing how amazing things are."* Another participant stated, *"Today was challenging, but nice. The moment when I saw the view from the top of the mountain, I forgot about the tough climbing."* These descriptions match the results of Reed and Jeremiah (2017), who found that grit can be fostered through activities that challenge individuals and, at the same time, encourage them to have fun. This is clearly illustrated by the following:

"Those rapids! I've never felt so completely alive as I did today. I think we all had so much fun on those crocs! My favorite part of it all was being one with nature all day and just spending time in God's amazing creation!"

As suggested by the previous quote, participants' experience of these activities often suggested the presence of a strong spiritual/religious component:

"[My favorite part of today's adventure activity was. . .] *to see the view from the top of the mountain. All the plants and small insects that make you realize once again how wonderful everything is created."*

This aspect will receive more attention in the following section.

Spirituality

As mentioned, participants reflected on the realization of their insignificance as being part of something much bigger, which clearly led to experiences of spiritual upliftment during the ABEL intervention:

"My favorite part of it all was being one with nature all day and just spending time in God's amazing creation! I encountered God on such a personal level. . ."

Their immersion in, and "getting lost" in nature instilled in some participants a newfound sense of self-discovery and knowledge of the self, which all contribute indirectly to the development of grit:

"Losing yourself in nature and in God is such an awesome experience and I think I have a better idea who I am in Him after today."

One participant expressed beautifully how her spiritual experience during the intervention impacted directly on the role she played as peer helper:

"I also feel that when I speak to someone, I must handle it the way I handled the river rafting. The rapid is the difficult situation, the boat is God or the staff of SCD that will help the person through the situation, and I can only climb into the boat through giving empathy and support and helping steer through it by showing the way, but I cannot be the boat."

A number of participants however made a direct link between their ABEL experiences and the development of grit. Expressing the origins of their grit in terms of a religious experience, there was specific reference to the value of their religious beliefs in conquering challenging situations:

". . . I was beyond my human strength and the power of God carried me through. . . By focusing on God's grace, I could overcome one of the most difficult challenges."

In combination, these results seem to confirm Barton and Miller's (2015) suggestion that for most people spirituality is the foundation of several positive psychological traits, including grit.

Continuous Growth

A significant aspect of the participants' reflections that illustrates the transcendent nature of their experiences, was their perception of a continuous growth process. During the ABEL program, participants often emphasized that the ABEL component of their training allowed them to step beyond their regular response to a situation, and how this learning experience served as a metaphor which aided in the expansion of their perspectives regarding future situations and different contexts. Its applicability to life in general is powerfully illustrated through the following quotes:

"My favorite part was when we fell off the boat. Although it was uncomfortable and unpleasant, I have learned a lot from it. Life is difficult and there will be days that we will fall off the boat, but in such times, we should stay focused on the solution and not the problem. The bad things let us appreciate the good."

"Today was challenging, but nice. The moment when I saw the view from the top of the mountain, I forgot about the tough climbing. Life is a climb, but the view is great! Thus, I have learned that it is necessary to just go on, no matter how discouraged you feel. In the end, the results will be worth the effort."

Reed and Jeremiah (2017) view future-mindedness as an important aspect of grit that helps a person to persist, even when encountering setbacks and to stay committed until he or she reaches his or her goal. Participants shared their experiences according to their expectations of the R&O program that was lying ahead:

"Rock climbing—there I have noticed the obvious, that you first must get over the difficult part before you can enjoy the best times. For example, R & O is the rock climbing and abseiling is the student experience. Both adventure activities of the day reflected the uncertainty and challenges of R & O."

Three months after the intervention, the participants were able to affirm how these experiences benefited them on a personal level and equipped them for their roles as peer helpers—making the sustainability of the learning experience apparent. Gass (1991) report that the transfer of learning to other areas of the participants' lives is one of the distinguishing characteristics of ABEL, while Newes and Bandoroff (2004) add that the use of metaphors aids in the process of change and facilitates the transfer of learning. Importantly, as illustrated by the following quote, the participants seemed to continue this process of self-discovery after the program had reached its conclusion:

"*I think what I also learned about myself. . . especially with the abseiling, is that I was not afraid or anything and I did it quickly, but then I realized I do a lot of things in my life quickly just to get it done with and I do not stop to see what is going on around me. . . I often do things quickly and then I don't always see the beauty in the things around me. . ."*

At the same time, it became clear that the participants had the ability to transfer their learning from one context to another. One participant explained,

"Like I think. . . I wish every first year can go on a camp like this, because it really equips you, it changes your perception. . . you see things in a whole different way. . . just because of 3 days that you were out of your comfort zone. Because what I think about the whole time what we learned is that there is a comfort zone, a growth zone, and a panic zone and to stay in the comfort zone will get you nowhere, so you should climb into your growth zone and run with it. And that is what I got out of it. . . to realize to be out of your comfort zone is okay, because that is where the magic happens."

It is thus evident from this category of transpersonal/transcendent aspects that, during and after the ABEL program, the participants were able to identify the relevance and inherent benefits of their experiences and the accompanying growth process for future situations. The participants' feedback demonstrated transcendence of the ABEL experience by means of a continuous process of growth, which equipped them better for a variety of challenging situations. Furthermore, considering all the categories of the findings, the similarities between the themes that emerged from the

participants' reflective diaries during the ABEL program and the themes from the focus group interviews after they had performed their duties as peer helpers for a few months, illustrated the sustainability of the learning experience.

CONCLUSION

The aim of this research study was to describe, with a focus on grit-related responses, the subjective experiences of the peer helpers during, as well as after their participation in an adventure-based experiential learning (ABEL) program. The results correspond with previous research that showed ABEL to be a successful intervention in the facilitation of intra- and interpersonal aspects of development (Priest and Gass, 2005; Sheard and Golby, 2006; Sutherland and Stuhr, 2012). In addition, the results indicated growth beyond the self and beyond the present moment to represent a transpersonal/transcendent aspect, which played an important part in the participants' self-reported experiences. These main categories were prominent in both phases of data collection, confirming the sustainability of the growth process initiated during the intervention.

This group of peer helpers' experience of participation in an ABEL program not only showed a strong association with the facilitation of grit, but also illustrated how an increased understanding of grit developed during the intervention could be transferred to other areas of life. The participants' reflections suggested that the challenges faced in an ABEL intervention early in their training program increased their commitment as peer helpers, which, in turn, could enhance the effectiveness of existing student counseling services at universities (Hsi and Chung, 2010). Grit has, however, been found to constitute more than merely work ethic, as it appears to be a character strength that affects all the areas of a person's life (Reed and Jeremiah, 2017). Therefore, apart from their functioning as peer helpers, increases in grit could also increase the academic performance, professional success, lifetime educational achievement, life goals, and well-being of these participants (Duckworth and Gross, 2014; Eskreis-Winkler et al., 2014).

It is therefore strongly suggested that quantitative follow-up studies are done to empirically investigate the significance of the associations suggested by this exploratory study. An additional recommendation would be to create a participant group through random assignment to include participants from diverse ethnic or language groups for the research population to be more representative of the larger peer helper population in the diverse context of South Africa. Future research should also focus on a longitudinal study on the long-term effects of an ABEL program on peer helpers.

In conclusion, the findings of the current study suggest that grit, which represents a potentially significant strength within the context of the peer helper at South African universities, could be strongly influenced by participation in an ABEL program. Apart from the institutional benefits, the inclusion of an ABEL component in the peer helpers' training furthermore has the potential to empower the participants themselves in the long term through the transfer of its effect on grit into other life contexts.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Health Research Ethics Committee (HREC). The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

JP was the promotor and CS and IC was the co-promotors. MP was responsible for the research design and writing of the literature, as well as the process of data collection and data analysis. JP, CS, and IC guided the research, edited, and co-authored this manuscript. All authors contributed to the article and approved the submitted version.

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