FUTURE PERSPECTIVES ON POSITIVE PSYCHOLOGY: A RESEARCH AGENDA

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FUTURE PERSPECTIVES ON POSITIVE PSYCHOLOGY: A RESEARCH AGENDA

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EDITORIAL
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Editorial: Facilitating the Third Wave of Positive Psychology: Perspectives on the Future of the Discipline

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Editorial on the Research Topic

Future Perspectives on Positive Psychology: A Research Agenda

INTRODUCTION

The science of positive subjective experiences, positive characteristics (states/traits/behaviors), and positive institutions have shaped our collective understanding of the elements that make life worth living and the factors that improve- and distract from optimal functioning (Donaldson et al.; Ng et al., 2021). Positive psychology has spawned a magnitude of new approaches, theories and methodologies that not only explained the conditions required for optimal functioning but also proved to be useful in many adjacent fields such as organizational studies, education, health, risk management, and even architectural sciences (Van Zyl and Rothmann, 2022). This, in turn, resulted in the creation of various new research and practice domains ranging from positive artificial intelligence (da Silva, 2020) and positive computing (Jeong et al., 2020) to positive coaching (Van Zyl et al., 2020; Richter et al., 2021) workplace design, human-robot collaboration and positive design sciences (Van Zyl and Rothmann, 2022). The science of understanding "what is right" rather than "what is wrong" has thus produced significant insights into the human condition and provided practical solutions to complex societal problems (Ryff; Worthington and Van Zyl). The discipline, however, isn't stagnant and continues to grow and develop. Lomas et al. (2021) stated that the discipline is on the verge of a third wave of innovative research that will fundamentally alter the trajectory of its discourse. However, it's not yet clear what the future of positive psychology will hold? What are some of the grand challenges facing this third wave of positive psychological research? Moreover, how can we, as a collective, contribute to enhancing the credibility and impact of the discipline's future? These are some of the most challenging questions that need to be answered. With the rapid development of the field, detailed research and practice "roadmaps" are thus required to set a course for future perspectives in positive psychology.

This Research Topic aimed to address these questions by collating a series of research agendas about potential future perspectives in positive psychology. Specifically, this Research Topic aimed to identify the limitations in our current understanding of the different theories, models, methods and interventions on which positive psychology is built and propose a roadmap for the third wave of Positive Psychological Research.

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STRUCTURE AND CONTRIBUTION OF THE RESEARCH TOPIC

Through the collective efforts of some of the top minds in our field today, this Research Topic provides 19 visionary, inspiring and provocative ideas about the future of our discipline. The manuscripts in this Research Topic, summarized in **Table 1**, are classified into four sections:

(1) *Future Perspectives on Positive Psychology as a Discipline*. In this section, the authors reflect upon the growth of the discipline as a whole, highlight various challenges it faces and present a vision for how the discipline could develop.
(2) *Future Perspectives on Mental Health and Wellbeing*. Here, the focus was on presenting new models and integrated approaches related to conceptualizing, measuring and managing mental health and wellbeing in various life domains.
(3) *Future Perspectives on Specific Positive Psychological Constructs*. In this section, the authors provided new perspectives on popular positive psychological constructs, conceptualized new theories and approaches, and provided reflections on how future researchers could take these forward.
(4) *Future Perspectives on Positive Psychological Interventions*. The final section aimed to provide new frameworks or typologies relating to the development and implementation of positive psychological interventions in various life domains. Specifically, it aimed to provide guidelines on designing, implementing and evaluating highly effective interventions and what approaches may be helpful in the future.

FUTURE PERSPECTIVES AND RESEARCH AGENDAS

Each of the 19 papers presents clear guidelines for taking the discipline forward and highlights the areas needed to build out positive psychology's relevance. Taking the overall trends of these papers together, this Research Topic highlights the following:

(1) *Positive Psychology is not without its criticisms and critiques*. Joseph, Ryff, Wissing and others highlighted that despite positive psychology's rapid growth during the last two decades, there are still several challenges which need to be addressed. They argued that various critics have questioned the unique contribution of positive psychology as well as the validity of the theories, frameworks and models on which it is built. Ryff and Wissing highlighted the challenges relating to positive psychology's meta-theory, the questionable research practices positive psychologists employ, the validity of positive psychological assessments, the politics behind and exclusivity driving the discipline, the ineffectiveness of positive psychological interventions, its over-reliance on empiricism and that positive psychology is culturally biased. Joseph, on the other hand, argued that positive psychology lacks a holistic view of human nature and discussed the fragile relationship between humanistic psychology and positive psychology. These, and other authors, provided suggestions on how these could be addressed and how we can take the field forward.
(2) *Positive Psychology requires more holistic, integrative and sustainable models for facilitating mental health and wellbeing*. Bohlmeijer and Westerhof, Donaldson et al., and Duncan et al. stated that more holistic approaches need to be developed in order to facilitate mental health development. Here the focus should be on integrating current perspectives of the individual with more dynamic approaches related to the impact of the environment and (social) context. These new approaches to mental health and wellbeing management should focus on developing the "strengths" of the individual *and* managing mental health complaints (Van Zyl et al., 2021). Further, environmental factors (such as workplace climate, workplace design, financial status, physical health etc.) should be incorporated into mental health models. More objective measures should also be used to make wellbeing more "tangible" (Vella-Brodrick et al.). Weijers also argued that sustainable mental health interventions and approaches require interdisciplinary perspectives and that the field should be opened up to incorporate these more actively.
(3) *Positive psychology requires more multilevel approaches and multi-dimensional perspectives*. Various authors have highlighted the limitations of positive psychology's preference for understanding the individual in isolation from the environment (c.f. Ciarrochi et al.; Colla et al.; Nielsen abd Christensen; Peifer et al.). Individual behavior and experiences are not only a function of what is going on "within" the individual but also a result of what occurs "between" people and is influenced by the conditions of the environment in which they function. Further, positive psychology has been criticized for employing an oversimplified view of "positive institutions" by stating that positive institutional phenomena are nothing more than the aggregated mean experiences of individuals. More multi-leveled perspectives on positive states, traits and behaviors are required to address this limitation, especially when these are embedded within formal social systems such as organizations or communities.
(4) *Positive Psychology and its relationship to physiological functioning*. Duncan et al., Vallerand et al., Vella-Broderick et al. and others have called for more empirical research on the relationship between positive psychological states, traits and behaviors and physical wellbeing/physiological factors/neurology. Although a significant amount of attention has been placed on understanding individuals' (self-reported) positive states and experiences, limited attention has been given to how these are related to physiological wellbeing and neurological functioning. There is thus a call for increased attention to the relationship between positive psychological constructs and physical health.
(5) *Increasing the effectiveness and long-term effects of Positive Psychological Interventions*. Contributors to this Research

TABLE 1 | Summary of future perspectives on positive psychology.

No	Author	Title	Purpose	Views	Citations
Future perspectives on positive psychology as a discipline					
1	Ryff	Positive Psychology: Looking Back and Looking Forward	To reflect upon the past criticisms, present problems and future perspectives of positive psychology as a discipline.	1,350	1
2	Wissing	Beyond the "Third Wave of Positive Psychology": Challenges and Opportunities for Future Research	Reflecting upon the trends and nature of the "third wave" of positive psychology and provides a vision for positive psychology's future as an inter- or transdisciplinary science on wellbeing. The paper focused on unpacking the challenges, opportunities, and future perspectives of positive psychology as a discipline.	1,622	1
3	Joseph	How Humanistic Is Positive Psychology? Lessons in Positive Psychology From Carl Rogers' Person-Centred Approach—It's the Social Environment That Must Change	To discuss the relationship between- and call for further integration of positive psychology and humanistic psychology. Specifically, the aim was to highlight the importance of the social environment in facilitating personal growth and development.	8,394	3
Future perspectives on mental health and wellbeing					
4	Bohlmeijer and Westerhof	The Model for Sustainable Mental Health: Future Directions for Integrating Positive Psychology Into Mental Health Care	Presenting a model for sustainable mental health care by integrating positive psychological perspectives and different mental wellbeing approaches. This heuristic model provides a more balanced approach to developing, implementing, and evaluating mental health treatment strategies by incorporating both a complaint- and strength-oriented approach.	3,502	3
5	Donaldson et al.	PERMA+4: A Framework for Work-Related Wellbeing, Performance and Positive Organizational Psychology 2.0	Providing a more holistic approach to work-related wellbeing through expanding upon Seligman's (2012) PERMA Framework.	2,569	2
6	Duncan et al.	An Emerging Preventive Mental Health Care Strategy: The Neurobiological and Functional Basis of Positive Psychological Traits	Reflecting upon the relationship between positive psychological constructs (measured by self-report measures) and their relationship to neurological functions. Specifically, it provides guidelines for future research on measuring and managing positive psychological constructs and how these should be approached from a neurological perspective.	874	0
7	Vella-Brodrick et al.	Seeing Is Believing: Making Wellbeing More Tangible	To call for more objective or "tangible" measures for measuring and managing wellbeing. The paper provides current examples of "tangible" wellbeing and calls for more initiatives to advance this approach.	352	0
8	Weijers	Don't Miss the Well-Being Train: A Radical Proposal for Revolution in Positive Psychology	Calling for interdisciplinary perspectives on the conceptualization, consolidation, measurement and management of wellbeing.	683	0
Future perspectives on specific positive psychological constructs					
9	Bryant	Current Progress and Future Directions for Theory and Research on Savoring	To provide a snapshot of the current state of the art in savoring research and to present a roadmap for future research.	1,934	1
10	Colla et al.	"A New Hope" for Positive Psychology: A Dynamic Systems Reconceptualization of Hope Theory	To argue for an interdisciplinary approach to expanding the meta-theoretical, theoretical, and methodological horizons, enabling a more dynamic systems approach to study hope. Specifically, it provides a roadmap for alternative approaches and methodologies which could address limitations in contemporary hope research.	2,641	1

(Continued)

TABLE 1 | Continued

No	Author	Title	Purpose	Views	Citations
11	Peifer et al.	A Scoping Review of Flow Research	To provide a multilevel framework for flow which consists of three levels: (a) the individual, (b) the context and (c) the cultural level. In the first "Individual" level are the categories for personality, motivation, physiology, emotion, cognition, and behavior. The second "Contextual" level contains the categories for contextual and interindividual factors and the third "Cultural" level contains cultural factors related to flow. The authors expand upon their integrated model for flow and set an agenda for future research.	2,825	1
12	Schaufeli	Engaging Leadership: How to Promote Work Engagement?	To present a conceptual framework for "engaging leadership" and review the empirical work underpinning its construction. It integrates engaging leadership within the current positive organizational psychology lexicon and presents a roadmap for future research.	3,475	1
13	Vallerand et al.	The Role of Passion in Psychological and Cardiovascular Responses: Extending the Field of Passion and Positive Psychology in New Directions	Investigating the role of passion in physiological responses of individuals. Specifically, it aimed to investigate the role of passion, and the mediating role of cognitive appraisals, in the psychological- and physiological responses to stressful situations.	722	0
14	Wehmeyer	The Future of Positive Psychology and Disability	To summarize the factors that led to the emergence of a focus on the positive psychology of disability and a strength-based approach in the field, examine the state of knowledge and practice as it pertains to the positive psychology of disability, and examine the challenges that serve as barriers to progress in this area and opportunities for advancement.	1,184	1
Future perspectives on positive psychological interventions					
15	Ciarrochi et al.	Toward a Unified Framework for Positive Psychology Interventions: Evidence-Based Processes of Change in Coaching, Prevention, and Training	To present an integrated model for positive psychological processes through an extended evolutionary psychological perspective. Specifically, the paper postulates that a multi-dimensional and multilevel evolutionary approach could organize effective change processes in psychosocial interventions by focusing on context-appropriate variation, selection, and retention of processes, arranged in key biopsychosocial dimensions across psychological, biophysiological, and sociocultural levels of analysis.	7,320	0
16	Nielsen and Christensen	Positive Participatory Organizational Interventions: A Multilevel Approach for Creating Healthy Workplaces	To argue for more positive participatory organizational-level interventions to enhance wellbeing and performance. Specifically, the paper calls for more multi-leveled intervention approaches aimed at managing the job characteristics (demands/resources) of individuals, groups, leaders and organizations.	2,707	6
17	Passmore and Evans-Krimme	The Future of Coaching: A Conceptual Framework for the Coaching Sector From Personal Craft to Scientific Process and the Implications for Practice and Research	To provide a structured framework for the future development of coaching research.	4,421	0
18	Van Woerkom	Building Positive Organizations: A Typology of Positive Psychology Interventions	To develop an evidence-based typology for positive organizational interventions. The paper distinguishes between target level of organizational interventions (organization, group or individual) and between one-off and structural interventions. The paper concludes with suggestions on improving the long-term effectiveness of positive organizational interventions.	3,679	0
19	Worthington and Van Zyl	The Future of Evidence-Based Temperance Interventions	To provide an overview of the challenges and opportunities for expanding the theoretical conceptualization of temperance and reflect upon the challenges in temperance-related PPIs. The paper provides a research agenda for each aspect of temperance, and presents a roadmap for future temperance interventions.	2,172	1

Topic called for more attention on designing effective positive psychological interventions. Here, the focus should be on how positive psychological interventions should be designed to ensure sustainable changes in wellbeing over time. Positive psychological interventions that have been shown to work well should be dissected, and the reasons for their effectiveness unpacked. When interventions fail to produce the intended results, researchers should not look for contextual factors explaining the results away, but rather reflect on the methods and content of these interventions to determine why they did not work well. There is also a call for more alignment and standardization in positive psychological intervention design approaches and methodologies.

(6) *New approaches to understanding positive psychological phenomena are required*. The COVID-19 pandemic showed that positive psychological approaches and theories cannot readily explain changes in behavior during a crisis. This implies that the usefulness of positive psychological theories, tools and techniques may only be applicable in relatively stable and predictable environments. Therefore, new approaches and theories are needed to help explain how positive states, traits, and behaviors can be facilitated in times of crisis.

(7) *Developing more indigenous psychologies*. Positive psychology has been criticized for being a primarily western driven enterprise which is culturally biased. The current narrative of a one-size-fits-all approach to understanding positive states, traits and behaviors is not only culturally incensive but facilitates cultural biases and reinforces certain cultural stereotypes. As such, Wissing argued that more indigenous positive psychologies should be developed that are centered around the ideals, values, and world views of different cultures.

(8) *Positive psychology needs to employ more robust research methods, designs and approaches*. Positive psychology is known for over-emphaisisng the importance of empiricism and positivism and over-relies on cross-sectional designs to support its claims. It has swayed away from using more robust methods such as qualitative research, experimental designs and mixed-method approaches. For positive psychology to grow, more robust research methods and approaches are required to describe relationships between factors but also to explain how/why these relationships exist.

(9) *Positive Psychology should capitalize on rapid changing technologies*. Positive psychologists should be at the forefront of adopting new technological innovations to assess, develop, and distribute positive psychological tools and techniques. New developments in machine learning, natural language processing, augmented reality and digital meta-verses provide exciting new avenues for the discipline to grow.

CONCLUSION

Positive psychology has shown to be the fastest-growing sub-discipline of psychology and has gained significant attention in practice (Martín-del-Río et al., 2021). It's rapid growth during the last two decades indicates that the discipline is on the horizon of a new wave of pioneering research, inspiring ideas and ground-breaking innovations. This new wave of research will be characterized by the rapid adoption of new technological innovations (e.g., artificial intelligence systems and machine learning), and will require more sophisticated models, approaches and measures to explain complex psychological phenomena. Facilitating the growth of the discipline will also require closer collaboration between scientists/practitioners, organizations/communities and professional societies/regulators to fast track the development and implementation of scientific innovations. We hope that this collection of articles from some of the top minds in our field, will inspire researchers to explore new opportunities and that it will provide a roadmap for future research.

AUTHOR CONTRIBUTIONS

LZ wrote the manuscript. MS co-managed the Research Topic and made conceptual contributions to the editorial. Both authors contributed to the article and approved the submitted version.

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PERSPECTIVE
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Positive Participatory Organizational Interventions: A Multilevel Approach for Creating Healthy Workplaces

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In the following perspective paper, we argue for the importance of conducting research on positive participatory organizational interventions. We propose that these types of interventions are important because they not only focus on eliminating or reducing adverse job demands but focus also on developing job resources. To achieve the best effects, actions should be taken to address demands and resources at the individual, group, leader and organizational levels. We furthermore suggest that the participatory intervention process itself may also build resources at these four levels.

Keywords: participatory interventions, IGLO model, resources, JD-R, healthy workplaces, positive psychology

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INTRODUCTION

According to the World Health Organization (WHO), healthy workplaces are characterized by employees and managers collaborating through a continuous improvement process to protect and promote the health, safety, and well-being of employees and the sustainability of the workplace (World Health Organization and Burton, 2010). Furthermore, the WHO defines health as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity" (WHO Definition of Health, 2015). To create healthy workplaces, it is therefore crucial to also develop the positive aspects of the job and build workers' personal resources to ensure good health among employees (Christensen et al., 2017). Despite a few promising examples (Christensen et al., 2019), there are, however, few intervention studies that focus explicitly of how to build healthy workplaces taking a positive psychology approach. Our perspective paper aims to apply lessons learned from the wider intervention literature regarding participatory multilevel approaches that could be applied to the field of positive participatory interventions (PPOIs).

PPOIs focus on improving the work environment and employee well-being. Such improvements happen through changing work policies, practices, and procedures through a collaborative approach where managers and employees jointly decide on the process (the design and implementation of the intervention) and the content of the intervention (changes to work policies, practices, and procedures) (Nielsen and Noblet, 2018). PPOIs employ a problem solving cycle approach to change and go through the phases of (1) preparation, (2) screening, (3) action planning, (4) implementation of action plans and (5) evaluation (Nielsen and Noblet, 2018).

In this perspective paper, we call for positive psychology researchers to create healthy workplaces through the implementation of PPOIs. We suggest the IGLO (Individual, Group, Leader and Organizational levels) framework may be useful to develop the content (action plans and their implementation) and the process (the collaborative process of employees and managers) of such interventions.

CREATING HEALTHY WORKPLACES BY CHANGING WORK POLICIES, PRACTICES, AND PROCEDURES

In order for PPOIs to achieve their intended outcomes, actions need to be sustainably implemented (von Thiele Schwarz et al., 2020). We argue that the Job Demands Resources model (JD-R) (Demerouti et al., 2001) is a suitable framework for developing actions. The JD-R model has a holistic approach to employee well-being including a motivational process and a health impairment process, respectively activated by resources and demands (Demerouti et al., 2001). Key to the JD-R model is the balance between job demands, i.e., the negative aspects of the job that require sustained effort or skills and job resources, i.e., the positive aspects of the job that enable employees to achieve their goals and stimulate personal growth (Demerouti et al., 2001). When making changes to work policies, practices and procedures it is important to consider this dual perspective and develop and implement action plans that reduce or eliminate job demands and build resources to not only reduce poor health but also to enable employees to grow and thrive in their jobs. Building resources is particularly important as resources may help buffer those aspects of the job that are not easily eliminated or reduced (Vignoli et al., 2017).

PPOIs focus on changing work practices, policies and procedures, and prescribe a structured, organizational process (Nielsen, 2013). Action plans should address both job demands and resources and thus focus on both the positive and negative aspects at work (Christensen et al., 2017). We propose that demands and resources may be addressed at multiple levels in the organization (Nielsen and Noblet, 2018). Recently, Nielsen and Miraglia (2017) and Day and Nielsen (2017) suggested the IGLO framework for building resources to promote positive employee and organizational health at the Individual, Group, Leader and Organizational levels. The IGLO framework can also be applied to job demands. When developing actions, the IGLO framework can be applied at the four levels. We provide brief examples of interventions at these levels, but in reality the possibilities of actions are much wider than presented here.

At the Individual level, we need to address the inherent demands people put on themselves, for example, employees' expectations of how much work they can take on and build individual resources such as beliefs about successfully overcoming challenges at work, i.e., self-efficacy (Bandura, 1986). At the Group level, we need to consider actions that address job demands within the work group, for example, whether group conflict and incivility prevent effective collaboration (Leiter et al., 2012) or whether we need to increase group resources such as effective communication. At the Leader level, leaders at the line management level may engage in abusive leadership or may lack the skills to support employees' development and thus training leaders may be an important way of building leaders' resources in an attempt to reduce adverse demands they place on employees (Kelloway and Barling, 2010).

Finally, at the Organizational level, Human Resource policies and practices may need to be adjusted or developed. Examples of interventions at this level may be jobs designed around high performance work practices, which have been found to be related to employee well-being (Ogbonnaya et al., 2017). High performance practices cover a range of practices across three dimensions. Ability concerns the development of training systems that ensure employees have the necessary skills and competencies to do the job. Motivation concerns the development of clear and transparent career progression pathways and reward systems to motivate workers. Finally, Opportunities refer to designing jobs in a way that encourages teamworking, information sharing, job autonomy, and flexible working (Ogbonnaya et al., 2017).

CREATING HEALTHY WORKPLACES THROUGH PPOI PROCESSES

More recently, it has been argued that the process, i.e., how PPOIs are implemented is as important as the content of PPOIs (Nielsen and Miraglia, 2017). The participatory process is key to building organizational resilience, i.e., developing the organization's ability to address adverse job demands and build resources (von Thiele Schwarz et al., 2017).

Multiple benefits of a PPOI process have been identified. First, the process creates employees' buy-in and ownership. Second, it makes use of workers' expertise of which demands and resources need to change and it enables workers to make sense of the PPOI. Third, it optimizes the fit with the organizational context, and it facilitates the PPOI process (Nielsen and Randall, 2012). Fourth, it enables dialogue between managers and workers about what changes need to be made (Christensen et al., 2019). Finally, the dual perspective on both negative and positive aspects of the work environment encourages a balanced understanding of the environment (Christensen et al., 2019).

Although there is a growing awareness of how the intervention process may influence intervention outcomes (Nielsen and Abildgaard, 2013; Nielsen and Randall, 2013), there has to date been limited research on how the participatory process may build resources at the four IGLO levels.

At the individual level, the individual resources relating to Psychological Capital (PsyCap; Brunetto et al., 2020) may be developed. PsyCap consists of four dimensions/resources: Self-efficacy, optimism, hope and resilience. As employees engage in the participatory process, they may build their confidence that they can take on and succeed in addressing adverse working conditions (self-efficacy). The participatory process may also build to employees positive attribution about how their working life may improve as actions to eliminate or reduce demands and build resources are implemented thus increasing their optimism. Equally, the participatory process may build employees' perceptions of hope as they persevere toward achieving the goals of the intervention. Finally, the participatory process may build employees' individual resilience as the review the progress of the implementation of action plans and develop strategies for successfully implementing changes to eliminate or reduce work demands and build resources.

At the group level, the participatory process may build group resources as workers engage in collective decision making about which changes to work practices and procedures to implement. One group-level resource that may be developed through the participatory process is collective sensemaking (Nielsen et al., 2021b). The development of shared understanding occurs through collective sensemaking processes (Maitlis and Christianson, 2014). Employees who engage in the participatory process collectively engage in developing and implementing action plans (Nielsen and Noblet, 2018), meaning they experience similar cues as to how to interpret the situation they find themselves in Goffman (1974), in this case the PPOI process, they are therefore likely to engage in collective sensemaking. The collective exchanges between participants are likely to lead to collectively generated sensemaking as the PPOI progresses (Stensaker et al., 2008). It is possible that through the discussions of working conditions, members of the work team develop a shared meaning of the problems (Weick, 1995). Collective sensemaking around the participatory process has been found to be related to increased work engagement (Nielsen et al., 2021b).

Collective job crafting (Leana et al., 2009) may be another group-level resource which could be developed as a result of the participatory process. As employees collectively explore and agree which changes to work practices, policies, and procedures need to developed and implemented, they craft not only their own jobs, but engage in a collective job crafting process where changes are implemented not only to the benefit of the individual but to the benefit of the entire work group. Hasson et al. (2012) found that in some work groups employees reported more changes had incurred as a result of the PPOI than their line managers reported, despite the managers being officially responsible for implementing changes. This finding could be seen as an indication that employees developed and implemented their own actions.

At the leader level, leaders may develop their own resources as a result of their role in the PPOI. In recent years, there has been an increasing focus on leadership behaviors that promote employee well-being, also termed health promoting leadership (Nielsen and Taris, 2019). Key characteristics of health-promoting leadership is that the leader enact behaviors that support employee well-being. Such behaviors include putting well-being on the agenda in meetings and engaging in discussions with employees about what changes need to be made to ensure their well-being (Franke et al., 2014). The participatory process offers an arena for leaders to put well-being on the agenda and engage in such discussions and thus the process may help leaders develop their health-promoting leadership skills.

At the organizational level, organizational resources may be built in relations to future health and safety management practices. Nielsen et al. (2021a) argued for the integration of PPOI processes into existing practices to ensure sustainable change. In many modern organizations, continuous improvement practices are employed to enhance organizational performance and productivity, the practices focus on continuous improvement of work practices and procedures to streamline the work process (von Thiele Schwarz et al., 2017). One widely used continuous improvement system is that of Lean (Radnor et al., 2012). A key component of Lean is Kaizen, the use of continuous improvement boards that workers employ to identify, implement, evaluate, and integrate the changes to work practices and procedures needed to streamline work processes (Jacobson et al., 2009). von Thiele Schwarz et al. (2017) demonstrated how well-being could be integrated into this process and that as a result the organization built its resources to manage the job demands and resources in a win-win situation.

DISCUSSION

In this perspective paper, we argue for researchers in positively psychology to create healthy workplaces through multi-level positive participatory organizational interventions PPOIs offer a way forward in creating healthy workplaces in which employees may thrive and develop in their jobs. We argue for a dual perspective approach where PPOIs focus at both eliminating or reducing adverse job demands as well as increasing job resources and that demands and resources need to be addressed at the individual, group, leader and organizational levels (Nielsen and Miraglia, 2017). Based on the IGLO framework, we make two significant contributions. First, the participatory process in itself may build resources at the IGLO levels. We call for research on how the participatory process itself may foster a healthy workplace that empowers employees and facilitates their thriving at work. Second, we argue that action to improve working conditions and well-being should include actions at all IGLO levels.

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 authors.

AUTHOR CONTRIBUTIONS

KN developed the first draft. MC contributed with additional text. All authors contributed to the article and approved the submitted version.

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PERSPECTIVE
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The Future of Evidence-Based Temperance Interventions

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Positive psychology has accumulated a large and ever-growing body of scientific knowledge about human strengths and virtues. However, research on positive psychology interventions (PPIs) to develop such is still in its infancy. In this brief position paper, we summarize the status of PPIs in one of the positive psychology's most important virtues: temperance. Temperance refers to the capacity to manage habits and protect against excess and is composed of forgiveness, humility, and (we include) patience. Specifically, we examine the current state-of-the-science in the conceptualization of temperance, explore the efficacy of temperance interventions, and reflect upon what the future may hold in this research domain. In this paper, we first highlight the challenges and opportunities for expanding the theoretical conceptualization of temperance and reflect upon the challenges in temperance-related PPIs. For each aspect of temperance, we propose a specific research agenda. Second, we explore what is needed for PPIs to promote temperance and how growth in temperance intervention research can be fostered. Generally, while forgiveness interventions are well established, we recommended that both humility and patience interventions need more viable evidence-based research on existing and new interventions. Third, we advanced several recommendations regarding how to promote more research in new interventions. These recommendations included attracting more funders to the area, developing new interventions, and employing new technology. Because intervention research in temperance is in its infancy, the future looks rosy for PPI researchers as we move into a second generation of positive psychology research.

Keywords: positive psychological interventions, temperance, forgiveness, future perspectives, humility, patience, positive psychology

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INTRODUCTION

Positive psychology has accumulated a large and ever-growing body of scientific knowledge about character strengths and virtues (Van Zyl et al., 2021). However, research on positive psychology interventions (PPIs) to help people develop their character is still in its infancy (Van Zyl et al., 2019). In this brief position paper, we evaluate the status of PPIs in one of the positive psychology's most important virtues—temperance. Specifically, we examine our perspective on the current state-of-the-science in the conceptualization of temperance, explore

the efficacy of temperance interventions, and reflect upon what the future may hold in this research domain. Importantly, this is not a systematic review of the literature. Rather, we have drawn on our baseline knowledge of the literature and offered our perspective. We hope that our perspective might be heuristic and stimulate meta-analyses, systematic reviews, and empirical research.

Each virtue is important, and in many ways, all virtues are interconnected. However, some seem more fundamental than do others because they organize or empower others. For example, humility, which is not strictly a virtue in Peterson and Seligman's (2004) category system, traditionally has been seen as a virtue and some philosophers (i.e., Augustine) have named it as the most central virtue because it is an attitude that orients one toward goodness or virtue. Self-control or self-regulation also is seen as an essential virtue because it is methodologically central. That is, most virtues involve inhibiting natural proclivities toward self-interest or even vice. Self-regulation or self-control is methodologically how this is often done. Finally, wisdom is a virtue needed to discern among competing goods. There is also an empirical basis for seeing temperance (involving self-regulation and the ability to focus wisely on others) as central (see McGrath and Walker, 2016).

TEMPERANCE—ITS COMPONENTS AND POSSIBILITIES

Peterson and Seligman's (2004) classified temperance as one of the six universal virtues they identified as being cross-culturally valued, leading to a genuinely good character. It is also a fundamental component of leading a happy, healthy, and flourishing life (Worthington, 2020a). This virtue reflects an inherent capacity to moderate or control one's thoughts, feelings, habits, and desires (Mayerson, 2020) that protects against excess or deficiency (Fehr and Gelfand, 2012). Temperance may encompass many related behaviors, such as prudence, conscientiousness, caution, and self-restraint, that could tame impulses of anger, resentment, selfishness, over-indulgence, and rigidity (Shahab and Adil, 2020). According to Peterson and Seligman (2004), as a virtue of good character, temperance can be exerted through four signature strengths: *forgiveness and mercy*, *humility*, *prudence/self-regulation*, and (we would add) *patience* (Schnitker and Emmons, 2007). Peterson and Seligman (2004) included prudence/self-control as their last two character strengths making up the virtue of temperance. Prudence is classically considered the ability to govern oneself by reason (which seems like one form of self-control—cognitive), and self-control is also considered self-governance—and is related to self-regulation (of cognition and behavior), emotion regulation, and other ways of stifling unwanted experiences and driving desired but hard-to-do experiences. Thus, prudence and self-control seemed confounded and not distinct in Peterson and Seligman's taxonomy. Furthermore, little empirical evidence exists in actively developing prudence and self-regulation through PPIs (Van Zyl and Rothmann, 2019). There is thus a pertinent need to theoretically and empirically explore these components from a positive psychological perspective and invest more resources in clarifying its role within the positive psychological lexicon (Summers, 2020). As such, we do not consider these factors further in our paper. With the exclusion of prudence/self-regulation, all of these factors have enjoyed extensive empirical attention in the positive psychology literature and formed the basis of several important PPIs (Worthington, 2019). We, therefore, choose to focus on the qualities of forgiveness, humility, and patience and the PPIs that promote them.

Forgiveness and Mercy

Forgiveness refers to a form of intraindividual, pro-social change that occurs within an individual that changes one's attitude toward a transgressor to become more benevolent and less vengeful/avoidant (Worthington, 2020a). Conceptually, a distinction should be made between "forgivingness" and "forgiveness." The former pertains to an individual's dispositional readiness to show forgiveness, whereas the latter refers to the psychological changes that take place which changes the perception of the transgressor or transgression (Peterson and Seligman, 2004). Forgiveness is also conceptually different from reconciliation. Where forgiveness is focused on changing one's feelings and behavioral intentions toward a transgressor, reconciliation refers to the extent toward which a damaged interpersonal relationship can be repaired through mutual, trustworthy, and supportive behaviors (Worthington and Drinkard, 2000).

Forgiveness should also not be confused with mercy. Whereas forgiveness is an "internal process," mercy is an act by one with authority to administer or pursue less punishment than is justly deserved (Worthington, 2006). Forgiveness is, therefore, a "*general concept reflecting kindness, compassion or leniency toward (1) a transgressor (2) someone over whom one has power or authority or (3) someone in great distress*" (Peterson and Seligman, 2004, p. 446). Fundamentally, forgiveness involves changes in emotions and behavioral intentions, which result in perceptions of the transgressor/transgression to become more positive and less negative (Worthington, 2006). In other words, the transgressor is viewed with more understanding, benevolence, compassion, and kindness (Shahab and Adil, 2020) and less hatred and vengeance is felt (Worthington, 2020a).

Forgiveness is therefore composed of two experiences that are related but not intertwined inextricably. *Decisional forgiveness* is a behavioral intention to treat a transgressor as a valued and valuable person and not pursue revenge for an offense (Worthington and Wade, 2020). Decisions to forgive can be followed through on and yet emotionally, the decisional forgiver could still feel resentment, bitterness, hatred, anger, and anxiety (i.e., unforgiveness). Thus, a second type of forgiveness, *emotional forgiveness*, must exist. Emotional forgiveness is the replacement of unforgiving emotions and motivations with other oriented, positive emotions (i.e., empathy, sympathy, compassion, or love) and benevolent motivations (Worthington, 2006). Berry, Worthington et al. (2001) argued that forgiveness is largely an affectively experienced phenomenon, where experiences of resentment, bitterness, and the like are neutralized through empathy, kindness, compassion, and humility.

Although forgiveness research has enjoyed much empirical attention over the last century, we believe there are still a number of conceptual issues needing clarification. In this brief perspective article, we admit to the inadequacy of being able to justify each recommendation in the present bulleted list (and the bulleted lists for humility and patience) within an essay of reasonable length. We generally made our recommendations because (1) they had not been previously researched and (2) they seemed to us to be needed, given our subjective sense of what might be needed to push ahead research on each topic. We hope our suggestions are heuristic, and we apologize for the lack of detailed context around each one. With that caveat in mind, we believe the next decade in forgiveness research should as:

- Determine the growth-promoting and transcendence functions of forgiveness, neither of which have received much research given the focus on the deleterious effects of not forgiving characterizing much research (Worthington, 2020b);
- Find differences in the ways that decisional and emotional forgiveness interact with each other over time and ways that each contribute to spiritual, relational, psychological, and physical health outcomes; whereas the two types of forgiveness have been hypothesized to have different spiritual, relational, psychological, and physical health outcomes, little systematic research has investigated what those differences are (Worthington, 2020b);
- Enhance and supplement theoretical and empirical frameworks for self-forgiveness; Woodyatt and Wenzel (2020) have systematically reviewed the research and arrived at a similar conclusion;
- Map interconnections, especially over time, among decisions to forgive, emotional forgiveness, observing in offenders expressions of accountability (e.g., remorse, regret, apology, and amends making), and observing in offenders indications of self-forgiveness and feeling forgiven by God (Worthington, 2020b);
- Explore context-specific variables that affect the presence or absence of forgiveness in dyadic, family, group, community, and macro (i.e., cultural) contexts (for reviews, see Worthington and Wade, 2020); and
- Investigate the future cultural value of forgiving (qua justice) in this era of increasing political and ideological polarization that has resulted in a strong valuing of punitive justice of those who harm and censure of those failing to support social justice for those who lack social power (Sandage et al., 2020).

Humility

Humility is a character strength rooted in the work virtuous ethics. It is a critical component of relationships providing social oil that facilitates smooth relationships and a buffer against hostility and relationship-disintegration when things go wrong in relationships. Humility also directly affects mental health and wellbeing (Worthington and Allison, 2018), and it often acts through relationships to further affect mental health and wellbeing. From this perspective, humility has been defined as a non-defensive inclination to view the self accurately or realistically, including both one's strengths and developmental areas (Peterson and Seligman, 2004). Recent conceptualizations of humility are considerably more refined than initial research conceptualizations. Humility occurs when individuals let their accomplishments speak for themselves, and actively refrain from distorting information to defend, verify or repair their own personal image (Watkins et al., 2016). As a foundational virtue, Worthington and Allison (2018) argued that humility is composed of three necessary and sufficient conditions. Humility must include (1) an accurate awareness and modest portrayal of one's strengths and weaknesses (realistic self-assessment) (2) an authentic appreciation for the strengths and contributions of others (other orientation), and (3) an openness for learning, constructive feedback, and new ideas of others (teachability), all of which quell self-focus. Therefore, expressed humility is discernible (imperfectly) from observable behaviors that manifest during interpersonal interactions.

Humble individuals engage in ongoing *realistic self-assessment* through interactions with others. Humble individuals process information gathered in social interactions as a means to both explore their personal identities (e.g., personality, strengths, and limitations) and to modify their behavior when necessary. Humility, therefore, fosters an accurate or objective appraisal of one's own strengths and areas needing additional development through a transparent (situation-appropriate) disclosure of their own limitations, openly acknowledging their mistakes, and actively seeking constructive feedback on their own development. Humble individuals tend to show high levels of relational functioning, psychological wellbeing, and mental health (Owens et al., 2013; Watkins et al., 2016; Worthington and Allison, 2018).

When humble individuals show an openness for learning, express an active desire to solicit constructive feedback on their own development, and seek new ideas of others, they show their "*teachability*" (Owens et al., 2013). Open-mindedness, a willingness to learn, and a receptive mindset are, therefore, vital elements of humility. Individuals showing high levels of teachability also afford others an opportunity to share their voices and foster greater trust, motivation, and a heightened sense of justice, fairness, and equity in teams (Cropanzano et al., 2007).

Humility is also a function of an *appreciation for the strengths, value, and contributions of others* (Owens et al., 2013), not merely a decrease in positive appraisal of the self (Worthington and Allison, 2018). Humble individuals can transcend the natural comparative-competitive response when engaging with others. Instead, they aim to acknowledge and celebrate the strengths/contributions of others (Worthington and Allison, 2018). In essence, this others orientation is a physical manifestation of the individual's positive view of human nature and others (Owens et al., 2013).

Worthington and Allison (2018) suggested that several distinct forms of humility exist. *General trait humility* is a personality disposition (relative to states of humility, such as entering a negotiation with humility rather than arrogance). *Relational humility* is humbleness that is differentially experienced in different relationships with others such that, for example, being

a humble boss or worker would entail different manifestations. *Cultural humility* is humbleness about cultural beliefs, differences, and views. *Intellectual humility* is humility about personal opinions, ideas, and intellectual capabilities that one is emotionally invested in. Finally, *spiritual humility* is humility before what one considers sacred.

Although humility has over 300 studies investigating it, it is still concept within positive psychology that requires further exploration. We therefore see a number of possibilities that could strengthen then scientific foundation of humility research. Future research on humility should focus on:

- Clarifying the definition; about half of the researchers see the definitional point of being other oriented to be debatable; and many favor "a quiet ego" as a necessity. Future research should resolve whether that point is affected by collectivistic versus individualist cultures or relationships, by religious beliefs (i.e., Buddhism and Hinduism might favor quiet ego; the Abrahamic faiths might favor other orientation). Such distinctions have not been addressed. While there might be religious and cultural origins to seeing humility as requiring a "quiet ego" or other orientation, it is unclear whether there is any residual religious basis for differing on this crucial point of the definition of humility;
- Articulating an evolutionary theory of humility's benefits to the species. There are no evolutionary accounts of humility in the literature;
- Describing how humility (with its emphasis on lifting others up), when applied to disadvantaged minorities, is not a call to accept oppression, but rather is a call to social justice. This has long been a criticism of humility from theoreticians writing about implications for people of disempowered status (for essays and debates on this point, see Collins et al., 2020);
- Documenting mental and physical health benefits of humility, whereas the social benefits of humility have been well documented, the mental health and physical health benefits have not been as often studied (see Worthington and Allison, 2018);
- Providing a strong theoretically grounded meta-analytic review of the field. Some systematic reviews exist (i.e., for reviews, see Worthington et al., 2017), but no recent meta-analysis exists; and
- Showing the relationship of humility to other virtues it is and is not related to.

Patience

Peterson and Seligman (2004) conceptualized patience not as a distinct virtue, but as an amalgam of the virtues of persistence (which they saw as part of courage), open-mindedness (which they saw as part of wisdom and knowledge), and self-regulation (which they saw as a synonym for self-control). Schnitker and Emmons (2007) sought to modify the Peterson and Seligman conceptualization of patience. They showed that all 24 strengths included in the Values in Action Inventory of Strengths (Peterson and Seligman, 2004) accounted for only 26% of variance in patience scores. Thus, Schnitker and Emmons argued that patience was a distinct and separate virtue. Schnitker (2012, p. 263) defined patience as "the propensity of a person to wait calmly in the face of frustration, adversity, or suffering". We might speculate that the reason that Schnitker and Emmons (2007) found patience to be substantially different from the other virtues Peterson and Seligman (2004) identified resides in *calm* waiting. Self-control or self-regulation could be effective whether the person grumbled, complained, frantically exerted effort, or reluctantly tolerated discomfort or frustration. Certainly, patience can involve persistent calm waiting, but again, most persistence is not characterized by patience; often sheer doggedness is needed for persistence. Finally, open-mindedness can be part of patience, but often it is not; much of patience involves putting up with frustrations, unpleasant events, or small hassles, none of which require much open-mindedness. But, calmness is the aspect of patience that distinguishes it from both self-control and prudence. We have sought to examine patience as part of temperance, complementing forgiveness and humility, even though patience does not fit neatly into Peterson and Seligman's conceptualization of virtues or character strengths (Schnitker et al., 2017b).

At its core, patience is a hybrid personality disposition that requires a self-transcendent narrative where suffering has meaning, serves a purpose, or can be justified (Schnitker et al., 2017b). McAdams and Pals (2006, p. 206) stated that "patience emerges when characteristic adaptations related to regulating emotions are imbued with a particular narrative that becomes a part of one's identity." Building on this definition, Schnitker (2012) developed a three-factor model for patience. Patience is composed of (1) *interpersonal patience* (i.e., a calm response to others perceived as being unpleasant, frustrating, or burdensome), (2) *life hardship patience* (i.e., a calm response to and tolerance for unpleasant or frustrating life events, such as financial hardships), and (3) *daily-hassles* patience (i.e., a calm response to hassles in daily life, such as traffic jams). Managing suffering at various levels from intense pain to aggravating unpleasantness is therefore a core component of patience. The magnitude and severity of the causes of the suffering to be endured are objectively different among these types of patience. However, all three types of patience involve an individual's calm response to what is subjectively perceived as a source of minor or major suffering (Schnitker et al., 2017b).

All three types of patience have been associated with various positive life- and work-related outcomes (Cagande et al., 2020). High levels of patience have been associated with higher agreeableness, mindfulness, goal effort, progress on goals, and satisfaction with achieving goals and lower neuroticism and anxious attachment (Schnitker, 2012; Cagande et al., 2020; Ng et al., 2021). In addition to the commonalities, *interpersonal patience* was correlated with higher self-esteem, hope, and life satisfaction and lower avoidant attachment and loneliness (Schnitker et al., 2017b). *Life-hardships patience* was found to be correlated with higher conscientiousness, hope, and self-esteem (Schnitker et al., 2017b). *Daily-hassles patience* was also found to be correlated with higher openness and life satisfaction and lower avoidant attachment and depression (Schnitker, 2012).

Despite these positive associations, much work is needed to further differentiate patience from other psychological constructs. Several challenges must be resolved to advance patience research:

- Within the current positive psychological nomological lexicon, it is not yet clear whether patience is to be treated as a strength or a virtue.
- Trait and state patience might well have different sequelae. These have not previously been investigated.
- A clearer distinction between patience and other aspects of personality (such as self-control, conscientiousness, and emotional regulation) needs be established for it to thrive as a stand-alone strength (Schnitker, 2012).
- Because calm waiting, rather than mere waiting, is hypothesized to be essential to patience, experimental determination of how calm one must be and how that is manifested physiologically, cognitively, and behaviorally need to be mapped (for a discussion, see Schnitker et al., 2017b).
- For patience interventions to gain traction, an understanding as to how patience contributes to and complements the virtue of temperance has not been articulated and thus is also needed.

EFFICACY OF TEMPERANCE INTERVENTIONS

Numerous interventions have been developed to promote these three aspects of temperance (c.f. Worthington and Wade, 2020). The need for these interventions stems from people's inherent struggle to forgive, act humbly when they wanted to do so, and wait patiently for good things to develop (Worthington et al., 2014). Thus, many people have sought to build forgiveness, humility, and patience, and providing evidence-based interventions for each aspect of temperance has been an important public service of psychology (Worthington and Wade, 2020). Generally, across the three, the interventions have been found to be efficacious and occasionally effective in common use. We must be cautious in concluding that the interventions have been successful because the intervention research, in general, has several reasons to proceed carefully. First, many more studies have investigated students whose problems have not reached clinical severity. Whereas that suggests wide applicability of psychoeducation, it does not give as much support for clinically severe symptoms. Second, across the three aspects of temperance, there is wide variability in the confidence available for assessing the constructs. Assessment of forgiveness has been found to be excellent (Worthington et al., 2014) and similarly for general humility (see McElroy-Heltzel et al., 2019). However, much fewer assessments (with correspondingly less evidence supporting estimated reliability and validity) have been developed for patience (Schnitker et al., 2017a). Third, whereas numerous interventions to promote forgiveness have been subjected to randomized controlled trials (RCTs; Wade et al., 2014), few interventions have been developed for both humility and patience (Schnitker et al., 2017a; Worthington and Allison, 2018). Thus, it is unclear whether good exercises have yet been developed to help people develop those two aspects of temperance.

In the following brief review, with the intent of uncovering new research directions, researchers generally used similar definitions across each aspect. In addition, the measures used to assess change have been generally the same within each domain.

Forgiveness Interventions

In many ways, forgiveness might be considered an exemplar for PPIs. Wade et al. (2014) identified 62 RCTs of forgiveness interventions spanning five decades. Wade and Tittler (2020) further found since their original meta-analyses, an additional 16 RCTs were published between the meta-analysis and their review (i.e., 2012–2018). Wade and Tittler (2020) argued that additional field studies and other non-experimental forgiveness interventions—both of which were more applicable to effectiveness than efficacy—were not included in the meta-analysis and review. These need to be documented as well as the RCTs for a more complete picture of the support for forgiveness interventions. Arguably, one reason that forgiveness interventions have been effective and popular has been that they did not focus entirely on its positive psychology potential. When Seligman and Csikszentmihalyi (2000) created positive psychology, they conceptualized it as the positive half of psychology. That is, helping heal dysfunction and problems—something positive in itself, though it focused on getting rid of negative aspects of life—had been the almost sole focus of psychology since World War II, and the founders of positive psychology challenged psychologists to investigate the other half of psychology (Wade et al., 2014). Forgiveness was an ideal bridge between positive psychology and traditional psychology. People who struggled with unforgiveness were clearly troubled, and unforgiveness was wrapped up in serious psychological dysfunction. So it dealt with healing (though unforgiveness was not diagnosable in itself; Worthington, 2020a). But forgiveness was also seen as a virtue, and it therefore also dealt with the positive half of psychology—promoting flourishing (Worthington, 2020b). Some of the major motivations for studying forgiveness psychologically were that it could prevent and heal stress-related physical and mental health disorders, heal relationship ruptures like affairs, incest, and abuse, and help deal with spiritual disruptions (Tittler and Wade, 2019).

Despite differing approaches among commonly studied programs to promote forgiveness, virtually all forgiveness interventions share common elements: (1) they act as conduits for victims to reflect upon and disclose the details of a transgression (2) they aid in altering or reframing the perspective through which transgressions are interpreted (3) they seek to develop empathy, kindness, and understanding for the transgressor, and (4) they promote intentional commitment to forgive transgressors (although this may take time; Wade and Worthington, 2005). Wade and Tittler (2020) found that most forgiveness interventions have aimed at forgiving hurtful offenses, and most effective interventions have taken several hours.

Two theoretical models for promoting forgiveness have dominated as: Enright's forgiveness process model (Freedman and Enright, 2020) and the REACH Forgiveness model (Worthington, 2020b). But other well-studied interventions include Forgive for Good (Luskin, 2001), emotionally focused therapy (Greenberg and Meneses, 2020), and forgiveness after affairs (Baucom et al., 2009). No single approach has been shown to be more efficacious per hour of treatment. A reliable finding from Wade et al., 2014 meta-analysis is that a linear relationship exists between the effect size of forgiveness (*d*, the "response") in standard deviations and the time spent conscientiously trying to forgive (*T*, i.e., the "dose"). This dose–response relationship has been described using a regression equation, $d = 0.124 + 0.046^{*}\ T$. The initial intercept is likely a positive effect from hearing a definition of forgiveness and a summary of the relational, psychological, and physical health benefits of forgiveness, which have been rigorously accumulated from basic research on forgiveness. Forgiveness interventions have been beneficial for increasing experiences of forgiveness, hope, optimism about the future, happiness, and wellbeing (Wade and Tittler, 2020). They also have profound long-term effects by decreasing depression and anxiety (Wade et al., 2014). In the future, several goals are important for forgiveness interventionists. First, forgiveness interventionists need to create briefer interventions that cause effects that are substantially above the regression line—i.e., more effective per hour than existing interventions. Second, attention is needed to effectiveness research. Third, interventions need to be scaled up that will entail other challenges. For example, scaling generally produces less impact on the average than does effectiveness research, which is less impactful than efficacy research. Although efficacy studies have progressively gotten larger, none have approached a larger dissemination trial.

Humility Interventions

For humility interventions, the PROVE Humility model (Lavelock et al., 2014, 2017) and Cuthbert et al.'s (2018) approach with pastors have been evaluated and are evidence-based. The PROVE Humility model was found to be efficacious in two independent trials with undergraduate students. A 7-h PROVE Humility workbook was evaluated against a non-action control in each of the studies by Lavelock and her colleagues. Both studies found changes in pre-post measures of trait humility, trait forgivingness, trait patience, and dispositional emotional negativity. When participants were recruited for a study to build virtues and randomly cast into one of the six conditions ($N = 208$; 32 to 37 per condition)—humility, forgiveness, patience, self-control, positivity, and no-action—the undergraduates who completed a DIY workbook on PROVE Humility ($n = 26$) outperformed a non-action control condition ($n = 33$). When participants were recruited specifically into a study to promote humility, the gains for the workbook ($n = 39$) relative to the control condition ($n = 33$) were about twice as big. Although the results of the interventions were promising, the studies were both with students at a single institution. Cuthbert et al. (2018) motivation, and a heightened sense of justice, fairness, and (2018) did not find efficacy for the humility condition ($n = 41$) beyond a wait-list control condition ($n = 30$) in their study of religious leaders. Cuthbert et al. (2018) workbook involved 16 exercises completed with a partner. One likely reason that no gains were found for the religious leaders is that those leaders were already high in humility, and there was a ceiling effect. At this point, humility interventions have mixed evidence supporting their efficacy, but the variety of interventions is too restricted to evaluate their potential.

Humility interventions appear more difficult for which to recruit participants than are forgiveness interventions. When people struggle with forgiveness, they feel a need. Grudges are unpleasant and revenge motives might frighten people, so they seek ways to eliminate those experiences and forgiving is one salient possibility. However, most people do not consider a deficit of humility to be a problem. In fact, one might be arrogant, and thus conclude that one does not need humility, already perfectly having that strength. One might exhibit too many self-effacing behaviors and feel oneself to be a doormat, but low self-worth might make the person feel unworthy of pursuing humility. Thus, the "market" for humility interventions might be within communities that value humility. These might be religious organizations. But some business organizations operate using a strong ethic of teamwork, based on other-oriented humility. Paradoxically, even armed forces, which train soldiers to be loyal to the small group, might benefit by humility interventions. Finally, Collins (2001) has found that Level 5 business leaders are, at root, humble. So, leadership training might come to embody humility interventions. While there might be several needs for humility interventions, it is likely that the field will build slowly, testing the patience of humility researchers.

Patience Interventions

Patience interventions have been studied more frequently than have humility interventions. Many interventions with adolescents to promote patience are brief and are aimed at stimulating better performance on frustrating tasks, like writing with the non-dominant hand (Schnitker and Emmons, 2007). Interventions seeking to promote patience have more often been aimed at children or adolescents than at adults. One problem inhibiting both basic and intervention research on patience (Hauser, 2019) is that sensation-seeking peaks earlier in adolescence (17–18) than does self-control (23–26). Their curves, on the average, tend to cross-over about age 22. Volitional processes that strengthen self-control are attention, monitoring, planning, persevering, and inhibition. These rely on executive functioning. Impulsive processes, which can derail self-control, include heightened sensitivity to rewards, risk-taking, a present-oriented (vs future-oriented) perspective, and specific addictions and cravings. Hauser (2019) reviewed research on self-control, including patience. They recommended two general ways of strengthening patient self-control—(1) understand how it works and (2) develop interventions in three categories of treatment. Those categories include practicing, goal attainment, and mental transformation of the situation.

Schnitker (2012) delivered a more complete, yet still brief, psychoeducational patience intervention over 2 weeks in four half-hour sessions to groups of three to six undergraduates, almost all of whom were under 26 years old. The content drew from interventions on meditation, treating hostility in Type A behavior, cognitive behavioral therapy, and promotion of character strengths. Undergraduates (N = 71; 61 female) experienced an end-of-treatment increase in trait patience and positive affect but not a decrease in negative affect and a decrease in depression. Gains in trait patience, however, were not maintained at follow-up.

Lavelock et al. (2017) provided the most comprehensive treatment to promote patience yet tested. They randomly assigned undergraduates to 7-h DIY workbook treatments, one of which was to promote patience in the SPACE for patience workbook (i.e., S = Serenity, P = Patient listening and Perspective, A = Allow boredom, C = Comfort with delays, and E = Endure with perseverance). The SPACE for patience DIY workbook (n = 28) produced more trait patience, trait self-control, and forgivingness than initially, relative to the control condition (n = 33).

Yet many adults over 26 years old struggle with failures in patience. So, assuming maturation will infallibly occur by age 26 is not a fruitful strategy for many. We also must help mature adults to build up a habit of experiencing patience. The interventions created by Schnitker et al. and Lavelock et al. (2017) and tested on college students could provide two PPIs that might work with adults older than 26. Two other interventions that were not explicitly designed to promote patience did produce some increase in patience in adult (over 26) samples. PREP's 20-h Within My Reach and Within Our Reach marriage and relationship education curricula (Daire et al., 2012) promoted marriage communication skills and showed modest increases in patience. A 40-h Crisis-Intervention Training program (Hanafi et al., 2008) for law enforcement officers promoted some increases in patience as well.

THE FUTURE OF TEMPERANCE INTERVENTIONS

Despite significant advancements in establishing temperance as an important concept within the larger nomological network of psychology, and the magnitude of PPIs aimed to develop its core components, we believe that two core questions remain unanswered:

- What is needed for interventions to promote forgiveness, humility, and patience?
- How do we promote growth in temperance intervention research?

We hope that evidence-based temperance PPIs can move beyond efficacy research to effectiveness research and from effectiveness research to scaled up dissemination methods by answering these two questions. We briefly reflect upon each of these questions in a hope to stimulate future research.

What Is Needed for Interventions to Promote Forgiveness, Humility, and Patience?

Forgiveness Interventions

Forgiveness interventions are well proven at the small, efficacy-study level (Wade et al., 2014). They require scaling in size and scope, moving outward to different cultural venues, expansion in terms of types of delivery systems—no longer exclusively focusing on the psychoeducational group, the individual psychotherapy or counseling intervention, or DIY workbooks. Rather, these interventions must be translated into common languages and culturally adapted to become more available for a wider audience.

Another factor to consider is the contextualization of forgiveness interventions. Wade and Tittler (2020) argued that the vast majority of forgiveness interventions had been conducted within Western, educated, industrialized, rich, and democratic (WEIRD) contexts and limited is known about how these could affect people from marginalized communities (e.g., LGBTQ community) or those from non-WEIRD contexts. An over-reliance on the WEIRD not only limits the generalizability of the results but also influences the intervention's applicability (and adoption) within other contexts. For example, the decolonization of science movement in South Africa is largely centered around the idea that western values and approaches are not usually applicable in African contexts, especially when they negate local values and traditions (De Jong et al., 2018; Heleta, 2018). Not developing interventions within these contexts and local traditions would therefore (out of principle) lead to such being received with skepticism or even outright rejection by these societies. Additionally, Lamb (2005) argued that not considering cultural and sexual identity could also lead to psychological harm being inflicted by forgiveness PPIs.

Forgiveness interventions should, therefore, not only focus on developing forgiveness within the full interpersonal context but also as applying in intergroup contexts as one means to enhance its global applicability (Worthington and Wade, 2020). It is imperative to understand whether suffering caused by a transgressor is seen as a function of an intergroup process or system embeddedness, as opposed to (as has dominated research and treatment through 2020) a response to interpersonal pain (Tittler and Wade, 2019). Therefore, forgiveness interventions should incorporate learnings from both cross-cultural psychology and social-identity theory (Worthington and Wade, 2020). Those modifications might facilitate intergroup forgiveness. Here, future research should focus on the identification of specific cultural- and identity-related moderators that can facilitate or hamper the development of forgiveness. In addition, forgiveness happens in context, so processes involving other actors than the forgiver—like offenders, witnesses, affected family or friend members, communities, and even larger societal actors like activists and politicians—must be incorporated in a full understanding of how to intervene to help the most people (Tittler and Wade, 2019).

Furthermore, even with evidence-based psychoeducation, psychotherapy, couple therapy, and prevention interventions, effectiveness studies are also needed. Rather than continuing

to produce additional closely controlled, lab-based efficacy studies in cultures that have already been investigated, controlled effectiveness studies in real-world contexts are needed.

Dissemination studies are also needed in which organizations adopt a particular approach to forgiveness and investigations must be conducted to monitor systems (not merely individual practitioners) to ensure fidelity of delivery and investigate the effects on the entire system (McHugh and Barlow, 2012). Scaling up smaller studies are always fraught, and a common finding is that scaled interventions are not as impactful as are RCTs—whether efficacy or effectiveness trials. Scaled studies engage people who really have little interest in the intervention, and yet get swept into the application of the intervention. Thus, such unmotivated people dilute outcomes. Studies that scale forgiveness interventions into dissemination trials must give particular attention to how to engage people who are initially unmotivated.

Furthermore, shifts in the demand for forgiveness interventions would affect both consumers and creators. Both will be looking to create or engage in new, brief, punchy, emotionally engaging, and motivating interventions that frequently engage the consumer in providing feedback and receiving level-up feedback to reward continued participation (Kelders et al., 2020). This will put a strain on forgiveness-related PPIs. Forgiveness interventions have been shown to be strongly related to amount of time spent trying to forgive (Worthington, 2020a). Effective forgiveness might not be amenable to four-minute, self-administered mini-interventions. Getting participation in completing a 7-h forgiveness self-help workbooks will likely be increasingly more difficult (Van Zyl et al., 2019). But Internet-based 7-h interventions might be prohibitive without extensive use of the methods we identified above—frequent attention-grabbers, opportunities for feedback, and leveling-up rewards (Kelders et al., 2020). As an example, Nation et al. (2018) offered a free Internet-based REACH Forgiveness intervention lasting about 7 h. Only 26 percent of those who began the course completed it. Nation et al. (2018) speculated that people were used to coming to a Web site and working with it as long as they stayed engaged (i.e., 30 min, an hour, or two), but coming back to the Web site was difficult. That is, especially true without Web site designers building in automatic prompts to return delivered to responders' email or text, and some system of monitoring and rewarding progress. Forgiveness, which has been found to be heavily dependent on time spent trying to forgive, might be most affected by the evolution of attention span and expectations in consumers of PPIs. More attention to these matters need to be considered in designing and implementing future forgiveness interventions.

Humility Interventions

Humility and patience have struggled to attract intervention researchers—for different reasons. Humility has struggled because people do not experience as much subjective discomfort from evaluating themselves as not humble as in evaluating themselves as unforgiving. Humility indeed has social benefits that have been well documented (see Worthington and Allison, 2018)—providing social oil that smooths relational conflict and promoting social bonds by being a social signal that one is other oriented. Yet, no clear connection has been made in the public mind that low humility is a problem, or at least is worthy of promotion (i.e., is related to other valued virtues or promotes wellbeing individually and socially). If humility research is to accelerate, this connection must become common belief that will not happen unless humility researchers make the empirical, theoretical, and publicly persuasive arguments to support it.

Furthermore, limited empirical and theoretical models exist that explain the routes toward humility. Despite being a valued virtue, there is little empirical evidence for the factors contributing to or influencing the development of humility (Watkins et al., 2016). Without a clear roadmap directing the route to the efficient practice of humility and without evidence-based interventions, interventionists are unable to generate valid and reliable intervention content that can promote humility confidently (Bollinger, 2018).

Despite this limitation, at least one of the two interventions aimed at developing humility showed promise. Both interventions employed traditional self-administered activity designs (such as workbooks), which were aimed at self-exploration. These interventions are self-paced and do not require the presence of a facilitator/therapist. However, these interventions relied on DIY workbooks. Although they were completed on a computer and submitted online, they we essentially traditional. Electronic formats (i.e., Apps, online interventions, and games) are needed to supplement the DIY workbooks and facilitated interventions must be developed for application in local communities if humility interventions are to be scaled.

Another element to consider is the paradoxical duality of humility. Humility is a personal function (or private experience) but can only exist (or be expressed) in the presence of others. Lavelock et al. (2014, p. 100) states that "the presence of others may present a paradox of toting one's goodness for others to see and heightening one's self-awareness, which is not ideal for seeking to transcend the self with humility". However, humility can only be expressed in the presence of an active social context (Lavelock et al., 2017). Humility is therefore particularly difficult tos promote and develop (Lavelock et al., 2014). This duality should be directly addressed within humility interventions to enhance both the self as well as the self-in-relation to others. Furthermore, given the interpersonal nature inherent to humility, there is a clear need for developing interpersonal interventions that incorporate others within the person's social system. Cuthbert et al. (2018) provided a start. They paired accountability partners to work through workbook interventions. More clever engagement of people's social system are needed. Multi-modal intervention approaches could therefore be useful. These interventions would aim to develop holistic humility through a combination of self-administered intentional activities (e.g., self-help activities and workbooks), group developmental initiatives (e.g., training or positive growth groups), accountability partners, and individually focused interventions (e.g., strengths-based

coaching) that can be facilitated both online and offline (Van Zyl and Rothmann, 2019; Van Zyl et al., 2020).

Finally, humility interventions should be expanded beyond the mere focus of general humility. Humility intervention researchers should develop intellectual humility (i.e., political humility and religious humility), spiritual humility (that is, humility in the face of God, nature, and humanity), relational humility (i.e., humility shaped differently for different types of relationships), and cultural humility interventions. Multi-facetted approaches toward humility development could therefore be greatly beneficial.

Patience Interventions

Patience interventions have been more frequent than humility interventions yet are plagued with similar issues. Additionally, patience interventions have almost exclusively been relegated to children, adolescents, and early adult college students (Schnitker et al., 2017b). For example, patience is often seen as something one grows into, and theoretical and empirical evidence exists that the impulsiveness of children and teens peaks at about age 17 or 18, yet the ability to control oneself cognitively rises almost linearly until it levels off about age 26. Thus, at some point between about 18 and 26, most young people will mature out of impatience—at least that is the theory (Schnitker and Westbrook, 2014; Schnitker et al., 2017b). As we all know, most adults frequently feel (and act) impatiently. Some adults are, by disposition, impatient. Yet, no interventions have been tested on adults except medical patients (Schnitker and Westbrook, 2014). Seeing patience as a virtue that will somehow right itself due to maturity has paralyzed research on middle-aged and older adults. Yet, that is clearly needed.

Moreover, despite the limited agreement on the components of patience, most interventions are exclusively focused on regulating behavior and emotional management. This has shown to be effective in certain population groups; however, the long-term sustainability thereof has been questioned (Schnitker and Westbrook, 2014). Patience interventions should supplement addressing the behavioral and emotional factors with patience interventions that focus on changing the attitudes or motivations for regulating behavior and emotions. Interventions aimed at changing motivations lead to more sustainable changes in behavior over time (Van Zyl and Rothmann, 2019).

Finally, interventionists and creators of interventions should be conscious of the "consumer culture" in mental health-related practices. People who need to build their patience would ironically be saying, "I want patience—now!" Creators of PPIs to promote patience must be cognizant of their audience's inherent bias against sticking with patience interventions patiently—unless the creators heed new strategies to promote engagement (Schnitker et al., 2017b).

How Do We Promote Growth in Temperance Intervention Research?

Funding for Research

One of the things that would increase the stable of researchers is additional grant funding. The turning point in research on forgiveness was the 1997 request for proposals that the John Templeton Foundation advanced. In the end, it funded about 20 research teams many of whom did multiple studies on forgiveness and that attracted post-doctoral researchers and graduate students who built their careers studying forgiveness. Money does not simply flow to a funding area. There must be a need and, following that, a funder whose priorities include building up the area. So what could create a need to study temperance?

Need for Interventions to Promote Temperance

One potential need could occur is there was a crisis associated with intemperance could increase research in temperance. As we found in the COVID-19 pandemic, crises mobilize action (Frenzel et al., 2021) and can result in amazing progress in intervention science. The development of numerous vaccines for COVID-19 over a single year was unprecedented. While no one wants some crisis to interfere with normal functioning, a public and widespread crisis of intemperance—such as an outcry against political polarization and a national or global outcry against injustice—could galvanize action in the research community.

As we saw in 2020, injustices are widespread throughout the world. Many of those might be thought to have occurred because people with abundant resources have pursued self-interested goals to the expense of less privileged people. Humility on behalf of the privileged might be needed to reverse this trend by not assuming that they have entitlement to an unfair share of resources. Forgiveness is needed by people who have been on the short end of social injustices instead of revenge that can perpetuate injustices. Forgiveness happens internally, as decisions to treat offenders as valuable people lead to emotional change that replaces negative unforgiving emotions with positive other-oriented ones (Worthington, 2020a). But, forgiveness does not negate one's motivation to work for social justice, which can often be pursued more vigorously without having the demons of unforgiveness to keep under control. Worldwide justice movements might inspire the need for more research on temperance.

Some people believe that forgiveness by victims of social inequities might short-circuit the pursuit of social justice. However, forgiveness is not opposed to justice. In fact, justice is a social and societal phenomenon and forgiveness in internal, involving a decision to treat people less hatefully and more benevolently and an emotional transformation involving less rumination and thus less depression, anxiety, and anger. It is possible that victims' forgiveness can remove people's focus on themselves, or their expenditure of energy direct at rage and hatred, and thus leave them more able to pursue social justice. In addition, offenders and those who have the position to speak to historic wrongs from the offenders' perspective need to be aware that their public statements of contrition, apology, and regret can encourage more forgiveness by victims, and amends making can begin or further reconciliation.

The awareness of increasing political and social polarization could create a sense of need to pursue a widespread building of temperance. This might involve political humility, forgiveness

of people on the other side of the political spectrum, and patience as people wait for change to occur. Movements like global warming and environmental concern have been polarizing. If both sides could see the potential for temperance, it might lead to positive steps toward a healthier environment. In addition, geographic, financial evolution might create another sense of need for more global temperance. In Asia, China has risen as a technological, industrial, and financial power, and Japan has continued to be strong. In the Middle East, the worldwide weakening of oil dependence on Arab nations is likely to portend a shift in global economics. There will be ample opportunity to forgive any Arab nations that might have been perceived as holding economic power over much of the rest of the world. In Europe, the weakening of the European Union with the withdrawal of Great Britain provides opportunities to forgive both within the EU and Great Britain and in countries who have dealt with them. In South America, the economic and social strengthening of the southern hemisphere is a global trend. Some interventions have developed to treat unforgiveness that has come about from civil wars and other South American conflicts. Narvaez and Foundation ES.PE.RE is a noted example. In Africa, the rise in religious consciousness toward Christianity and in North Africa, Islam, have created the potential for religious tensions. These add to tribal tensions that have been long experienced in the Great Lakes region of East Africa, including Rwanda, Burundi, Uganda, and other countries. In Central America, emigration and political stabilization create needs for temperance—forgiveness, humility, and patience. In the United States, political polarization, conflict, the cancel culture, and divisions economically, politically, racially, and religiously are fertile grounds for practicing the virtue of temperance.

When people build temperance, they are not passively reacting to circumstances requiring restraint. Rather they are actively seeking to restrain negative knee-jerk reactions. Such restraint might take different forms. For example, people could tolerate changes. Tolerance involves restraining oneself from negative social responses, even though internally one might feel negative emotions. Forbearance involves restraining negative reactions for a positive motive—for the sake of group harmony. That positive motive can therefore mitigate the negative emotions of tolerance while yielding the same restraint of social wrongdoing as tolerance. Acceptance speaks to restraint of negative reaction and a passive internal emotional state. The position of acceptance might be actively arrived at yet there is more equanimity than with either forbearance or tolerance. Forgiving restrains negative reactions and also more actively puts the past in the past, yielding a different type of emotional equanimity than acceptance. Building forgiveness and having a patient stance toward seeing change come about socially, while having an attitude of humility, can provide people and communities resources to actively re-shape their interpersonal relationships in their communities to promote and sustain actions toward social change (Richter et al., 2021).

An Engaged Funder

Besides a need, research funding depends on an engaged funder. Government funding is likely if these social and economic, and racial pressures do not abate. Private funding from foundations and NGOs might also be aimed at these social tensions.

The Allure of New Technologies

New treatments inevitably provide, for some, an attraction of using a new technology to deliver the treatments. In addition, philosopher Peter Galison (1997) has shown that technological revolution can actually change the content of a science. Thus, as new technologies are developed, like apps that are immediately available, new interventions to promote patience, forgiveness, and humility might emerge. In 1957, Everett Rogers (2003) put forth a law of the diffusion of innovations: An innovation is disseminated by communication over time among a social system. When a new technology or treatment comes online, it is adopted in five waves. First, innovators begin using the technology. Then, early adopters jump in. Then, early majority adopters follow. Late majority adopters pick up the treatment. Finally, a laggard group joins in (just in time to miss the next new innovation).

- Knowledge leads. Often, innovators are drawn to initial knowledge, usually combined with internal drives to be seen as opinion leaders. Early knowledge is crucial to innovators' adoptions. Yet most of the innovations fail. Thus, when innovators lead, usually at least some empirical success must attend their choice.
- Persuasion Cialdini (2016) suggests that persuasion to adopt something new (with at least a modicum of evidence) is based on six factors. One is reciprocity, feeling we owe the influencer something. Second, commitment and consistency speak to loyalty to existing products. Innovators must persuade early adopters to forswear their loyalty. Third, liking the influencer can influence early adopters (or any potential adopter) to take a chance. Fourth, endorsements by authorities, such as a recognized expert or (for younger generations) user-generated ratings of endorsement, can provide a sort of expertise. Often early adopters and early majority adopters usually rely on authority testimonies or word-of-mouth endorsements to adopt. Fifth, social proof involves seeing that numerous people are using a product successfully, which attracts late majority adopters and laggards. Sixth, scarcity can stampede adopters to make a positive decision at any point along the diffusion of innovations waves.
- Social confirmation. Once people have adopted a technology—whether innovator or laggard or anyone between—we all look for social confirmation that we have made the right choice. As cognitive psychologists tell us, we look to support our choices not disconfirm them (Kahneman, 2011).

CONCLUSION

Because intervention research in temperance is in its infancy, the future looks rosy for PPI researchers. However, in this perspective paper, we suggest that we are in a second wave of PPI intervention research (Ivtzan et al., 2016) that requires

a third-generation overhaul of the methods developed in the decades of the 2000s and 2010s. These new methods employed in the design of new interventions must draw on the empirical results of the previous two generations and yet be nimble and open to the new methods suggested by popular psychology as discerned from books, podcasts, and public talks. This includes being sensitive to the ironies of providing immediate gratification to people seeking to build their temperance.

In conclusion, to promote growth in temperance interventions, our lessons are few: First, new innovations must be developed—like creating temperance-related PPI apps, games, web-based brief interventions, engaging Internet-based interventions, and artificial intelligence interventions. Second, these innovations must be tested empirically for efficacy, effectiveness, dissemination, and scaling—each of which could necessitate modifications of content and delivery methods. Third, innovators must be attracted to the new methods, and the innovators must be likeable, have networks of loyal followers, and be persuasive enough to wean people from their existing commitments to temperance-focused evidence-based PPIs. Fourth, there must be initial positive data because the enthusiasm of innovators cannot carry a technology without some evidence of its efficacy. Fifth, leaders in the field must endorse the new intervention. Sixth, word-of-mouth communication of evidence that the new methods are successful in essential to build a following. Seventh, social proof and ultimately social confirmation are needed to sustain the use of the new innovations. Our fervent hope is that the present perspective article might inspire changes and provide ideas for new steps in building temperance by using PPIs.

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.

AUTHOR CONTRIBUTIONS

EW conceptualized the paper. EW and LEvZ drafted and finalized the first version of the manuscript. All authors contributed to the article and approved the submitted version.

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How Humanistic Is Positive Psychology? Lessons in Positive Psychology From Carl Rogers' Person-Centered Approach—It's the Social Environment That Must Change

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Both positive psychology and the person-centered approach share a common aim to promote human flourishing. In this article I will discuss how the person-centered approach is a form of positive psychology, but positive psychology is not necessarily person-centered. I will show how the person-centered approach offers a distinctive view of human nature that leads the person-centered psychologist to understand that if people are to change, it is not the person that we must try to change but their social environment. Centrally, the paper suggests that respecting the humanistic image of the human being and, consequently, influencing people's social environment to facilitate personal growth would mean a step forward for positive psychology and would promote cross-fertilization between positive psychology and the person-centered approach instead of widening their gap.

Keywords: humanistic psychology, positive psychology, person-centered approach, Carl Rogers, actualizing tendency, fully functioning person

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INTRODUCTION

It was in the late 1980's that I first became interested in what later became known as positive psychology. I was completing my doctorate research in the psychology of trauma. An unexpected finding was that many survivors reported positive changes in outlook. But there was little written in the mainstream literature about this. I wanted to find a language with which to frame my observations. Like many, I had studied humanistic psychology briefly in my undergraduate studies, but not in a way that I understood its depth and richness, so it came as a revelation to me when I discovered that the same intellectual challenges I was now grappling with, had been tackled decades ago.

Specifically, I began to see how Carl Rogers' person-centered theory of personality development could be applied to understanding how people grow following adversity. Throughout the 1990's, I studied Rogers' ideas coming to realize that what he and his colleagues had achieved from the 1950's onwards had offered a new paradigm for the psychological sciences, one that focused on how to promote human flourishing. As a result, when I first encountered positive psychology

in the early 2000's, my initial reaction was to dismiss it as it seemed to offer nothing new, but I also saw the enthusiasm of my students for positive psychology, and that positive psychology was succeeding in bringing ideas about well-being back into mainstream awareness when person-centered psychology seemed to be struggling to do so. I could see that person-centered psychology was not incompatible with being interested in positive psychology, so I began to think of myself as a person-centered positive psychologist. For the past two decades I have sought to build bridges between humanistic and positive psychology, to bring the person-centered approach to my work on posttraumatic growth and authenticity, and to make the case that the person-centered approach is a form of positive psychology.

In this article I want to elaborate on what I mean when I say that the person-centered approach is a form of positive psychology. My aim is to position the person-centered approach as part of contemporary positive psychology, as well as it being part of the humanistic psychology tradition. Carl Rogers, the founder of the person-centered approach, was one of the pioneers of humanistic psychology. As such, the person-centered approach is often associated with humanistic psychology. While the relationship between humanistic and positive psychology has been contentious in the past, it is now widely accepted that positive psychology has largely followed in the footsteps of humanistic psychology. In this way, person-centered psychology can be seen as a historical antecedent to positive psychology, but what I want to show is that it is not just a branch of research, scholarship, and practice from the past; it is one that has continued and developed over the past 70 years, that now sits comfortably under the wider umbrella of positive psychology.

I would like to invite readers of this special issue to become more fully acquainted with person-centered psychology and to consider its perspective on what it means to be a positive psychologist. I will provide a brief overview of positive psychology in the context of humanistic psychology, followed by a discussion of the person-centered approach and how it offers a distinctive view of human nature, and finally, reflections on my vision for a more person-centered positive psychology. In short, the person-centered positive psychologist would look not at ways to change people but at how to change their social environment. I will show that considering the influence of the social environment as the means to facilitate personal growth would mean a step forward for positive psychology in a direction away from its individualistic and medicalized focus and would promote cross-fertilization between positive psychology and humanistic psychology. In making this argument I am reiterating and developing Linley and Joseph's (2004b) conclusion in their book *Positive Psychology in Practice* that there is a need to develop a theoretical foundation for positive psychology that offers a clear, coherent, and consistent vision of human nature, and how the agenda for the practice of positive psychology inevitably arises out of its vision. Speaking personally, my vision would be for a more person-centered positive psychology.

POSITIVE PSYCHOLOGY IN THE CONTEXT OF HUMANISTIC PSYCHOLOGY

Positive psychology was formally launched by Martin Seligman in his 1998 presidential address to the American Psychological Association (Seligman, 1999), and in the special issue of the *American Psychologist* dedicated to the topic that soon followed (Seligman and Csikszentmihalyi, 2000). Seligman later said how the idea of positive psychology came to him following a moment of epiphany when gardening with his daughter, Nikki, who was then aged five, when she instructed him not to be such a grouch. "In that moment, I acquired the mission of helping to build the scientific infrastructure of a field that would investigate what makes life worth living: positive emotion, positive character and positive institutions." (Seligman, 2004, p. xi). But while such thinking was a refreshing change for many, these were not new ideas. The idea of focusing on the positive was an idea that was always core to humanistic psychology.

The A*merican Association for Humanistic Psychology* was founded by Abraham Maslow in 1961 (renamed the *Association for Humanistic Psychology* in 1963). Bugental (1964) put forward five basic principles of humanistic psychology, which were later adapted by Tom Greening to define the parameters of humanistic psychology: "1. Human beings, as human, supersede the sum of their parts. They cannot be reduced to components. 2. Human beings have their existence in a uniquely human context, as well as in a cosmic ecology. 3. Human beings are aware and aware of being aware —i.e., they are conscious. Human consciousness always includes an awareness of oneself in the context of other people. 4. Human beings have some choice and, with that, responsibility. 5. Human beings are intentional, aim at goals, are aware that they cause future events, and seek meaning, value, and creativity." Humanistic psychology was known as the third force of psychology, because it recognized the limitations of its predecessors, behavioral psychology and psychoanalytical psychology. As Sutich and Vich (1969), editors of *Readings in Humanistic Psychology*, wrote:

> "Two main branches of psychology – behaviorism and psychoanalysis- appear to have made great contributions to human knowledge, but neither singly nor together have they covered the almost limitless scope of human behavior, relationships, and possibilities. Perhaps their greatest limitation has been the inadequacy of their approach to positive human potentialities and the maximal realization of those potentialities" (Sutich and Vich, 1969, p. 1).

Focusing on the potentialities of being human was always a feature of humanistic psychology. For the first decade of its existence, humanistic psychology went from strength to strength (Moss, 2001). It sought to understand the nature of humanity and the problems faced in the quest to live harmoniously and peacefully together and within nature. But by the 1980's, however, the influence of humanistic psychology had begun to dwindle (Taylor and Martin, 2001). Was humanistic psychology simply ahead of its time? Had it pushed forward its more radical ideas

about qualitative ways of knowing too quickly? Did becoming associated with the counterculture lose it credibility?

It seems likely that humanistic psychology lost its power and influence, not only for these reasons, but because it was "…inherently incompatible with the basic assumptions and values of contemporary mainstream psychology and with the conservative ideologies that have increasingly gained power in American culture since the 1960s" (Elkins, 2009, p. 267). By the late 1990's, humanistic psychology was largely seen as obsolete, irrelevant, and lacking in rigor by mainstream scholars (Krippner, 2001).

So it was that when positive psychology was introduced, it seemed that the ideas long championed by humanistic psychologists were now being put forward again, but it was done so in a way that was critical of humanistic psychology for what was perceived to be its anti-scientific stance, and paid scant acknowledgment to its achievements (Robbins, 2008, 2015). In 2001, in response, the *Journal of Humanistic Psychology* had a special issue containing several articles dedicated to what had become a fraught relationship between humanistic and positive psychology. Greening (2001), the then editor, opened by remarking how positive psychology had appeared as if humanistic psychology, its decades of scholarship and research, and the fact that early pioneers of humanistic psychology had themselves been presidents of the American Psychological Association, had simply not existed. Taylor (2001), in his article in the special issue, refuted Seligman's arguments that humanistic psychology was anti-scientific and that it had not generated significant research. It was also argued that positive psychology would gain from recognizing the merits of experiential, process-oriented research methodologies common to the humanistic psychotherapies (Resnick et al., 2001).

Certainly, it is clear that some of the initial comments by positive psychologists in the early days were unjustified. That said, perhaps there was also some truth in positive psychology's initial negative portrayal of humanistic psychology as it had later become. Certainly, there were aspects of the 1960's counterculture that were questionable and did no favors to humanistic psychology's standing in the eyes of mainstream psychology by becoming so closely aligned (see Grogan, 2013). As such, and as I've argued before, it was possibly a politically astute move by the positive psychologists to distance themselves from the perceived embarrassments of humanistic psychology if it was to succeed where humanistic psychology had failed in garnering mainstream attention, funding, and prestige (see Joseph and Murphy, 2013a). But as the positive psychology movement evolved, and gained footholds in the mainstream agenda, its leaders (e.g., Seligman et al., 2005) came to acknowledge, perhaps albeit reluctantly and without fully admitting their earlier critical comments were largely unfounded and misleading, that positive psychology built upon the earlier work of the pioneers of humanistic psychology (see DeRobertis and Bland, 2021). Whether intentional or not, positive psychology had helped to bring the ideas of humanistic psychology back into the mainstream.

In the early days of positive psychology, I believed that it offered the promise to bring these ideas of Rogers and other humanistic psychologists back into the mainstream agenda of scholars (see Linley and Joseph, 2004a). Almost two decades later, I think positive psychology has indeed provided an important vehicle for renewed interest in humanistic psychology. Positive psychology has become a richer and deeper form of scholarship as a result. For example, one important shift that seems to reflect the accommodation of ideas from humanistic psychology is the movement toward more eudaimonic conceptualizations of well-being as opposed to the hedonic (Joseph, 2015a). It is now not so easy to dismiss positive psychology as superficial (e.g., Ehrenreich, 2010).

One of the problems, however, in understanding what positive psychology can be, is the idea that all it offers is a corrective balance to mainstream psychology's focus on pathology. While that may be how many think of it, including perhaps how some of its pioneers originally thought of it, positive psychology has the potential to be so much more than that. As Wong (2011) wrote.

> I propose that a stronger argument in support of the legitimacy of PP is that PP is much more than a corrective reaction to the perceived imbalance in the literature. Properly understood, the overarching mission of PP is to answer the fundamental questions of what makes life worth living and how to improve life for all People (p. 69).

To be more than a corrective reaction, it is essential to understand how the negative and the positive are related, and how one cannot understand the positive without the negative—what some have called positive psychology 2.0 (see Wong, 2011). There is a rich tapestry of humanistic psychology that positive psychologists are now beginning to unfold, one thread of which is the work of Carl Rogers and the person-centered approach. While Rogers is now widely recognized in positive psychology as one of the original pioneers of a more positive psychological approach, the depth and detail of his work is not in my view well-understood, and particularly how his approach offered a vision for what we now call positive psychology 2.0, or put another way, a meta-theory for positive psychology (Joseph and Linley, 2006a). In the section below I will discuss the significance for practice of Rogers' ideas—specifically how the person-centered approach proposes that if we want to change people, we need to change their social environment.

PERSON-CENTERED PSYCHOLOGY

Rogers was originally a psychologist by training. In 1947 he served as the President of the American Psychological Association; the position later held by Seligman 50 years later when he founded the positive psychology movement. Throughout his life Rogers was a prolific researcher and writer, publishing numerous academic papers and books, many of which are still widely read today (see Kirschenbaum, 2007). Most known for his development of client-centered therapy (Rogers, 1951), Rogers went on to apply his theory more broadly, offering a theoretical framework encompassing personality development, psychological functioning, and helping relationships across different contexts (Rogers, 1959).

Meta-Theory of Human Nature and Development

For the present discussion, however, the way Rogers' theory is most obviously relevant to a discussion of positive psychology is his conceptualization of the fully functioning person (1963a). Rogers (1963a) described the fully functioning person as (1) open to all their experiences, they are sensitive to the world around them, other people's reactions, and their own internal feelings, reactions, and meanings; (2) living existentially, able to be fully present in the moment; and (3) able to trust their feelings and reactions to guide them in their actions. Such a person has a non-defensive attitude, can listen to others empathically, unconditionally, communicate clearly and effectively, and respond to situations creatively. In describing the fully functioning person, Rogers provided an alternative to then dominant illness-related concepts. John Shlien, originally writing in 1956, noted:

> In the past, mental health has been a 'residual' concept – the absence of disease. We need to do more than describe improvement in terms of say 'anxiety reduction'. We need to say what the person can do as health is achieved. As the emphasis on pathology lessons, there have been a few recent efforts toward positive conceptualizations of mental health. Notable among these are Carl Rogers' 'fully Functioning Person' … (Shlien, 2003, p. 17).

The idea that the task should be to promote more fully functioning behavior has always been at the core of person-centered psychology (see Levitt, 2008; Joseph, 2015b). While Rogers' ideas about becoming more fully functioning may have been familiar to person-centered psychologists, they were less known to mainstream psychologists who continued to view mental health as a residual concept, until the advent of positive psychology. It should also be recognized that Rogers approached this work using the methods of traditional empirical psychological science. In this way, it is evident that person-centered psychology is a form of positive psychology.

However, and this now takes me to the main point of my article, positive psychology is not necessarily person-centered. This is because the defining feature of Rogers' person-centered theory of how fully functioning arises, is that it was grounded in a growth model (DeCarvalho, 1991; Joseph and Patterson, 2008; Joseph and Murphy, 2013b). Rogers presented a view of human nature in which becoming fully functioning was a state toward which people were intrinsically motivated. For Rogers, the person-centered approach was based on an image of the person that is basically trustworthy, and that humans are intrinsically motivated toward:

> … development, differentiation, cooperative relationships; whose life tends to move from dependence to independence; whose impulses tend naturally to harmonize into a complex and changing pattern of self-regulation; whose total character is such as to tend to preserve himself and his species, and perhaps to move toward its further evolution (Rogers, 1957: p. 201).

Rogers (1959) referred to this as the actualizing tendency, a universal human motivation resulting in growth, development, and autonomy of the individual. The actualizing tendency, Rogers argued, was the one natural motivational force of human beings and which is always directed toward constructive growth (Rogers, 1963b). This will happen automatically given the optimal social environment. But too often people don't have the optimal social environment, and the unfolding of the actualizing tendency is usurped and thwarted, leading people to self-actualize in ways that are less than fully functioning. Thus, while both positive psychology and person-centered psychology might often share the same goal, how they do this may be very different and hard to reconcile (see e.g., van Zyl et al., 2016). My aim is to reflect on positive psychology from the perspective of the person-centered approach, from the point of view that the term positive psychology simply describes a broad discipline with a range of topics of scholarly and practical interest whereas person-centered psychology is a specific approach to those topics; or put another way, positive psychology is about the content, whereas the person-centered approach is about a process.

There is a famous quote from Kurt Lewin: "There is nothing so practical as a good theory" (Lewin, 1951, p. 169). I think that Rogers' (1959) approach provides a brilliant illustration of Lewin's quote. For Rogers, it followed that the logical implication of the growth model was that if people are less than fully functioning because of their social environment, then providing them with the optimal social environment would be necessary and sufficient for constructive personality change. Given the optimal social environment the person's intrinsic motivation toward fully functioning would do the rest[1].

This ontological view of human nature is what underpins the non-directivity of the person-centered practitioner. Non-directivity is an ideological position that arises from the aforementioned fundamental assumptions of the practitioner that humans are intrinsically motivated toward personal development, differentiation, and cooperative relationships, when in optimal social environments. Non-directivity is a much-misunderstood concept. It does not mean no direction; rather it means the practitioner is not imposing their direction but trusting in and helping the client to find their own direction.

The idea that the world around us influences how we think, and feel is of course not new, and many positive psychologists have already emphasized that attention cannot only be placed on the individual. As Wong (2011) wrote.

> "…you cannot live a healthy and fulfilling life in a sick world contaminated by crime, corruption, injustice, oppression, and poverty. Such evils can destroy individuals and societies like cancer cells. Positive psychology 2.0 emphasizes the need to develop good and decent people as well as a civil society by

[1]It is beyond the scope of this paper to go into the detail, but it is worth noting that this view of human nature was also taken up and developed subsequently by Ryan and Deci (2000) in their self-determination theory, which, by and large, offers theory and evidence consistent with and supportive of Rogers' theory (see Sheldon and Kasser, 2001; Patterson and Joseph, 2007; Joseph and Murphy, 2013b; Sheldon, 2013).

> promoting meaning/virtue and overcoming and transforming negatives" (pp. 77).

Humanistic psychologists of all persuasions would no doubt wholeheartedly agree with this, but what is radically different about Rogers' person-centered approach is that it is all about the social environment—we develop "good and decent people" *through* the society we create. In short, when the optimal social environment is present, people will automatically move in directions toward fully functioning. This is the theoretical core of the person-centered approach that led to 70 years of research and scholarship concerning the operational definition of what constitutes the optimal social environment to produce constructive personality change (Cornelius-White and Motschnig-Pitrik, 2010; Murphy and Joseph, 2016). Rogers (1959) proposed that the optimal social environment was one that was experienced as unconditional, positively regarding, empathic and genuine. Taking these principles seriously in the way that Rogers' theory suggests, is an antidote to crime, corruption, injustice, oppression, and poverty. Imagine if that was the attitudinal climate experienced by children in their homes and schools, and by adults in their workplaces and in all other areas of their life.

Applications: Prevention, and Cure

Up to this point, I've deliberately avoided the topic of psychotherapy as I wanted to make it clear that Rogers' theory is about the social environment and its influence on a person's psychological development, and in this way show how applications of his theory may be upstream in education, parenting, public policy, and so on, concerned with prevention, and not just downstream in psychotherapy and clinical psychology, dealing with problems after they arise. Applications of Rogers' (1959) theory are as much about ensuring that the unfolding of the person's actualizing tendency is not usurped and thwarted in the first place, as it is about the self-righting process subsequently.

Also, because psychotherapy and clinical psychology, more generally, are often understood from the perspective of an illness ideology, as involving activities in which one person (the therapist) attempts to change another in some predetermined way (the client), discussion of Rogers' (1959) theory in the context of therapy can be misunderstood, as if the necessary and sufficient conditions are something that one person does to another to get them to change. In this way, I wanted to situate the discussion outside the therapeutic context to avoid this misunderstanding. As such, it might therefore surprise some readers to think of Rogers' conditions as describing a social environment as more often his theory is caricatured as something the therapist does to a patient.

Regardless of the nature of the application of Rogers' approach, however, it is not about doing something to people. The attitudinal conditions of unconditionality, positive regard, empathy and genuineness come together to create the fundamental non-directive attitude of the practitioner, which because of his or her trust in the agency of the client, means that they do not intervene, and have no intention of intervening. As Bozarth (1998) wrote of client-centered therapy:

> "The therapist goes with the client, goes at the client's pace, goes with the client in his/her own ways of thinking, of experiencing, or processing. The therapist cannot be up to other things, have other intentions without violating the essence of person-centered therapy. To be up to other things – whatever they might be – is a 'yes, but' reaction to the essence of the approach. It must mean that when the therapist has intentions of treatment plans, of treatment goals, of interventive strategies to get the client somewhere or for the client to do a certain thing, the therapist violates the essence of person-centered therapy (Bozarth, 1998, pp. 11–12).

In creating an empathic, unconditional, and congruent social environment, the therapist is not trying to change the person, has no agenda for the person whatsoever, but they trust that given the optimal environment the person will change toward becoming more fully functioning. Unlike other psychologically based interventions, the person-centered practitioner is not doing anything to the person, they have no agenda for the person to change in any particular way, rather the practitioner's only agenda is for themselves to be able to create a social environment characterized by these conditions. This remains a revolutionary idea in psychology that remains underappreciated in my view, perhaps because while Rogers' theory of therapy is well-known, it is less well-understood that it is about changing the social environment, not the person. And this is what makes it a radically different form of practice to most other psychological interventions, which focus on changing the person. This can be difficult to understand if looking at the person-centered approach from outside its paradigmatic stance. But imagine if you truly believed that people would only move in directions toward becoming more fully functioning when they experience themselves in the optimal social environment.

Originally writing about therapy, Rogers (1959) soon developed his thinking more widely into how the same optimal social environment could be facilitative of growth in a range of contexts. Psychotherapy and clinical psychology are obvious applications of the person-centered approach, but in these contexts, it is about a self-righting process, helpful to people whose tendency toward actualization has already been usurped and thwarted. Of more importance, in my view, is that positive psychology expends its energy on upstream interventions, to facilitate people's psychological development in the first place, such that the eventual need for psychotherapy and clinical psychology is reduced. In this respect, education is the most powerful institution in the world for shaping the future of humanity because of its influence on how each generation comes to view what matters, and what to prioritize and to value.

Recent years have seen much interest in positive psychology applications to education and the development of the new subfield of "positive education" (Seligman et al., 2009). Positive education is a relatively new initiative, but its aims are similar to those of person-centered education, as developed by Carl Rogers

in his subsequent writings about the applications of the person-centered approach. In 1969, Rogers published his influential book *Freedom to Learn* (Rogers, 1969), in which, building on his earlier writings, he set out his full philosophy of education: in essence, that human beings have a natural urge to learn, that this most readily happens when the subject matter is perceived as relevant to the student, that learning involves change and as such is threatening and resisted; that learning is best achieved by doing, and that the most lasting learning takes place in an atmosphere of freedom in which students were trusted to be autonomous learners. In essence, the goal of education should be to assist people to learn to be self-determining; to take self-initiated action and to be responsible for those actions; to be able to adapt flexibly and intelligently to new problem situations; internalize an adaptive mode of approach to problems, utilizing all pertinent experience freely and creatively; cooperate effectively with others in these various activities; and work, not for the approval of others, but in terms of their own socialized purposes. To adopt other goals in which the teacher has a pre-determined intention that the student should change in any particular direction was seen from Rogers' person-centered perspective as contradictory to the act of nurturing self-determination.

While Rogers' influence has been greatest in the field of psychotherapy, it is I would argue his contributions to education which are the most significant and important for the modern world. However, Rogers' writings on person-centered education have received little attention in the positive education literature. Positive education, whilst offering a new focus on human flourishing, does not challenge traditional education with its largely teacher-centered approach. Rogers' view on education was that it was this teacher-centered approach that was itself the problem that thwarted and usurped developmental processes and stifled creativity and curiosity. Both person-centered education and positive education have a shared focus on human flourishing. But what makes person-centered education different to positive education is its clear ontological stance that people are their own best experts, and the resultant hypothesis that with the right social environment, students will be self-determining and move in autonomous and socially constructive directions (see Joseph et al., 2020).

All the different applications of the person-centered approach—whether downstream in the domains of clinical psychology, coaching, counseling, conflict resolution, psychotherapy; or upstream in business, education, encounter groups, leadership, management, parenting, or policy, are all about changing the social environment, because they are grounded in a vision of humanity in which people are always striving toward becoming fully functioning, a tendency which will automatically be released when the social environment is optimal. This is what makes the person-centered approach distinctive, the fact that its interventions are always about changing the social environment and not about changing the person. And in changing the social environment, people will change in a way that is toward becoming more fully functioning. In turn, more fully functioning people, by definition, will create more facilitative social environments for others (Motschnig-Pitrik and Barrett-Lennard, 2010). This way of thinking is what I believe would make for a more person-centered positive psychology. But, as already indicated, a more person-centered positive psychology involves more than a simple change of focus from the individual to the social, it also challenges us to think from a different paradigmatic stance and to ask questions about the positionality of positive psychology, its politics, and its subtle use of power over others.

TOWARD A MORE PERSON-CENTERED POSITIVE PSYCHOLOGY

In this final section I will offer some reflections on positive psychology from the perspective of person-centered psychology. In so doing, I hope to show how a consideration of the person-centered approach leads to questions about positionality, politics, and power in positive psychology.

The Unspoken Positionality of Positive Psychology

One criticism that I have heard leveled against Rogers' theory many times is that it is an ideological position. This argument implies however that there is a neutral position that one could take while waiting for that evidence. But as Burr (2015, p. 172) wrote: "No human can step outside their humanity and view the world from no position at all, and this is just as true of scientists as of everyone else." All interventions in psychology represent ideological positions and this is one of the lessons to be learned for positive psychology as it moves forward. All forms of psychological practice and policy are grounded in a vision of the human being (Joseph, 2017). But for positive psychology, if not the growth model, what model?

To illustrate what I mean, first, all constructs used in research are derived from theories that represent an ideological position, whether expressed implicitly or explicitly, and in turn, the choice of which constructs to investigate represents one's own ideological views. Second, how we interpret the implications for practice from research is ideological. For example, research shows that greater authenticity leads to greater well-being. The implication is that increasing levels of authenticity would be desirable. But what sort of intervention should be designed to promote authenticity? There is nothing inherent in the research finding itself that presupposes the nature of the intervention, whether it be through changing the social environment or by altering the person's thoughts, feelings or behaviors. If one holds to the growth model, then changing the social environment will make sense. But if it is thought that people need instruction from others, then introducing interventions targeted directly at somehow pushing the person toward authenticity will make sense.

In this way, the choice of intervention only looks like it arises out of the research findings if one thinks of oneself as taking a neutral position. Interventions are always ideologically driven and based on the researcher's or practitioner's assumptions about human nature. And those assumptions about human nature are baked into the design of research and the language used to discuss findings. Of course, subsequent research can show support or fail

to show support for an intervention, and in that way, we can be guided subsequently by research. If changing the environment doesn't work, then maybe we need to push. But, if there is no neutral position, which ideological position should be our default setting? Furthermore, out positionality also determines what factors are deemed appropriate as targets for intervention. In sum, most positive psychology interventions involve directive interventions targeted at changing the person in ways decided upon by the practitioner as best for the client, which presupposes an ideological position that runs counter to a growth model.

The Hidden Politics of Positive Psychology

If we reflect on one reason for the demise of humanistic psychology being its clash with conservative ideologies (Elkins, 2009), I believe we also learn about the success of positive psychology. One of the features of the conservative ideology is its focus on individualism, and it is a focus on individualism that has led to the rise of a culture in which positive psychology research has been used to promote mindfulness in school children, to deal with the stressors of failing educational systems, resilience training in workers to help them cope with punitive workloads, and well-being applications to help people manage the stresses of economic insecurity (Joseph, 2020). The person-centered psychologist would see the challenges in such situations to be how to create more growth promoting climates in schools, and workplaces, and in everyday life, how to build more empathic, genuine, and unconditional relationships in which people can be autonomous and free from coercion and control, and thus able to express themselves in a more socially constructive way. This too could be the research agenda for positive psychology if it took seriously a model of growth as its paradigm.

The word paradigm is often overused to refer to new ideas and practices, but its real meaning is that of a world view underlying the theories and methodology of a particular scientific subject. Within the history of psychology, the growth model of person-centered psychology represented a genuine paradigm shift from the first and second forces in psychology, the behaviorist image of the human being as a blank slate on which anything could be written or the psychoanalytical view of the human being as driven by destructive impulses (see DeCarvalho, 1991). I believe that positive psychology was a welcome shift in the everyday business of mainstream psychology, but as Seligman (2004) made clear, it was not a paradigm shift. It continued to operate within the same world view as mainstream psychology. Thus, despite the language of positivity, it appears to me that positive psychology as a movement, largely continues to operate within models that implicitly condone the idea that less than fully functioning human behavior is not so much the result of the social environment, but of a deficit in the person themselves (an absence of a strength), and thus putting the responsibility on the person to manage or cope better in adverse circumstances.

Positive psychologists might not always be the people behind such interventions, but it is the technology and tools of positive psychology which are used when stressed and overworked employees are forced by their managers to attend well-being sessions, or school children are given mindfulness classes to cope with the mental health concerns. The gap that exists between research and practice might blind some to how their research is understood and used, and how ultimately its implementation may condone ideas about deficit and dysfunction within the person. In sum, if we reflect on the demise of humanistic psychology relative to the success of positive psychology, we might wonder if the latter's rise was at least in part because it fits well with the demands of conservative ideologies and the need for many organizations and institutions to control and coerce people to behave in particular ways, which presupposes an ideological position that runs counter to a growth model.

The Subtle Use of Power in Positive Psychology

One of the ways in which psychology has power over people is through its adoption of the medical model. Humanistic psychology has long challenged the traditionally accepted parameters in psychology, including the model of a practitioner taken from medicine (Bugental, 1963). Rogers' (1959) approach succeeded in doing this because of how he theorized the nature of psychological problems as having a unitary cause in incongruence and he offered a form of therapy which was about the social environment; in these ways he moved beyond a separation of the negative and the positive into distinct fields of study, and the need for practitioners to take an expert stance over the person's inner experiences. In this way, the person-centered approach offers a different understanding of the power relations between practitioners and clients. Positive psychology promises to offer an alternative to the medicalisation of human experience (Maddux and Lopez, 2015), but yet it does so only in the most superficial of ways by not using the language of medicine but continuing to condone the essential elements of the medical model (see Joseph and Linley, 2006b).

The first way it does this is because the remit of positive psychology is often seen as a supplement to traditional psychology, which focuses on distress and dysfunction. In doing this it serves to condone the idea that there is a separation between the clinical and the more fully functioning aspects of human experience. The person-centered conceptualization is that while there is a universal human tendency toward actualization, this tendency becomes thwarted in non-optimal social environments, which create an incongruence between the tendency toward actualization and self-actualization. As such, it is usual for people to self-actualize in ways that are less than fully functioning. In this way, person-centered therapy effectively posits a unitary cause of distress, but varied expressions of that distress will arise according to the uniqueness of each individual's incongruence (see Sanders and Joseph, 2016).

A second way in which positive psychology continues to condone an illness ideology is through the notion that different interventions are needed for different states of positivity. It is a common assumption in clinical psychology that different interventions are needed for different clinical states, referred to as the specificity myth by person-centered psychologists (Bozarth and Motomasa, 2005). It is an assumption from clinical psychology that is applied to positive psychology that there are specific interventions for specific positive psychological states.

But it is an assumption that runs counter to the person-centered proposal that there is a unitary cause of distress and growth, and thus a single form of intervention. Shlien (1989) wrote:

> 'Client-centered therapy has only one treatment for all cases. That fact makes diagnosis entirely useless. If you have no specific treatment to relate to it, what possible purpose could there be to specific diagnosis? Nothing remains but the detrimental effects.' (p. 402).

The need for diagnosis, formulation, and all expressions of expertise over the person dissolve when it is the social environment that is the focus of intervention, not the person (Joseph, 2021). In this way, the positive psychologist may not be using diagnosis in the clinical sense, but if they are developing an intervention suitable for some people but not others, the same logic applies. As such, much of contemporary positive psychology remains underpinned by the medical model, but that fact is disguised by its language of strengths, virtues, and happiness. In sum, the assumption that different problems or people require different interventions leads the practitioner to take an expert stance, implying that they know what the client needs better than the client knows themselves, which presupposes an ideological position that runs counter to a growth model.

CONCLUSIONS

As described above, reflection on positive psychology from the perspective of the person-centered approach leads to questions about the positionality of positive psychology, its politics, and its subtle promotion of power. The adoption of a growth model leads to a different way of addressing these same issues.

A growth model offers: (1) an alternative nomological net of variables for research, to do with the quality of relationships, growth promoting climates, and fully functioning personality dimensions, with (2) different implications for practice, to do with non-directive rather than directive interventions, and (3) significance in terms of real-world relationships between people, institutions, and society, as the aim is to work toward a social environment free from corruption, injustice, oppression, and poverty, and all other ways in which the growth of people is usurped and thwarted.

For researchers, this offers new challenges to understand whether and in what ways people will be intrinsically motivated to move in positive psychological directions when in optimal social environments, and how to define the optimal social environment, across different contexts and cultures. It alerts researchers that research findings in themselves do not indicate an approach to an intervention, and that there is a need to understand the relative merits of directive and non-directive approaches. It also helps us think about how our research is used by others and what other agendas our findings might be used to serve.

Such a shift in thinking would also have implications for what it means to be a positive psychologist. For example, in psychotherapy and clinical psychology, the practitioner must learn new ways of relating to people. Or in education, the educationalist must learn to trust in their students that they have the intrinsic need to learn and to develop. Adopting a person-centered approach to practice offers challenges to positive psychologists in terms of their own psychological development. Because the person-centered approach focuses on the relational climate that the practitioner fosters through their ability to be genuine, empathic, and congruent, the importance of the practitioner's own psychological development and emotional maturity cannot be understated.

Positive psychology is a broad discipline of study and practice. It isn't defined in terms of its approach. Positive psychologists take a variety of approaches to their work, including a person-centered approach, although it may not always be recognized as such.

While my own vision is for a more person-centered positive psychology, and that is the branch of positive psychology that I identify with most strongly, it might be said by some that it is a strength of positive psychology that it has no single paradigmatic positionality on human nature, as that allows for great flexibility in exploration, crossing between ideas and assumptions about human nature traditionally associated with the psychoanalytical, behavioral, and humanistic. As a discipline I would agree that positive psychology need not take any single paradigmatic stance. But that is not the same as it being neutral, as each instance of research or practice does have a stance, whether it is made explicit or not. Unless each researcher and practitioner acknowledges their own positionality, and describes how their focus of interest, measures chosen, and so on, arises from their point of view, what otherwise appears like a coherent and building body of knowledge is actually founded on a tangle of different assumptions. What could be a strength is a weakness. It is a weakness when positionality in research and practice is implicit and unacknowledged, as if it were not true that all research and practice comes from a position, as it allows for the fact that all research and practice is ultimately ideological to go unnoticed.

Seen like this, positive psychology provides a smorgasbord of methods, lacking in any single underpinning ontological approach. In this respect, positive psychology is not person-centered, but person-centered psychology can be thought of as a specific approach to positive psychology. Recognizing it as such places a much-needed new stake firmly in the ground to draw attention to, and create a tension with, whatever the other implicitly accepted ontological stances of mainstream positive psychology are, and which often imply that people's intrinsic motivation cannot be relied upon.

In these ways, I believe that positive psychology can learn from the person-centered position, to realize the often dark and destructive images of humanity that actually lie at the core of much contemporary positive psychology, disguised by its language of positivity. Despite the similarity in stated goals there can be gulf between humanistic and positive psychology. To close the gap, perhaps it may be helpful for positive psychologists to revisit Bugental's (1964) five basic principles of humanistic psychology and make them their own. Moving forward with a new research agenda, positive psychologists must become more explicit about their own positionality, to be clear what theoretical

assumptions underpin their choice to focus either on the person or the social environment. Respecting the humanistic image of the human being and, consequently, considering and influencing people's social environment to facilitate personal growth would promote cross-fertilization between positive psychology and the person-centered approach instead of widening their gap. It would be useful for positive psychologists to be open regarding their image of humanity, thus offering positive psychology as an umbrella for interventions from different theoretical foundations and making that explicit would seem a step forward for positive psychology and a door-opener to include the person-centered approach.

In summary, while the move toward studying the good life is surely to be welcomed, in taking up the baton from humanistic psychology, positive psychologists left behind what I believe is the most vital part of the humanistic approach—its view of human nature. Whereas, humanistic psychology and specifically the person-centered approach provided an alternative growth paradigm to the behavioral and psychoanalytical schools that had come before, positive psychology as a whole takes no single paradigmatic stance. This might be seen as a strength for a discipline, but it is misleading to think that this means that each instance of research or practice is not based in a paradigm. Positive psychology may use the language of positivity, yet implicitly condone ideas about deficit and dysfunction within the person, and talk about growth, yet promote practices that quietly curtail freedom and self-direction. In this way, positive psychology may yet learn from humanistic psychology that our ideas about how to treat people are always based in our visions of human nature.

DATA AVAILABILITY STATEMENT

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

AUTHOR CONTRIBUTIONS

The author confirms being the sole contributor of this work and has approved it for publication.

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The Model for Sustainable Mental Health: Future Directions for Integrating Positive Psychology Into Mental Health Care

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This position paper proposes a model for systematic integration of positive psychology interventions (PPIs) in mental healthcare. On the one hand, PPIs can contribute to the decrease of dysfunctional processes underlying mental illness. This evidence is at the core of the new domains of positive clinical psychology and positive psychiatry. On the other hand, a growing number of studies demonstrate that mental health is not merely the absence of mental illness. Mental wellbeing represents a related but separate dimension of mental health. Mental wellbeing reduces the risk of future incidence of mental illness and is highly valued by people receiving psychological treatment as an important aspect of personal and complete recovery and personal growth. This makes mental wellbeing a vital outcome of mental healthcare. PPIs can directly increase mental wellbeing. The model of sustainable mental health is presented integrating the science of positive psychology and mental wellbeing into mental healthcare. This heuristic model can guide both practitioners and researchers in developing, implementing, and evaluating a more balanced, both complaint- and strength-oriented, treatment approach. The role of gratitude interventions is discussed as an example of applying the model. Also, three potential modalities for implementing PPIs as positive psychotherapy in treatment are as: positive psychotherapy as primary treatment, as combinatorial treatment, and as intervention for personal recovery of people with severe or persistent mental disorder. Finally, we argue that longitudinal studies are needed to substantiate the model and the processes involved.

Keywords: positive psychology, mental health care, intervention, implementation model, integration

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INTRODUCTION

Positive psychological interventions (PPIs) aim to enhance resources that enable people to be resilient and flourish. Some examples of evidence-based PPIs are: savoring, gratitude, kindness, optimism, promoting positive relationships, and pursuing meaning (Schueller and Parks, 2014). Though PPIs have been developed to promote happiness and optimal functioning in diverse groups like people who would like to grow and develop, children at school, workers in business (Seligman and Csikszentmihalyi, 2000; Linley et al., 2006), from the beginnings of positive psychology as a scientific domain, PPIs have been studied in clinical populations as well

(Seligman et al., 2006). PPIs, aiming to promote positive affect, engagement, and social relationships, may improve response of psychological and psychiatric treatments of mental disorders which have led to initiatives to integrate positive psychology in clinical psychology (Wood and Tarrier, 2010; Wood and Johnston, 2016) and in psychiatry (Jeste and Palmer, 2015; Fava and Guidi, 2020).

In the past years, a rapidly growing number of studies have evaluated the effects of PPIs on mental health in clinical populations. Chakhssi et al. (2018) indeed found small to moderate effect sizes of PPIs on wellbeing, depression, and anxiety in clinical populations across 30 studies. In a recent comprehensive meta-analysis on the impact of PPIs, an average moderate effect on mental wellbeing was found, based on 60 studies in clinical populations (Carr et al., 2020). On the other hand, another recent meta-analysis has shown that a broad range of psychological interventions can contribute to the promotion of wellbeing in both clinical and non-clinical populations (van Agteren et al., 2021). In persons with mental illness, cognitive (behavioral) therapy had similar small to moderate effects on wellbeing as singular and multi-component PPIs.

Hence, an important question is how we can better understand the mutual effects of PPIs and more traditional psychological interventions on both mental wellbeing and mental illness. In this position paper, we present a heuristic model of sustainable mental health, systematically integrating PPIs in mental healthcare. We will first describe the model that is informed by empirical research but is mainly a theoretical proposition. Next, we use gratitude as an example of how it can be applied. We present three potential modalities for implementing PPIs as positive psychotherapy in treatment and close with directions for further research.

MENTAL WELLBEING AS A VITAL OUTCOME OF MENTAL HEALTHCARE

The first step in developing the sustainable mental health model relates to the recognition that mental wellbeing is an important outcome in mental healthcare, besides mental illness. "Mental health is simply too important to be ignored" wrote eminent scholar George Vaillant (2003). The dominant focus in psychological treatment has long been on mental disorders and symptoms of psychopathology. Mental health, however, is more than the absence of mental illness. The World Health Organization accentuates the positive dimension of mental health defining it as "a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community" (World Health Organization, 2005, p.2). The three core components of this definition are (1) feeling well, (2) effective functioning of an individual, and (3) effective functioning for a community.

In this definition, one can also recognize two traditions of wellbeing: one focusing on hedonic wellbeing and the other on eudaimonic wellbeing (Waterman, 1993; Ryan and Deci, 2001). There is widespread consensus that hedonic wellbeing is a multidimensional concept, including evaluations of life in emotional terms (i.e., life-satisfaction) as well as the presence of positive and absence of negative affect (Diener, 1984; Diener et al., 1999). The concept of eudaimonia dates back to Aristotle, for whom not subjective happiness, but the realization of one's own potential in a societal context was the essential element of a good life (Waterman, 1993). Several models have been put forward for eudaimonic wellbeing, such as psychological wellbeing (Ryff, 2014) and self-determination theory (Ryan and Deci, 2017). Keyes (2005) developed a model of mental health in which emotional, psychological, and social wellbeing are all important indicators of a flourishing life.

Three key findings have emerged from studies on the relation between mental wellbeing and mental illness in the past decades. First, there is substantial evidence for the so-called two-continua model. This model holds that mental wellbeing and mental illness are related, yet discernible phenomena: One continuum represents the presence or absence of mental wellbeing and the other the presence or absence of mental illness. Superiority of a two-related factors model has been demonstrated in large representative surveys (Keyes, 2005; Westerhof and Keyes, 2010; Lamers et al., 2011; Weich et al., 2011; Schotanus-Dijkstra et al., 2017) as well as in clinical samples (Trompetter et al., 2017; De Vos et al., 2018; Franken et al., 2018). Evidence for mental wellbeing and mental illness as distinct dimensions also comes from, for example, health and life-style surveys (Huppert and Whittington, 2003) and life span studies (Westerhof and Keyes, 2010; Lamers et al., 2012).

Secondly, longitudinal evidence indicates that higher levels of mental wellbeing reduce the risk of incident mental health issues and mental disorders (e.g., Keyes et al., 2010; Wood and Joseph, 2010; Grant et al., 2013; Lamers et al., 2015; Schotanus-Dijkstra et al., 2017).

Thirdly, whereas the two-continua model has been developed from studies in the general population, studies on perspectives of mental healthcare users have made a difference between clinical and personal recovery (Slade, 2010). Based on a systematic review and narrative synthesis of qualitative studies on personal recovery, Leamy et al. (2011) developed the so-called CHIME model to describe five personal recovery processes: Connectedness, Hope and optimism, Identity, Meaning in life, and Empowerment. Although this model uses different terminology, there is a clear overlap with approaches to eudaimonic aspects of wellbeing. A systematic review and qualitative meta-analysis synthesized findings of qualitative studies on perspectives of persons who recovered from eating disorders in line with the two-continua model (de Vos et al., 2017). Besides a decrease in eating disorders-related behaviors and cognitions, they described improvements in self-acceptance, positive relationships, personal growth, self-adaptability/resilience, and autonomy as most fundamental criteria in their recovery process. Besides a reduction in complaints, these findings show that psychological wellbeing plays an important role in the recovery process for these persons. Hence, it can be concluded that the patient perspective also considers wellbeing an essential part of recovery processes.

Over the past years, many instruments have been developed to measure different aspects of mental wellbeing. An overview with as many as 99 instruments to measure mental wellbeing is available (Linton et al., 2010). Among the most often used are the Positive and Negative Affect Schedule, the Satisfaction with Life Scale, Ryff's Scales of Psychological Well-being, the Warwick-Edinburg Mental Well-Being Scale, the Flourishing scale, and the Mental Health Continuum Short Form. A number of measures have also been developed for personal recovery (Van Weeghel et al., 2019), such as the Recovery Assessment Scale, the Stages of Recovery Instrument, and the Questionnaire on Personal Recovery. There is nowadays good evidence that people can provide valid and reliable self-reports of wellbeing (Diener et al., 2018).

In studies on the two-continua model, the Mental Health Continuum Short Form (Keyes et al., 2008) has become the most often used instrument. The instrument is solidly grounded in theoretical syntheses on subjective wellbeing and optimal psychological and social functioning with each item measuring a separate aspect of wellbeing. A recent meta-analytic structural equation model across 26 studies provided strong evidence of a general factor of mental wellbeing as well as three separate dimensions of emotional, psychological, and social wellbeing in both clinical and non-clinical samples (Iasiello et al., in press).

To summarize, growing evidence suggests that mental wellbeing is a vital outcome in mental healthcare that can be measured with reliable and valid instruments. Integrating PPIs in mental healthcare might contribute to a stronger focus on mental wellbeing in mental healthcare practice. However, PPIs are not meant to replace or compete with other well-established psychological treatments in mental healthcare but to complement them. But this raises the question how to optimally integrate PPIs in mental healthcare? To this end, we developed the model of sustainable mental health.

THE MODEL FOR SUSTAINABLE MENTAL HEALTH

Figure 1 presents a model aiming to integrate dysfunctional and functional perspectives on mental health and psychological treatment. It is meant as a heuristic model guiding researchers and practitioners to develop, implement, and evaluate a more balanced, both complaints- and wellbeing-oriented, treatment approach. It is beyond the scope of this paper to discuss all components of the model in detail, but we give a brief overview of outcomes, adaptation, context, underlying processes, and interventions as main components of the model (Bohlmeijer and Westerhof, 2021).

A first component in this model is that sustainable mental health incorporates mental wellbeing as an essential mental health outcome besides mental illness as discussed in the previous section.

The second component refers to adaptation processes as inhibiting or promoting sustainable mental health. The absence of psychological complaints and the presence of mental wellbeing can easily be taken as normative endpoints. However, life is characterized by moments of suffering as well as flourishing. As both continua of mental health will fluctuate across time in a dynamic reciprocal process, it is important to better understand how people regulate their mental health, not in the least because that may also provide possibilities for psychological interventions. We therefore added adaptation processes to the model. Psychosocial adaptation can be seen as a *process* by which a person interacts with the psychosocial consequences of smaller or larger challenges in life. A common view is that temporality plays an important role in adaptation (Livneh, 2001). Short-term challenges include day-to-day moments that often involve emotions, such as anger, anxiety, or depression. These short-term reactions ask for coping processes that mainly focus on the reduction of stress (Lazarus and Folkman, 1984). Intermediate challenges may be referred to as self-management, which includes dealing with symptoms of illness, communication with health professionals, or adopting life-style changes (Barlow et al., 2002; Loriq and Holman, 2003). Lastly, there are longer term challenges that ask for assimilation and accommodation of life-goals, identity, and meaning in life. These processes are related to aspects of narrative identity development in which the way people identify with and distance themselves from difficult life experiences is key in the regulation of mental health and wellbeing (Westerhof and Bohlmeijer, 2012).

Besides the temporal aspect of adaptation processes, the regulatory focus of these processes might differ. A large body of psychological literature that is of interest to chart adaptation processes has focused on how to deal with stress, symptoms, and illnesses. These processes are mainly important in regulating the illness continuum of mental health, often with a reactive focus on solving problems, restoring previous levels of functioning, or bouncing back to an earlier equilibrium. More recently, a number of processes have been put forward in positive psychology that have a stronger focus on maintaining or promoting wellbeing, like the attention for positive emotions or the use of strengths, virtues, and values (Fredrickson, 2001; Lyubomirsky et al., 2005) and psychological flexibility (Kashdan and Rottenberg, 2010). Processes involved include, for example, benefit finding (Tennen and Affleck, 2005), post-traumatic growth (Tedeschi and Calhoun, 1995), and sense of coherence (Antonovsky, 1993). These processes focus more on the maintenance and promotion of wellbeing, despite the presence of problems and stress, or even on growth in wellbeing due to problematic or stressful experiences.

Thirdly, people may experience both barriers and resources for their adaptation processes. Many theories on mental illness as well as those on mental wellbeing distinguish between both in relationship to outcomes. Examples of well-studied barriers are information processing biases and negative biases in thinking, such as overgeneralization and magnification or minimization, dysfunctional schema and beliefs about the world and oneself, and suppression of emotions and avoidance behavior. Examples of resources are the ability to experience and amplify positive emotions, optimism, the awareness and use of strengths, values, self-affirmations, and positive relationships. We prefer the concepts of barriers and resources over, for example, negative and

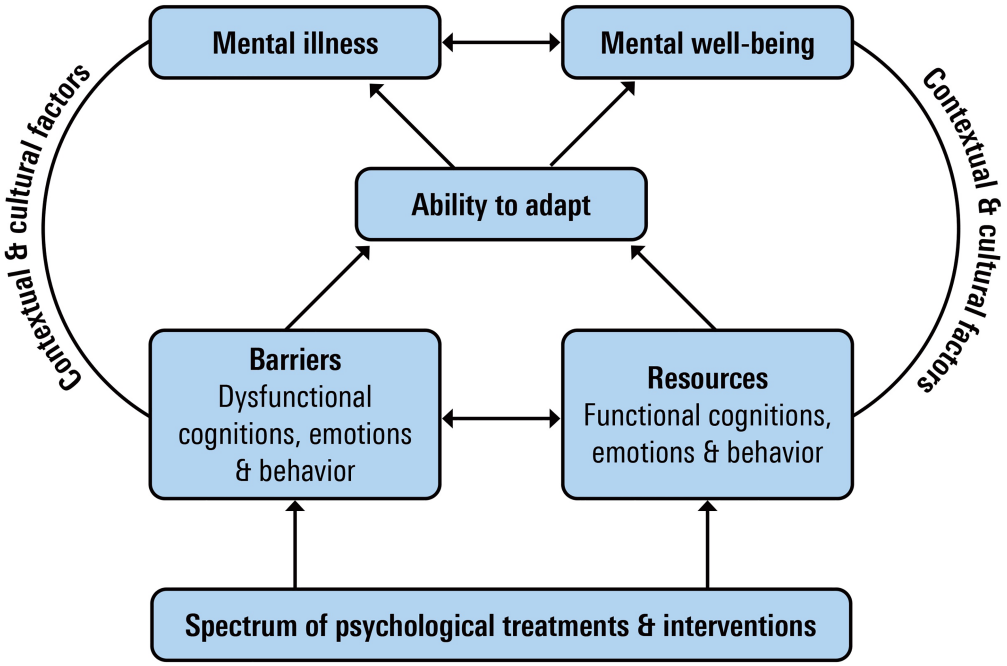

FIGURE 1 | Model of sustainable mental health

positive. The presence of negative emotions and cognitions, for example, can be functional in adaptation processes as they direct attention to important issues in the process. Over time, however, they may become dysfunctional when emotion regulation and coping strategies are inadequate and do not result in decreases of symptoms or increases in mental wellbeing.

Fourthly, contextual factors play an important role in supporting or thwarting individual attempts to maintain and achieve sustainable mental health. Ecological systems, such as relationships, parents, organizations, and communities, may either cause or maintain dysfunctional or maladaptive cognitions or behaviors that are related to mental illnesses or distress or may enhance resources that promote adaptation and mental health (Bronfenbrenner, 1995). It is important to acknowledge that the social, historical, and cultural context play an important role in supporting or thwarting individual attempts to maintain and achieve mental health. Although in this paper, we mainly focus on individual aspects of the model, this does not mean that individuals are solely responsible for managing their mental wellbeing and illness.

The fifth component is the spectrum of psychological treatments and interventions and their focus on targeting barriers or resources for successful adaptation. We propose that psychological treatments can be ordered on a spectrum, depending on whether their primary focus is on targeting barriers or resources for successful adaptation. At one end of the spectrum is psychological treatments or interventions that primarily target barriers for successful adaptation, e.g., CBT may target dysfunctional cognitions and avoidance behavior and schema therapy will target dysfunctional schema about the world and oneself. At the other end of the spectrum is psychological treatments or interventions, such as PPIs that primarily focus on developing and using resources for adaptation.

It is important to stress that many psychological treatments will comprise interventions targeting both barriers and resources for adaptation. One example is Acceptance and Commitment Therapy (ACT). ACT is a distinctive model of behavioral and cognitive therapy with a strong focus on the context of behavior (Hayes et al., 2013). It is based on a relational frame model that links behavioral principles of psychological flexibility to both pathology and flourishing (Ciarrochi and Kashdan, 2013; Hayes et al., 2013). ACT targets both barriers, such as experiential avoidance, and resources, such as awareness of and commitment to personal values. Hence, promoting sustainable mental health is a core focus in ACT (Bohlmeijer et al., 2015; Fledderus et al., 2015; White et al., 2017).

The model of sustainable mental health makes clear that there are several pathways to the different outcomes of mental illness and mental wellbeing. For example, an intervention may lead to fewer symptoms which in turn are related to more wellbeing. Or more specifically, an intervention might focus on strengthening resources that contribute to better adaptation and thereby to both mental wellbeing and mental illness. These kinds of processes might explain why PPIs can have an effect on mental illness (Chakhssi et al., 2018) as well as why CBT can have effects on wellbeing (van Agteren et al., 2021). However, it would be important to address the different barriers and resources as well as the aspects of adaptation and mental illness and mental wellbeing that are involved. We discuss these processes in some details regarding gratitude as an example.

GRATITUDE

In this section, we want do discuss how gratitude as an example of a PPI fits into the model. Gratitude has been defined as both a positive affect resulting from the perception of receiving a benefit from another person (McCullough et al., 2002) and a trait, which includes the ability to appreciate simple things in life, sense of abundance and experience, and express gratitude toward others (McCullough et al., 2002; Watkins et al., 2003; Wood et al., 2010). People with gratitude as a stable character strength will also more frequently experience gratefulness as a positive emotion in daily life as they tend to notice and appreciate positive events and contributions of other people more often and more intensely (McCullough et al., 2002). A growing number of longitudinal studies have demonstrated the positive relation between gratitude and mental health (Wood et al., 2010). For example, it has been found that higher levels of gratitude predict improvements in wellbeing and distress over time for various populations, such as healthy adults (Disabato et al., 2017), heart patients (Millstein et al., 2016), people with rheumatic disorders (Sirois and Wood, 2017), and war veterans (Kashdan et al., 2006).

The most frequent studied gratitude interventions are the gratitude journal and gratitude letters (Emmons, 2013). The gratitude journal intervention invites people to write every day for 10 or 15 min about events and experiences they are grateful for. In the gratitude letter intervention, people write a letter to person expressing their gratitude explaining how the other person has had a positive impact on one's life. People are then invited to visit the other person and read the letter out aloud. In both interventions, writing in detail about the experienced benefits is a key working mechanism of gratitude. Reviews found limited and inconclusive evidence for the efficacy of mainly brief gratitude interventions (Wood et al., 2010; Davis, 2016; Dickens, 2017). However, recent studies showed a substantial impact on mental health of gratitude interventions of longer duration (Heckendorff et al., 2019; Bohlmeijer et al., 2021).

Figure 2 shows the potential impact of gratitude interventions within the model of sustainable mental health.

First of all, gratitude interventions may build *resources* that promote adaptation and contribute to mental health. For example, gratitude interventions aim to enhance the daily experience of gratefulness as a positive emotion. The broaden-and-build theory (Fredrickson, 2001) demonstrates how gratitude and other positive emotions contribute to a more broadened thought-action repertoire. This broadened repertoire sets into motion two positive spirals. First, it will promote the likelihood of discovering meaning in upcoming events, increasing the experience of positive affect in the near future (Fredrickson and Joiner, 2002). Secondly, over time positive emotions cause a positive spiral building durable physical, cognitive, and social resources promoting the ability to adapt and mental health Thus, gratitude as a life-orientation will directly contribute to mental wellbeing by a tendency toward noticing and appreciating the positive in the world and gratitude as a positive affect will decrease distress by building mental flexibility (Wood et al., 2010). Longitudinal studies have found a relationship between gratitude and negative mental states, such as depression mediated by positive emotions (e.g., Lambert et al., 2012). Also, gratitude interventions may promote the use of adaptive coping-styles, such as positive reframing. Positive reframing is the ability to develop positive interpretations of events that are firstly experienced as negative. An example is when an adverse life-event is considered as an opportunity to deepen a relation or develop new skills. Several studies have found evidence for the mediational role of positive reframing in the relationship between gratitude and mental health (Lambert et al., 2009, 2012). Watkins et al. (2008) found that grateful processing was beneficial in bringing closure to negative emotional memories. Finally, there is also ample evidence demonstrating that experiencing and expressing gratefulness supports the development and maintenance of high-quality relationships (e.g., Algoe et al., 2010; Grant and Gino, 2010; Lambert and Fincham, 2011; Algoe and Zhaoyang, 2016). Experiencing gratitude draws our attention to people who, by their small or major gesture, demonstrate that they care for us and are responsive to us (Algoe et al., 2013). By expressing appreciation, we confirm emotional closeness with the other person. Receiving appreciated benefits and expressing gratitude promotes shared joy and reciprocal kindness, relationship satisfaction, and willingness to invest in the relationship, all key positive, interpersonal processes (Algoe, 2019). High-quality relationships have been found to play a vital role in mental health (e.g., Thoits, 2011).

Secondly, gratitude interventions may impact *barriers* for adaptation. One such barrier is repetitive negative thinking. This is considered an important transdiagnostic risk factor for psychopathology (Spinhoven et al., 2015) comprising sustained focus on and difficulty to disengage from negative content. Gratefulness promotes noticing and appreciating positive experiences and this may train people to shift their attentional focus from negative experiences to more positive ones. Several studies have found evidence for the beneficial effects of gratitude interventions on repetitive negative thinking (Heckendorf et al., 2019). However, the relation between gratitude and barriers may also work the other way around. One example is the presence of a dysfunctional attachment style. People who score high on attachment-related anxiety have difficulties in trusting that a partner will be responsive in times of need, and people with an attachment-avoidance profile are more distrustful of the goodwill of other people (Brennan et al., 1998; Mikulincer and Shaver, 2009). People with strong attachment issues will have difficulties in noticing and appreciating good intentions and deeds of other people and in expressing gratefulness. Thus, the presence of attachment issues may inform the practitioner not to indicate gratitude as an intervention.

COMBINING POSITIVE PSYCHOTHERAPY WITH COMPLAINT-ORIENTED TREATMENTS

In the last section, we discussed gratitude as an example of one positive psychology intervention. In the context of

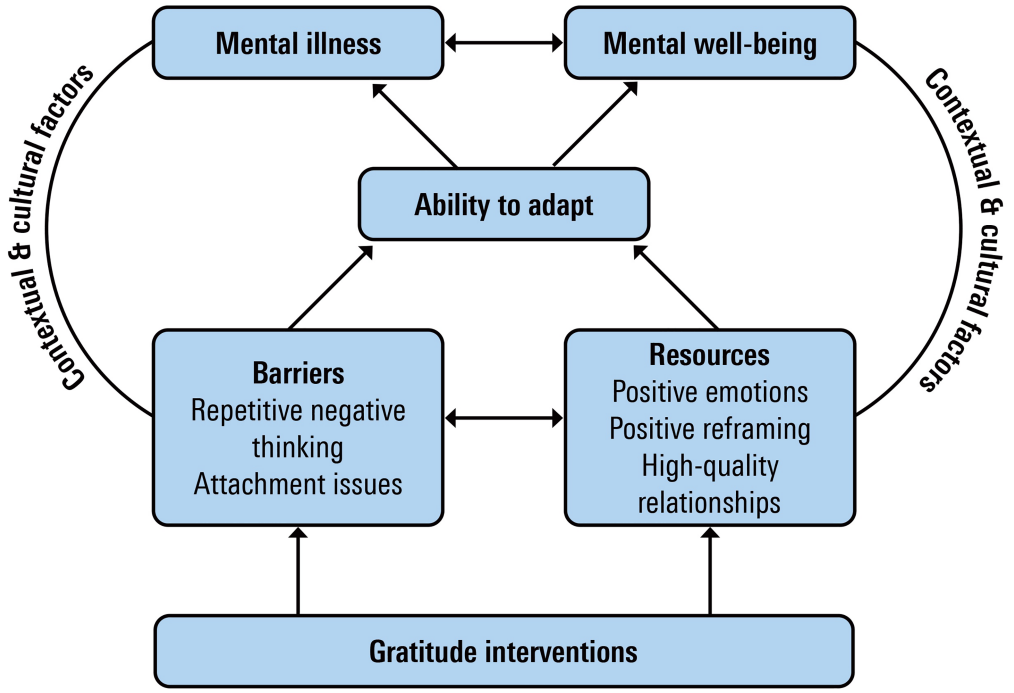

FIGURE 2 | Gratitude and model of sustainable mental health.

psychological treatment, several positive psychology inventions are often combined into so-called positive psychotherapy. Positive psychotherapy can be defined as a treatment approach that systematically amplifies the positive resources of clients, such as strengths, meaning, positive relationships, and intrinsically motivated accomplishment with aim of increasing mental wellbeing and personal recovery and undoing or diminishing mental illness (Rashid and Howes, 2016). How can positive psychotherapy be combined with treatments and interventions primarily aiming to reduce barriers for adaptation (complaint-oriented psychotherapy)? We discuss three potential modalities: positive psychotherapy as primary treatment, as a combinatorial treatment, and as personal recovery treatment.

Positive psychotherapy can be offered as *primary treatment*. Chaves et al., 2017 found that the effects of positive psychotherapy in reducing depressive symptomatology were similar to the effects of cognitive behavioral therapy (CBT) in a sample of women with a DSM-IV diagnosis of major depression. One explanation is that a lack of positive emotions and cognitions plays a major role in causing and maintaining depression (Gotlib and Joormann, 2010; Watson and Naragon-Gainey, 2010; Carl et al., 2013) and positive psychotherapy is primarily aimed at increasing positive emotions and cognitions. Though evidence-based treatments for depression, such as CBT, have been established (Cuijpers et al., 2011), it has also been estimated that about 10–60% of patients with depressive disorders do not respond to evidence-based treatments (Carvalho and Mcintyre, 2015). Moreover, about 20% of patients with a depressive disorder develop a chronic or therapy-resistant course (Kerkhof, 2002; Spijker et al., 2002). Possibly some patients may respond better to positive psychotherapy. Analyses using the Personalized Advantage Index showed that patients mental and physical comorbidity, prior antidepressant medication, higher levels of negative cognitions, and higher personal growth demonstrated a better response to positive psychotherapy in comparison with CBT (Lopez-Gomez et al., 2019). However, more research on factors predicting response to specific treatments is warranted.

Implementing positive psychotherapy as a *combinatorial treatment* is a second modality. One example is sequential treatment that can be defined as a two-stage approach, based on the *a priori* assumption that one treatment will often not be successful in realizing complete recovery or full response (Guidi et al., 2016). For example, studies have found larger effects on mental health for sequential combinations of CBT and wellbeing therapy in comparison with active control groups for people with cyclothymic disorder (Fava et al., 2011) and people with acute coronary syndromes (Rafanelli et al., 2020). Though wellbeing therapy differs from positive psychotherapy, these treatments share a primary focus on increasing psychological wellbeing. Within the model of sustainable mental health, sequential treatment may imply that a treatment primarily targeting barriers for adaptation is followed by a treatment primarily focusing on increasing resources for adaptation. A second example is implementing positive psychotherapy as a relapse prevention or rehabilitation intervention. Radstaak et al. (2020) evaluated the impact of an intervention combining wellbeing therapy

and positive psychology as a rehabilitation intervention for people who had been treated for PTSD. For patients with lower levels of wellbeing, indicating the absence of complete recovery, the positive intervention was more effective than treatment as usual for mental wellbeing and post-traumatic growth.

A third modality is implementing positive psychotherapy as an intervention for personal recovery and wellbeing. This is especially relevant for people with severe mental illness (SMI) that can be defined a psychiatric disorder with severe functional problems, where the constraints are causal and consequential and which is not temporary, and there is a need for coordinated professional care (Delespaul, 2013). Examples of SMIs based on these criteria are schizophrenia, schizoaffective disorder, bipolar disorder (BD), personality disorder, and major depressive disorders (MDD). Several positive psychotherapy programs in this context have been developed. For example, WELLFOCUS is a positive psychotherapy group program adapted for people with psychosis. A trial with 94 participants showed no significant effects for mental wellbeing but small to moderate effects for various symptoms of mental ill-being in comparison with treatment as usual (Schrank et al., 2016). Another example is the *Living well with mental disorder* intervention (Kraiss et al., 2018). This is an 8-week transdiagnostic positive psychotherapy group intervention for people with SMI. Kraiss et al. (2018) conducted a trial on the effects of this intervention in a sample of 97 patients with bipolar disorder. The post-treatment findings show a moderate to large effect on mental wellbeing and personal recovery in comparison with treatment as usual (Kraiss, 2021). Recently, a meta-analysis on the effects of PPIs on mental health in people with SMI across studies was conducted (Geerling et al., 2020). Sixteen studies were included (nine RCTs), representing 729 patients. The results showed that there is at present no evidence that PPIs are more effective in comparison with other active interventions. However, within-group effects revealed a moderate effect (Hedge's $g = 0.40$) on wellbeing and a large effect on mental ill-being symptomatology ($g = 0.70$), suggesting that people with SMI do benefit from PPIs in terms of enhancement of mental health.

IMPLICATIONS FOR FUTURE RESEARCH

In the last section, we discussed gratitude as an example of one PPI and tried to explain the pathways through which it can have effects on both mental wellbeing and mental illness as outcomes. Overall, it has been discussed that it is difficult to demonstrate the superiority of one intervention type over another as most psychological interventions have some kind of effect on mental illness (Lambert, 2013a; Lambert, 2013b). This might apply to effects on mental wellbeing as well. Hence, it would be of value to conduct similar exercises for other kinds of interventions, thereby filling the model with different resources, aspects of adaptation, and pathways to outcomes. This could help to better understand what the main outcomes and working mechanisms of different forms of interventions in clinical samples are.

Although the model is informed by empirical research, it is mainly a theoretical proposition. A next step would be to further substantiate the model with empirical studies. This would provide more insight into the validity of the heuristic model for specific PPIs. Structural equation modeling could be used to examine the validity of the model. Researchers would need to make good choices for instruments to measure the different components in the model, but they would also need to have good longitudinal designs to assess the processes involved. Intervention studies assessing the impact of PPIs on mental health could include measures of adaptation, barriers, and resources and mediational analyses could study the specific processes of change as predicted by the model of sustainable mental health. This would also include research on the different modalities of combining PPIs and other psychological interventions. Besides demonstrating that interventions do have an effect on mental health outcomes, this would therefore also involve research that gives a better understanding what works when for whom.

This research agenda would also entail innovations in research methods. For example, single-case designs with more measures for fewer participants can be used as they are rather flexible in tailoring research to the processes that are involved in specific interventions. Furthermore, the APA describes including professional expertise and patient perspectives as important besides scientific evidence for effectiveness. These perspectives can add to filling in the model for particular interventions, but they can also inform theory on good, shared decision making about modalities and what works when for whom.

The model for sustainable mental health we presented in this position paper primarily applies to clinical psychology and psychiatry and not to public mental health and prevention. We also realize that the model is most relevant to western countries with a developed capacity for mental healthcare. It has been shown that most positive psychology research has been conducted in western, educated, industrialized, rich, and democratic (WEIRD) samples (Hendriks et al., 2018). It is also important to stress that wellbeing is strongly influenced by social and cultural contexts (McNulty and Fincham, 2011). For example, wellbeing literacy has been introduced as a vital capability to comprehend and compose wellbeing language across contexts in order to improve wellbeing of self and others (Oades et al., 2020, 2021). Though the model for sustainable mental health acknowledges the relevance of contextual and cultural factors mental health, it was beyond the scope of this paper to discuss them.

AUTHOR CONTRIBUTIONS

All authors have written and equally contributed to the paper.

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An Emerging Preventive Mental Health Care Strategy: The Neurobiological and Functional Basis of Positive Psychological Traits

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Even with the expanding burden of the COVID-19 pandemic on mental health, our approach to mental health care remains largely reactive rather than preventive. This trend is problematic because the majority of outpatient visits to primary care providers across the country is related to unmet mental health needs. Positive psychology has the potential to address these issues within mental health care and provide primary care providers with strategies to serve their patients more effectively. Positive psychology has many frameworks like hope, which can be measured using simple questionnaires in the waiting room. Moreover, there is a growing body of neurobiological evidence that lends credence to positive psychology concepts in the context of differential neuronal activation patterns. Many positive psychological instruments not only have high construct validity but also have connections to observable neurobiological differences tied to differences in psychosocial functioning. Despite the current evidence, we still need robust research that explores if such psychometric measurements and related interventions lead to clinically significant and favorable health outcomes in patients outside of controlled environments.

Keywords: preventive mental health care, neurobiology, positive psychology, hope theory, psychometrics, clinical settings

INTRODUCTION

The COVID-19 pandemic has resulted in devastating worldwide consequences for health networks and patients. Along with economic and medical repercussions, there has also been an unprecedented rise in the prevalence of mental illnesses (Panchal et al., 2021). Recent data show the number of adults reporting anxiety or depressive symptoms has risen from about 10 to 40% of the population (Panchal et al., 2021). Even with the expanding burden of the pandemic on mental health, our approach to mental health care remains largely reactive rather than preventive. This emphasis on treating active psychopathology means that we are likely missing key opportunities to mitigate the effect of social isolation and disease-related distress in the USA (Panchal et al., 2021).

Mental health care still faces stigmatization from much of the public, ranging from hesitancy to distrust (Parcesepe and Cabassa, 2012). This stigma largely stems from the fact that many people do not see mental illnesses as legitimate as somatic dysfunctions (Parcesepe and Cabassa, 2012). Unfortunately, these perceptions of mental health create a challenge for both patients and

primary care providers (PCPs) given that approximately 70% of outpatient visits relate to unmet mental health needs (Hunter et al., 2017). Among PCPs, a lack of clinical tools needed to provide preventive mental health services frequently hinders efforts to find intervention points before a decline in function appears (Clatney et al., 2008). Therefore, PCPs need tools that are readily implementable in busy practices and that lead to clinically appreciable changes in well-being.

This article seeks to highlight the potential of positive psychology to address these issues within mental health care and provide PCPs with strategies to serve their patients more effectively. Positive psychology has many frameworks like hope, which can be measured using a simple questionnaire in the waiting room. Many of these positive psychological instruments not only have high construct validity but also have connections to observable neurobiological differences. Additionally, these scales are generally available for free, provide a unique perspective into the spectrum of mental well-being, and are actionable in a variety of patient populations. While these scales are widely available, they are not currently widely implemented. Therefore, we argue positive psychology has significant, untapped clinical utility for preventive mental health care in primary care settings. Further research into how these variables affect clinical outcomes will likely be both exciting and necessary.

MENTAL HEALTH CARE AND THE ROLE OF POSITIVE PSYCHOLOGY

One concept that has gained traction in the realm of preventive health care is salutogenesis, which is the idea of promoting and improving health even in the absence of disease (Bauer et al., 2020). While supportive psychotherapy and developing coping skills have such salutogenic utility, they are not the only effective means of attaining mental well-being and not necessarily what every patient needs long-term (Bauer et al., 2020). In fact, many patients would likely benefit more from developing neuropsychoplasticity and protective factors gradually during routine clinical encounters, which may be key to preventing new or worsening psychopathology (Jeste et al., 2015; Bauer et al., 2020). This movement in clinical mental health care toward salutogenesis espouses principles of the positive psychology movement, which Martin Seligman championed in the 1990s (Jeste et al., 2015).

Since the 1990s, Martin Seligman and his colleagues have conducted a plethora of studies ranging from animal model experiments to integrated biopsychological studies of humans to demonstrate the validity and modifiability of positive psychological traits and states and to challenge the old paradigm wherein mental well-being was the default and psychopathology was the breakdown in this baseline well-being. As a powerful example of this paradigm shift, Seligman and others explored the concept of learned helplessness, which described animals' natural tendencies to learn defeatist behaviors and lose their capacity for adaptability in the face of adversity (Maier and Seligman, 2016). It is now clear from neurobiological research that helplessness and passivity are the default decreases in adaptive brain functions secondary to prolonged aversive experiences and that learned control is the adaptive, modifiable response (Maier and Seligman, 2016). Seligman has further elucidated this principle with his conceptualization of the "hope circuit," which shows how the medial prefrontal cortex develops as we learn control and subsequently inhibits the dorsal raphe nucleus to prevent dispositional helplessness (Seligman, 2019). This evidence shows how leveraging positive psychological traits and states can enhance well-being beyond simply reacting to declines in mental health.

Positive psychology interventions (PPIs) likely have clinical importance in primary care settings where patients' overall health is a major priority (Park et al., 2014). A large-scale meta-analysis of PPIs demonstrated significant improvements in well-being, depression, and anxiety measures from pre- to post-intervention (Chakhssi et al., 2018). The PPI literature shows that these theory-grounded strategies are effective across a variety of settings and delivery formats, which underscores the flexibility of these approaches (Chakhssi et al., 2018). This evidence strongly suggests that PPIs can play a unique role in the primary prevention of common psychopathological conditions since they have beneficial effects on mental health outcomes and do not need to be delivered in a strictly prescribed manner (Chakhssi et al., 2018). Moreover, current research also signals the potential utility of PPIs outside of psychiatrists' and psychologists' offices, such as in primary care settings where mental health issues are so common (Wittchen et al., 2003; Hunter et al., 2017).

Therefore, better understanding the role of positive psychology in mental health care may pave the way for novel, community-level health promotion strategies that could decrease both the incidence and severity of common psychopathological conditions. Emerging evidence supports how changes in positive psychological traits are associated with structural brain changes. Moreover, these changes are known to have associations with adaptive mental functions. Therefore, it is necessary to examine the connection between positive psychology and neurobiology.

THE BRAIN STRUCTURE–FUNCTION RELATIONSHIP AND HOPE

Strong evidence supports a brain structure–function relationship wherein structure determines function (Batista-García-Ramó and Fernández-Verdecia, 2018). This is analogous to antecedent anatomical disruptions changing functional outcomes in other organ systems (Murphy et al., 2018). Neuroanatomical research continues to elucidate the connections between brain structures and their functions, opening new avenues for improving health care practices (Batista-García-Ramó and Fernández-Verdecia, 2018; Murphy et al., 2018). This work is in the same vein as Seligman's hope circuit research, which adds to the consistency and specificity of the evidence in this area (Seligman, 2019). While this field of scientific research is still relatively new, discoveries in this area are leading to important breakthroughs that allow us to treat human suffering more effectively and

promote psychological well-being (Mayberg et al., 2005). In light of these advances in neuroimaging research, increasing understanding of the brain structure–function relationship may encourage a paradigm shift in the public's perception of and approach to mental illness.

Unlike other complex organs like kidneys, a central feature of this paradigm shift is the recognition that the brain is amenable to distinct types of non-physical therapies. For example, cognitive behavioral therapy has demonstrable benefits in altering the neuroanatomical activation patterns involved in the remission of common mental illnesses like major depression, such as increased glucose metabolism in several prefrontal cortical areas (Beauregard, 2014). An increasing number of studies indicates that PPIs can change people's hormonal, immunological, and neurological activity and produce differential neuronal firing patterns in the brain (González-Díaz et al., 2017).

Positive psychology consists of manifold concepts, including flourishing, hope, gratitude, and creativity (Hausler et al., 2017). On account of its direct connections to clinical care, it is worthwhile to examine hope more closely as a well-studied example of positive psychology (Duncan et al., 2020). Hope represents an individual's cognitive appraisal of internal and external resources related to pursuing a desired goal, such as motivation and social support (Snyder et al., 1991; Duncan et al., 2020). In effect, dispositional hope is a measure of a person's baseline capacity for goal setting, perseverance when faced with goal-related barriers, and adaptability during goal pursuit (e.g., setting subgoals and alternative goals; Snyder et al., 1991; Duncan et al., 2020). Researchers have operationalized hope by developing instruments like the Adult Hope Scale (AHS) that assess approach versus avoidance behaviors through goal-oriented questions (Snyder et al., 1991). A recent synthesis of research at the intersection of hope and mental illness revealed that hope plays an integral role in the recovery process and can be increased despite the neuropsychiatric effects of many mental illnesses (Schrank et al., 2012). The current evidence sufficiently shows that interventions resulting in dispositional hope increases can be tailored to the individual, which suggests potentially high therapeutic utility (Snyder et al., 1991; Schrank et al., 2012; Duncan et al., 2020).

Recent neuroimaging studies exploring changes in dispositional hope have shown how hope may change the brain. One study using resting-state functional magnetic resonance imaging revealed that higher dispositional hope was positively correlated with more spontaneous neuronal firing in the bilateral medial orbitofrontal cortices and negatively correlated with anxiety severity (Wang et al., 2017). In a follow-up study, higher hope was associated with greater gray matter volume of the left supplementary motor area, more satisfaction with life, and higher hedonic balance ratings (Wang et al., 2020). All of these findings suggest that interventions that change hope also produce changes in different types of cortical activity connected to adaptive functions like emotional regulation, goal setting, and impulse control (Batista-García-Ramó and Fernández-Verdecia, 2018). Therefore, measuring dispositional hope appears to give some insight into patients' neurobiology without the need for impractical neuroimaging.

IMPLICATIONS OF MEASURING HOPE FOR HEALTH CARE

Using psychometric scales like the AHS as assessment tools requires few resources beyond informing providers about how to interpret the scores (Snyder et al., 1991). Having the AHS in wellness toolkits could potentially heighten providers' awareness of opportunities to support patients before a mental health crisis or disorder develops. These scales and their accompanying intervention strategies have salutogenic and preventive mental health care utility in a wide variety of settings, which may be able to lessen the tremendous burden on the existing mental health infrastructure (Wittchen et al., 2003; Clatney et al., 2008; Schrank et al., 2012). Additionally, providers could tailor their choice of intervention to what would benefit the patient most. A personalized psychological intervention would offer greater treatment efficacy, and its foundation in observable neurostructural changes may also garner trust and acceptance from those who are hesitant to accept mental health care.

By demonstrating the specific clinical applications and limitations of measuring psychological traits like hope and appropriately implementing related PPIs, psychometric scales grounded in positive psychological theories could gain the same confidence as hemoglobin A1c or blood pressure screenings among patients and mental health care providers. These psychometric tools could be employed in the same manner as a review-of-systems checklist while patients are in a waiting room to identify opportunities to help them. By applying these tools universally, we could lessen the stigma and burden surrounding mental health conversations. Providers would no longer have to guess which patients require intervention, and patients would no longer feel singled out. Moreover, we could identify more points of intervention earlier and thereby prevent suffering. Just as physicians and other providers inquire about diet, exercise, and sleep habits because of their relevance to health, they could similarly normalize questions about goal setting to know if and when a patient is ready to set further health-related goals.

KNOWLEDGE GAPS AND FUTURE RESEARCH DIRECTIONS

We are developing a better understanding of the connection between neurobiology and neuropsychological function. Mapping hope to differential neurostructural activity is just one of multiple examples of this progress. However, much remains to be discovered in connecting biological factors to a person's behavioral tendencies and psychological well-being. Given what we know about the role of hope and other positive psychological traits on brain activity, it would likely be fruitful to continue expanding on the extant basic science research. For applied clinical research, studying the use of these psychometric measurements in the context of complex health-goal- and risk-related behaviors like non-adherence, lifestyle modification adoption, and cessation of substance use could produce substantive and powerful practice recommendations. This step

is essential for making all of this relevant to clinical practice and increasing the uptake of these theory-supported concepts.

Specifically, psychometric testing could be administered while patients are waiting, minimizing disruptions to standard workflows. Administration of PPIs could be handled through a referral system wherein patients with low psychometric scores could be offered a chance to participate in individual or group treatments with a trained facilitator. In conjunction with physical and mental health data, the results of such interventions could be tracked over time as the patient continues to use services in order to detect long-term effects. By implementing such a system, researchers could study the impacts of positive psychology interventions and their clinical significance.

CONCLUSION

Hope and the broader field of positive psychology have a unique potential to improve mental well-being in novel ways. Positive psychological concepts like hope show robust construct validity and are appreciable on a neurobiological level. Researchers have developed widely available psychometric instruments and have used these tools to show that PPIs effectively improve these traits. To generalize these findings further, we need research that explores if these psychometric measurements and related PPIs lead to clinically significant and favorable health outcomes in patients outside of controlled environments. Such research could produce sufficiently high external validity to warrant using these tools in larger community and primary care settings.

As our understanding of brains as dynamic, highly sensitive organs grows, we need to counsel our patients that maintaining mental health is a process that demands the same attention as diets and exercise habits. A key part of encouraging this perspective involves improving the balance between proactive and reactive mental health services. This will entail expanding the clinical evidence in order to earn the confidence of PCPs, who could then speak to their patients about the benefits of the positive psychological frameworks. Such a widespread understanding would encourage those with mental health concerns to seek care when needed and increase awareness of the importance of preventive mental health care.

DATA AVAILABILITY STATEMENT

This article reports on the findings from other researchers' original studies. Further inquiries can be directed to the corresponding author.

AUTHOR CONTRIBUTIONS

AD, GD, and GC contributed to the literature search, manuscript design, writing, editing, and topic selection involved in preparing this article. AD led the research team and proposed the initial concept underlying this work. All authors contributed to the article and approved the submitted version.

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Engaging Leadership: How to Promote Work Engagement?

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This paper introduces the notion of engaging leadership and reviews the empirical work done so far. Engaging leadership is defined as leadership behavior that facilitates, strengthens, connects and inspires employees in order to increase their work engagement. It can be measured with a reliable and valid self-report scale. As predicted by Self-Determination Theory, on which the concept of engaging leadership is based, basic need satisfaction mediates the relationship between engaging leadership and work engagement. This is true both for individual employees as well as the team level. In addition, job characteristics (job demands and job resources) seem to play a similar mediating role, just as personal resources. Furthermore, research shows that engaging leadership has a beneficial effect on individual and team performance which illustrates its relevance for organizations. Future research should focus, amongst others, on the opposite of engaging leadership (i.e., disengaging leadership) and interventions to foster engaging leadership. Moreover, alternative affective, cognitive and behavioral pathways should be explored that might play a role in addition to the motivational (through need fulfillment) and material (through job characteristics) pathways that have been investigated so far.

Keywords: engaging leadership, work engagement, self-determination theory, employee engagement, transformational leadership

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INTRODUCTION

It is a truism that people are the most important capital for organizations, especially in today's knowledge-intensive service economies. Hence the abundant use of the notion "human capital" and the current emphasis on sustainable employability in HRM. After all, organizations should cherish their valuable and expensive human capital. Work engagement is an important indicator of sustainable employability; when employees are engaged, workability is secured (Van der Klink et al., 2016). For example, a Finnish study (Airila et al., 2012) showed that after 10 years the level of workability of engaged firefighters was significantly higher than that of their less engaged colleagues, also after controlling for lifestyle (i.e., alcohol use, smoking, exercise, sleep and BMI).

If engagement is so important to organizations—as illustrated in section Work Engagement—then the question arises how organizations can promote work engagement of their members to a higher level. This is where leadership comes into the picture. One of the principal responsibilities of leaders is to motivate their followers so that they will perform well. And because work engagement lies at the core of employee motivation, the logical question is: how can leaders promote work engagement? Answering this question is important both theoretically as well as practically, because on the one hand it provides insight into the nature of motivational processes at work, and on the other hand, it uncovers what specific behaviors leaders should exhibit to increase work engagement.

That is the reason why a research program into engaging leadership was started a few years ago, the first results of which are discussed in this article.

It should be noted in advance that it is definitely *not* the intention to introduce yet another leadership concept, because there already are too many of them. Instead of starting with leadership behavior and then examining its effects on employee motivation and performance, we turned it around—so to speak—and started with work engagement and asked ourselves; what kind of leadership behaviors can promote work engagement among employees? In doing so, we follow the recommendations of Bormann and Rowold (2018) to further prevent the proliferation of leadership concepts. They argue for narrow instead of broad approaches that focus on specific employee behaviors—such as work engagement—rather than on a very broader range of outcomes. We also take a second recommendation to heart, namely that leadership concepts should have a solid theoretical foundation, for which Self-Determination Theory (SDT) seems to be particularly suitable.

This paper consists of three sections. In the first section, the concepts of work engagement and engaging leadership are explained, including their relationships with self-determination. Also, the difference with transformational leadership is discussed as well as the way in which engaging leadership is assessed. In the second section, the empirical results of recent studies on engaging leadership are reviewed, which are graphically summarized in **Figure 1**. Finally, the paper is closed with a concluding section, in which also the future of engaging leadership research is discussed.

THE CONCEPTS OF WORK ENGAGEMENT AND ENGAGING LEADERSHIP

Work Engagement

What exactly is work engagement? The most common description reads: "a positive, fulfilling, work related state of mind that is characterized by vigor, dedication, and absorption, whereby vigor refers to high levels of energy and mental resilience while working, the willingness to invest effort in one's work, and persistence even in the face of difficulties; dedication refers to being strongly involved in one's work, and experiencing a sense of significance, enthusiasm, inspiration, pride, and challenge; and absorption refers to being fully concentrated and happily engrossed in one's work, whereby time passes quickly and one has difficulties with detaching oneself from work" (Schaufeli et al., 2002, p. 74). Based on this definition, the Utrecht Work Engagement Scale (UWES; Schaufeli et al., 2006), has been developed, which is used in almost 90 percent of all scientific papers on work engagement (Bailey et al., 2017).

Just to clear up a misconception right away; work engagement differs from work addiction, which it is often confused with (Van Beek et al., 2011). Although similar to workaholics engaged employees work hard as well, their motivation differs fundamentally. Engaged employees invest highly in their job because they enjoy it, nevertheless they know when to stop and also have a private life outside of their work. In contrast, workaholics work so hard because they have no other choice; they are driven by an irresistible inner need to work, and when they don't, they feel useless, nervous, uneasy, restless and guilty.

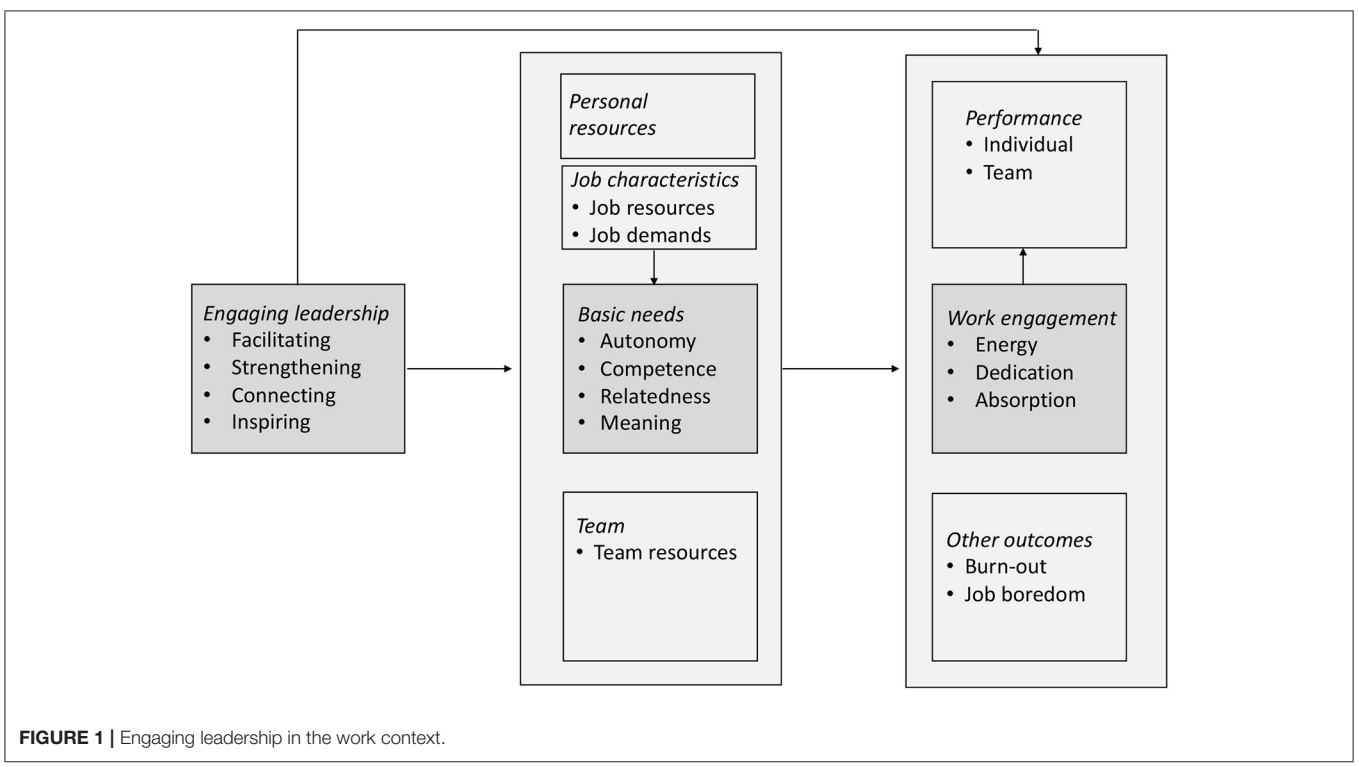

FIGURE 1 | Engaging leadership in the work context.

Therefore, it has been argued that engaged employees have a positive (approach) motivation and workaholics a negative (avoidance) motivation (Taris et al., 2014). The former are attracted by work because it is fun, whereas the latter are driven to work in an attempt to avoid the negative thoughts and feelings that are associated with *not* working.

Two decades of research has unequivocally demonstrated that engagement is good for employees as well as for the organizations they work for (for reviews see: Schaufeli, 2014; Schaufeli and Bakker, 2020). For example, engaged employees suffer less from depression and all kinds of other stress complaints, and run a lower risk of cardiovascular disease. Hence, their sickness absenteeism is lower than that of their less engaged co-workers. Engaged employees also feel strongly committed to their organization and therefore do not have the intention to leave. Furthermore, they like to learn and develop themselves, take personal initiative, and are innovative and make few mistakes. No wonder they perform better, also according their co-workers and supervisors. In addition, work engagement is also positively related to business results. For instance, engaged entrepreneurs achieve more growth and business success and engaged supervisors achieve better results with their teams. Engaged employees not only ensure higher financial turnover and productivity, but also provide better service. For example, a recent study of more than 100 publicly traded US companies showed that employee engagement predicts profitability and customer satisfaction over a period of 1–2 years (Schneider et al., 2018). In short, it is important to organizations for several reasons to promote employee engagement.

Work Engagement and Self-Determination

Self-Determination Theory (SDT; Ryan and Deci, 2017; Ryan et al., 2021) is a general motivation theory, which has been studied in the context of school, education and sports as well as at work. Unlike most other motivational theories, the emphasis is not so much on the strength of motivation, but on its *quality*. According to SDT, high-quality motivation arises when three basic psychological needs are satisfied. First, the need for *autonomy*, which refers to the desire to be able to act psychologically freely. Employees feel autonomous when they can decide for themselves and make their own choices. Second, the need for *competence*, which refers to the desire to deal effectively with the environment. Employees feel competent when they can learn and develop, allowing them to adapt flexibly to what the work demands of them. Third, the need for *relatedness*, which refers to the desire to build positive relationships with others, to feel loved and cared for, and to care for others oneself. Employees feel connected when they are part of a close-knit team that supports each other and shares personal feelings and thoughts.

According to SDT, these three basic needs are innate and are, as it were, ingrained in human nature. It is therefore not a question of whether these needs are present or not—after all, everyone possesses them—but to what *extent* they are *satisfied*. SDT posits that the satisfaction of these basic needs is just as essential for optimal psychological functioning of people as food is necessary for their physical health. When these three basic needs are met, high-quality motivation—in SDT dubbed autonomous motivational regulation—exists that ensures optimal functioning of employees, both in terms of well-being and performance. To what extent basic needs are actually satisfied ultimately depends on the work context, which "nurtures" these needs, as it were.

Congruent with SDT, it was found that the satisfaction of the three basic needs mediates the relationship between job resources and work engagement (Van den Broeck et al., 2008). When all three basic needs were met so that employees are able to decide about the tasks they have to perform (autonomy), can use their skills (competence), and receive positive feedback from others at work (relatedness), they feel engaged. Another study showed a positive relationship between need satisfaction and work engagement as well, this time followed by better work performance in the form of extra-role behavior (Van Beek et al., 2014). That research also showed that work addiction may develop when basic needs are *no*t met. Finally, it appears that engagement is positively related to the extent to which basic needs are satisfied, also when controlling for the big-five personality traits (Sulea et al., 2015). If these needs are *not* met, students feel bored and also report burnout complaints, this research shows.

In summary, as predicted by SDT, it appears that the satisfaction of basic psychological needs at work is associated with optimal functioning, in terms of work engagement and job performance. When those needs are *not* met, suboptimal functioning might occur, such as work addiction, boredom or burnout. Finally, it appears that rather than on people's personality, the satisfaction of their basic needs depends on the characteristics of their jobs.

Engaging Leadership and Self-Determination

Now that we know that employees are more engaged the more their basic needs are met, the question is how leaders can contribute to this. In other words, what kind of leadership behaviors should they exhibit in order to fulfill their followers' basic needs? Schaufeli (2015a) argued that "engaging leaders" may satisfy the need for autonomy, competence and relatedness of their followers by facilitating (empowering), strengthening and connecting them, respectively. By *facilitating* employees, for example by granting freedom and responsibility and giving them voice, they feel psychologically free to make their own decisions. This boils down to empowering employees. As a result, facilitating leaders satisfy the need for autonomy of their followers. By *strengthening* employees, for example by delegating tasks and responsibilities, giving them challenging jobs and stimulating their talents, they will feel more competent. Strengthening refers particularly to acquiring or increasing knowledge and skills. Leaders who strengthen their followers therefore satisfy their need for competence. Finally, by *connecting* team-members, for example by encouraging collaboration and creating a good team spirit, they will feel more comfortable and experience a sense of togetherness. Hence,

leaders who connect their followers satisfy their basic need for relatedness.

A fourth basic need has been added on the basis of both theoretical and practical considerations; the need for meaning. This refers to the desire to perform useful and important work that contributes to something beyond one's own person, thereby transcending oneself. Employees experience that their work is meaningful when they feel that their contribution makes a difference. Frankl (1946) and Baumeister (1991) have convincingly argued that the need for meaning can be considered a basic human need as well. It seems that particularly in the public sector (e.g., among teachers and health care workers), meaningful work is important for work engagement (Mostafa and El-Motalib, 2018). In SDT, the basic need for meaning is implicitly understood as part of the need for autonomy. After all, true psychological freedom (autonomy) only exists when choices and decisions are based upon one's own personal values. If I can only choose from alternatives that are not meaningful to me—i.e., don't align with my own personal values—I will feel compelled to do something I don't really want to. From interviews with employees, we learned that performing meaningful work was very important to them and that leaders could stimulate meaningfulness by inspiring them. They can do this, for example, by enthusing their followers for a certain vision, mission, idea or plan and by acknowledging their personal contribution to the overall goal of the team or the organization. In short, *inspiring* leaders satisfy their employees' need for meaningfulness.

In summary, engaging leadership is defined as leadership behavior that facilitates, strengthens, connects and inspires employees in order to increase their work engagement. By facilitating, strengthening, connecting and inspiring, the employees' basic psychological needs for autonomy, growth, connectedness and meaning are satisfied, respectively, which in their turn, increases their work engagement.

Engaging and Transformational Leadership

As such, engaging leadership bears a certain resemblance to transformational leadership (Bass, 1985), which is currently the most frequently studied leadership concept. Transformational leadership also consists of four aspects; (1) inspiration, i.e., motivation through charisma; (2) intellectual stimulation, i.e., encouraging innovation and creativity; (3) idealized personal influence, i.e., acting as a role model; (4) individual consideration, i.e., coaching, support and advice. The first two leadership behaviors more or less correspond to inspiring and facilitating, respectively, of engaging leadership. However, acting as a role model and individual consideration are *not* part of engaging leadership. Rather than merely exhibiting exemplary behaviors as a role model, engaging leadership is about actively stimulating employees' sense of autonomy, competence, relatedness and meaning. Furthermore, engaging leadership is about team consideration (i.e., stimulating connectedness and togetherness of team members), instead of individual consideration (i.e., personal support assistance and advice), as is the case with transformational leadership. Conversely, connecting and strengthening (promoting employee's strengths and talents), are not included in transformational leadership. A recent meta-analysis found a moderate positive correlation ($r = 0.42$) between transformational leadership and work engagement across 86 studies (DeCuypere and Schaufeli, 2021).

Van Knippenberg and Sitkin (2013) have severely the criticized the transformational leadership concept up to the point that that they advised "going back to the drawing board." Their main criticism focuses on the inadequate definition of the four elements of transformational leadership and the lacking theoretical foundation of the concept. Hence, we heeded their call to go back to the drawing board and start from theory. This resulted in the concept of engaging leadership that is firmly rooted in Self-Determination Theory. However, this does not alter the fact that a certain overlap exists between both leadership concepts, so that it is not surprising that a consistent, positive relationship is found between transformational leadership and work engagement (Carasco-Saul et al., 2015). On the other hand, however, transformational and engaging leadership can, in fact, be distinguished empirically. For example, a study among Australian employees found that engaging and transformational leadership each loaded on a separate factor instead of collapsing into one common factor (Smith, 2018). Furthermore, another study showed that both engaging and transformational leadership explained independently from each other similar amounts of variance of work engagement of Indonesian employees (Rahmadani and Schaufeli, 2020).

In summary; transformational and engaging leadership partially overlap, which explains that both independently correlate positively with work engagement. Theoretically speaking, however, engaging leadership is superior because it is firmly rooted in a widely recognized theory of motivation that describes the psychological mechanism through which leadership leads to work engagement. In section Empirical Research on Engaging Leadership we will discuss the empirical support for this claim.

The Measurement of Engaging Leadership

Employees' perception of engaging leadership can be measured using a short self-report questionnaire consisting of three items for each of the four aspects; the Engaging Leadership Scale (ELS; see **Appendix**). Several studies using confirmatory factor analysis confirmed that the ELS contains four components: inspiring, facilitating, strengthening, and connecting (Rahmadani and Schaufeli, 2020; Rahmadani et al., 2020a; Nikolova et al., 2021). However, these components are so closely related that, practically speaking, it is more convenient to use the total score of the ELS. In addition, a 360-degree study that included focal leader's followers, superiors and fellow-team leaders provided strong evidence of a halo effect (Robijn, 2021a). This means that when a leader is positively assessed on one particular aspect of engaging leadership by a follower, superior or fellow-team leader, it is highly likely that this also applies to the remaining three aspects. This finding too points in the direction of using the total ELS-score. The 360-degree study also showed that the interrater agreement between followers and superiors of the focal leaders was much stronger ($r = 0.42$) than that between their followers and fellow-team leaders ($r = 0.22$). Perhaps this is due to the fact

that both followers and superiors have a formal relationship with the focal leader, with the former receiving daily guidance and supervision and the latter directing and appraising team leaders.

It is important for the validity of the ELS that team members agree in their assessment of the level of engaging leadership of their team leader. Indeed, this appears to be the case, which means that team members share their perception of engaging leadership so that the individual scores of team members can be aggregated at the team level (Rahmadani et al., 2020b; Salas-Vallina et al., 2021; Mazetti and Schaufeli, under review). Based on such aggregated team scores teams can be differentiated according to the level of engaging leadership as perceived by their members. Accordingly, this type of data-aggregation makes it possible to examine engaging leadership not only as an individual perception but also as a team characteristic (see section Team-Level Engaging Leadership).

Finally, the ELS is a reliable measurement tool with both a high internal consistency ($\alpha > 0.85$; Rahmadani et al., 2019; Rahmadani and Schaufeli, 2020; Salas-Vallina et al., 2021) and a stability of 0.79 and 0.52 after 6 months (Smith, 2018) and 1 year (Nikolova et al., 2019), respectively. In summary; the ELS has good psychometric properties and can therefore be used as valid and reliable indicator of perceived engaging leadership, both at individual as well as team level.

EMPIRICAL RESEARCH ON ENGAGING LEADERSHIP

Below the results of recent investigations about engaging leadership are reviewed. First studies on the mediation of basic need fulfillment will be discussed, followed by studies on the mediation of job characteristics and personal resources. Special attention is paid to engaging leadership at team level. This section is closed with a figure that summarizes the main results of studies.

Mediation of Basic Psychological Needs

As argued above and based on SDT, engaging leadership is expected to lead to the satisfaction of basic psychological needs and subsequently to an increase in employee's work engagement. In other words, satisfaction of the four basic needs should mediate the effect of engaging leadership on work engagement. This indeed appears to be the case, for example among South African miners (Erasmus, 2018), employees of Flemish health insurance funds (Robijn et al., 2020), office staff of a Dutch insurance company (Robijn, 2021b), staff of the back office of a Dutch technology company (Van Tuin et al., 2020a) and finally Russian civil servants and employees working at an Indonesian palm oil plantation (Rahmadani et al., 2019). In all cases full mediation was observed, except for Russian civil servants and Dutch back-office staff, where the mediation was partial in nature. This means that in addition to an indirect relationship—*via* the satisfaction of basic needs—a significant *direct* relationship was also found between leadership and engagement. Furthermore, engaging leadership is also indirectly related—*via* the satisfaction of basic needs—to boredom (Erasmus, 2018) and team performance (Robijn, 2021b); when employee's basic needs are met, they feel less bored and perform better as a team.

A recent longitudinal study among Indonesian workers shows a more complex relationship between engaging leadership and engagement (Rahmadani et al., 2020a). This study observed that engaging leadership leads to the perception of more job resources 1 year later (e.g., a better person-job fit, more use of skills and feedback), which in turn, leads to the fulfillment of basic needs and subsequently to more work engagement. Thus, engaging leaders satisfy their increase employees' basic psychological needs not only directly, but also indirectly, though increasing their job resources. Another longitudinal study also found that engaging leadership leads to an increase in job resources, such as autonomy and social support, over a period of 1 year among Dutch hotel employees (Nikolova et al., 2019). However, this study did not include basic psychological needs and energy resources did not appear to mediate the relationship between engaging leadership and job resources.

Mediation of Job Characteristics and Personal Resources

In some other studies, however, a mediation effect of job resources (and job demands) was found. For example, Schaufeli (2015a) showed in a representative sample of the Dutch working population that engaging leadership is positively associated with work engagement through job resources (e.g., team spirit, task variation and role clarity). At the same time, burnout is negatively associated with engaging leadership via lower work demands (e.g., work overload, emotional demands and work-home interference). Both mediation effects were replicated in a longitudinal study among employees of a Dutch government agency (Schaufeli, 2017). It was observed that engaging leadership led to more job resources and less job demands a year later, which in turn, was related to more work engagement and less burnout, respectively.

In addition to job characteristics (job demands and job resources) engaging leadership also has a positive impact on personal resources, such as optimism, resiliency, flexibility and self-efficacy, as was shown by another study that is based on the aforementioned representative Dutch sample (Schaufeli, 2015b). In their turn, these personal resources were positively associated with engagement. In other words, just like job resources, personal resources also appear to mediate the relationship between engaging leadership and work engagement (and burnout). This was confirmed in a longitudinal study of Dutch civil servants, that found that engaging leadership led to an increase in personal resources (i.e., optimism, resiliency, flexibility, and self-efficacy) over a period of 1 year, which in turn, led to more work engagement (Mazetti and Schaufeli, under review).

Team-Level Engaging Leadership

The longitudinal study by Mazetti and Schaufeli (under review) not only looked at the effect of perceived engaging leadership on individual work engagement, but also at the effect at team level. It appeared that a year after baseline measurement, teams led by engaging leaders perceived more team resources (e.g., better communication and more participation in decision-making)

compared to teams that that were led by less engaging leaders. In teams with more job resources, team members felt—in turn—more engaged than in teams with fewer job resources. In other words, it seems that also at team level job resources mediate the relationship between engaging leadership and work engagement. Engaging leadership is therefore not only important for individual employees, but also for teams. This is confirmed by another longitudinal Indonesian study, which showed that employees from teams led by engaging leaders not only feel more engaged individually, but also collectively as a team experience more work engagement (Rahmadani et al., 2020b). This, in turn, led individual team members to performing better, learn more and display more innovative work behavior. But also, teams learned more collectively and showed more innovative behavior as a team. In other words, engaging leaders boost individual and team performance by increasing employee engagement.

Finally, a recent Spanish study investigated to what extent engaging team leadership enhances over time the effect of HR policies regarding job security, training and education, quality of work, teamwork, communication and leadership (Salas-Vallina et al., 2021). As expected, it was observed 1 year later that the effects of these policies were more positive in teams led by engaging team leaders, as compared to teams with a less engaging leaders. For example, team members from teams led by an engaging leader felt happier and less exhausted and had more trust in leadership. In turn, happiness and trust contributed positively to team member's performance and negatively to feelings of exhaustion. In other words, HR policies seem to have positive effects on the well-being and performance of team members, particularly when the team is led by an engaging leader.

Summary of Results

Figure 1 summarizes the results of engaging leadership research; the core assumption of SDT about the mediation of basic need satisfaction is shaded in gray. Although the arrows suggest causality, this has not (yet) been empirically confirmed in all cases; the issue of causality is further discussed in section Causality and Dynamic Relationships.

Generally speaking, there seem to be two avenues through which engaging leadership may promote work engagement: a direct and an indirect avenue, through satisfying follower's basic needs and increasing their job, team and personal resources. Engaging leadership not only impacts work engagement, but is also negatively associated with burnout and boredom and positively with individual and team performance. There are also indications for more complex relationships in which engaging leadership, through increasing job resources, contributes the fulfillment of basic needs and subsequently to work engagement. Furthermore, engagement appears to be positively related to individual and team performance, as was already known from previous research (see section Work Engagement).

CONCLUSIONS AND OUTLOOK

This article attempts to provide an overview of recent research about engaging leadership, a novel leadership concept that is developed using SDT, specifically with the aim to uncover how leaders may promote work engagement among their followers. As hypothesized, engaging leaders promote work engagement by satisfying their employees' basic psychological needs for autonomy, competence, relatedness and meaning. They do so by facilitating, strengthening, connecting and inspiring them. In addition to satisfying basic needs, engaged leaders also reduce job demands and increase job and team resources as well as personal resources.

That means that when employees feel autonomous, competent and connected to their co-workers and when they experience their work to be meaningful, they are less likely to suffer from job stress and can tap better into job resources. This energizes them and boosts their work engagement, which in its turn, has a beneficial impact on their job performance, including learning ability and innovativeness. In addition, it appears that the more the basic needs are satisfied, the fewer burnout and boredom at work is experienced. Importantly, engaging leaders affect not only individual employees but the entire team, as they help the team to function better by increasing team resources, thereby fueling a collective sense of team engagement that in turn leads to better team performance. Engaging team leaders also enhance the positive effect of the organization's HR policies on the well-being and performance of employees. In that sense, engaging leaders are a crucial link between top management and the shopfloor.

It can therefore be concluded that, so far, research results regarding engaging leadership are encouraging. Moreover, many findings—such as the pivotal role of basic need satisfaction—have been replicated in different occupational groups from various countries. This means that many results can be generalized across work situations, occupations and countries. The questionnaire that is designed to measure engaging leadership (ELS) also appears to be reliable and valid, both at individual and team level. Despite these encouraging findings, five themes remain unexplained, which together form an agenda for future research on engaging leadership.

Causality and Dynamic Relationships

Much of the research which is discussed above is cross-sectional in nature, so that no conclusions can be drawn about the direction of the relationships. That the observed relationships are not always in the expected direction illustrates a longitudinal study by Nikolova et al. (2019). This study found that the employees' current level of work engagement predicts their leader's future level of engaging leadership, rather than the other way around. This could indicate that there is a dynamic process in which engaging leadership and work engagement mutually influence each other. A dynamic, bi-directional process like this should be investigated further using longitudinal research with at least three measurement occasions. Accordingly, more longitudinal research on engaging leadership is needed, especially when it comes to mediation.

Another method to unravel dynamic, bi-directional relationships is diary research, in which employees fill out a short questionnaire every day for a period of 1 or 2 weeks. This is based on the assumption that the level of engaging leadership varies from day to day. A Finnish diary study among care workers showed that especially on days when leaders tried

to connect their team members, more job crafting was observed (Mäkikangas et al., 2017). This means that particularly on those days care workers tried to bring their work in line with their own preferences. This diary study illustrates that team leaders may stimulate proactive behavior such as job crafting by connecting team members; i.e., by satisfying their need for relatedness.

Disengaging Leadership

Engaging leadership can be contrasted with its opposite disengaging leadership, which is characterized by: (1) coercing (i.e., authoritarian behavior that restricts and controls employees); (2) eroding (i.e., obstructing employee's professional development and diminishing their sense of competence) (3) isolating (i.e., disconnecting employees from the rest of the team and pitting them against each other); (4) demotivating (i.e., creating, among employees, an image that their job is meaningless and their work does not contribute to anything important). This way, the basic needs for autonomy, competence, relatedness, and meaning are thwarted. Frustration of basic needs fundamentally differs from not satisfying them because it involves active thwarting rather than not stimulating and letting it run its course (Vansteenkiste and Ryan, 2013). A first study on disengaging leadership indeed showed—as expected—that it negatively relates to engaging leadership and satisfaction of basic needs, and positively to need frustration (Nikolova et al., 2021). In addition, this study found that the positive relationship between disengaging leadership and emotional exhaustion (the core component of burnout) was mediated by a frustrated need for autonomy. In other words, disengaging leaders thwart the need for autonomy, leaving employees feeling exhausted. In fact, this negative process is analogous to what is depicted in **Figure 1** for positive, engaging leadership behavior. More research is needed to uncover the extent to which other variables from **Figure 1** play a similar—but opposite—role in case of disengaging leadership.

The Measurement of Engaging Leadership

The psychometric features of the ELS are encouraging as evidenced by its internal consistency, stability and factorial validity. There is also a reasonable correlation between self-assessment and the assessment of others, and it appears that engaging leadership, as measured by the ELS, can be distinguished from transformational and disengaging leadership. The concept validity of the ELS is supported by the research findings that are summarized in **Figure 1**. Finally, some indications for discriminant validity vis-à-vis transformational leadership were found. However, what is still lacking is validation based on actual leadership behavior. After all, research to date was about employee's perception of leadership, based on the adage that engaging leadership is in the eye of the beholder. It appears from 360-degree assessments that followers, superiors and fellow-team leaders reasonably agree about the extent to which the focal leader displays engaging leadership behavior (Robijn, 2021a). This in itself is encouraging, albeit that the self-perception of leaders corresponds much less closely with the assessment of others around him or her. By using behavioral observations, for instance behaviorally anchored rating scales, a better picture may be obtained of specific engaging leadership behaviors. How exactly does facilitating, strengthening, connecting and inspiring look like in practice?

Interventions

Because engaging leadership is beneficial for organizations, it makes sense to integrate it into management development programs. But what do we know about the effectiveness of interventions to improve engaging leadership? A first study into the effect of an 8-month engaging leadership training, which consisted of six monthly training days, supplemented by two face-to-face coaching sessions and three peer consultation sessions, yielded mixed results (Van Tuin et al., 2020b). The training days included: introduction and discussion about the goal of the program (day 1); explanation about engaging leadership and setting personal goals (day 2); discussing the administered team questionnaires and monitoring the progress regarding one's personal goals (day 3); increasing resilience and dealing with negative emotions (day 4); motivational coaching based on the SDT (day 5); evaluation of the program including the achievement of one's personal goals (day 6). Results of the study showed on the one hand that the level of engagement in teams of leaders who had participated in the intervention program had *not* increased significantly compared to control teams whose team leaders had not participated in the intervention. On the other hand, however, absenteeism decreased and productivity of the intervention teams increased compared to the control teams. Quite importantly, both positive effects were still observed 6 months after the intervention had finished. Perhaps it may take a relatively long time before a positive effect on work engagement of team members can be observed. Unfortunately, in this study, work engagement was only measured before and immediately after the intervention and not after another 6 months. Most likely, during the intervention period, engaging leaders increased their team's resources, thereby reducing absenteeism rates and increasing team productivity. Either way, more research is needed to unravel how the positive effects of leadership interventions come about.

All Roads Lead to Rome

It is also important to investigate alternative psychological processes that may explain why engaging leaders promote work engagement. In a theoretical contribution, DeCuypere and Schaufeli (2020) described five pathways through which positive leadership behavior can influence engagement; it seems that all five roads lead to Rome. Only the two indirect paths have been explored to date; the "motivational" (satisfaction of basic psychological needs) and the "material" path (improvement of work characteristics). In addition, the authors distinguish three other, *direct* paths, namely an affective, cognitive and behavioral path. These could potentially explain the direct relationship between engaging leadership and work engagement as shown in **Figure 1**. The *affective* path involves emotional contagion, meaning that positive emotions of leaders automatically cross-over to their followers in the form of work engagement. The direct *cognitive* path involves social exchange, meaning that employees feel obligated, as it were, to reciprocate the

commitment of their engaging leader by engaging similarly in their work. Finally, in the direct *behavioral* path social learning plays a key-role, meaning that the engaging leader acts as a role model. Future research on these three direct, alternative pathways may elucidate other psychological mechanisms underlying engaging leadership.

FINAL NOTE

Recent research on engaging leadership did yield valuable insights about the positive effects for employees and teams. The concept of engaging leadership is not only scientifically interesting because it unveils the motivational dynamic at the workplace, but also important for organizational practice because engaging leadership produces positive outcomes.

Moreover, a practical advantage that helps implementing engaging leadership in organizations is its intuitive appeal. It hardly needs any explanation for executives, managers and HR-officers that leaders who facilitate, strengthen, connect and inspire allow their employees to flourish and grow and therefore achieve superior results. The fact that this seems to be confirmed by scientific research is an additional bonus. After all, not everything that has intuitive appeal in organizations can withstand scientific scrutiny.

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The author confirms being the sole contributor of this work and has approved it for publication.

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APPENDIX

The Engaging Leadership Scale (ELS)©

Instruction

The following 12 statements are about your supervisor. Please read each statement carefully and decide how you feel about him or her. Check the box that best describes your present agreement or disagreement with each statement below.

Completely disagree	Disagree	Neither agree nor disagree	Agree	Completely agree
1	2	3	4	5

My supervisor…	1	2	3	4	5
Strengthening					
1. …encourages team members to develop their talents as much as possible	☐	☐	☐	☐	☐
2. …delegates tasks and responsibilities to team members	☐	☐	☐	☐	☐
3. …encourages team members to use their own strengths	☐	☐	☐	☐	☐
Connecting					
4. …encourages collaboration among team members	☐	☐	☐	☐	☐
5. …actively encourages team members to aim for the same goals	☐	☐	☐	☐	☐
6. …promotes team spirit	☐	☐	☐	☐	☐
Empowering					
7. …gives team members enough freedom and responsibility to complete their tasks	☐	☐	☐	☐	☐
8. …encourages team members to give their own opinion	☐	☐	☐	☐	☐
9. …recognizes ownership of team member's contributions	☐	☐	☐	☐	☐
Inspiring					
10. …is able to enthuse team members with his/her plans	☐	☐	☐	☐	☐
11. …makes team members feel that they contribute to something important	☐	☐	☐	☐	☐
12. …is inspiring	☐	☐	☐	☐	☐

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The Future of Coaching: A Conceptual Framework for the Coaching Sector From Personal Craft to Scientific Process and the Implications for Practice and Research

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This conceptual paper explores the development of coaching, as an expression of applied positive psychology. It argues that coaching is a positive psychology dialogue which has probably existed since the emergence of sophisticated forms of language, but only in the past few 1000 years, has evidence emerged of its use as a deliberate practice to enhance learning. In the past 50 years, this dialectic tool has been professionalised, through the emergence of professional bodies, and the introduction of formal training and certification. In considering the development of the coaching industry, we have used Rostow's model of sector development to reflect on future possible pathways and the changes in the coaching industry with the clothing sector, to understand possible futures. We have offered a five-stage model to conceptualise this pathway of development. Using this insight, we have further reviewed past research and predicted future pathways for coaching research, based on a new ten-phase model of coaching research.

Keywords: positive psychology, coaching research, coaching practice, democratisation of coaching, coaching trends

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INTRODUCTION

Coaching is often considered an applied aspect of positive psychology. Both emerged from humanistic psychology, with its focus on the flourishing of the individual, and how individuals, teams and society can create the right conditions for this to be achieved. In this paper, we explore the nature of coaching, as an applied aspect of positive psychology, the journey so far and where practice and research may be heading over the coming 30 years.

It would seem only prudent at the start of this paper that we note the challenges of predicting the future direction of any industry and of research in general. We acknowledge the future is 'trumpet-shaped', emerging from the point of singularity (now) to multiple possible futures. Any attempt to accurately 'predict' the future is challenged by inevitable unforeseen events, their timing and the interaction between foreseen and unforeseen events. We have tried to improve our predictions by drawing on a previously published framework, which

we have adapted. However, we ask the reader to note this is just one possible future.

WHAT IS COACHING?

The clear link between coaching as lived positive psychology has been focused on by many writers (Lomas et al., 2014). However, just how much of a driving force positive psychology was in the maturation of coaching is yet to be discussed. In order to establish the role positive psychology played in the maturation of the coaching sector, this section will review their shared historical roots and focus on the influence positive psychology research had on the evolution of coaching definitions.

Coaching and positive psychology's histories are dynamic and rooted across multiple disciplines, yet they are both born out of the Human Potential Movement of the 1960s. This led to the popularisation of personal and professional growth and development, through pioneers such as Werber Erhard. Brock's (2010) review of the development of coaching notes the humanistic tradition and the work of Carl Rogers' of particular significance. Rogers' focus on the relation and the needs of the clients' and the potential to find their own way forward have become central features of coaching. Coaching rise coincided with a shift in the perspective about illness and wellbeing. This was the move from the medical model that focused on pathologies to the wellbeing model, which encouraged greater attention towards what individual's strengths.

Interestingly, coaching psychology (CP) launched in the same year as positive psychology. Atad and Grant (2021) described how coaching psychology was a 'grassroots' movement, led by founders of the Coaching Psychology Unit at the University of Sydney and the Special Interest Group in Coaching Psychology in the British Psychological Society (BPS) including psychologists like Stephen Palmer, Jonathan Passmore and Alison Whybrow.

While positive psychology and coaching psychology both focus on the cultivation of optimal functioning and wellbeing (Green and Palmer, 2019), often through the use of personal strengths development, Atad and Grant (2021) reported key differences. The first is that approaches like solutions-focused cognitive-behavioural coaching also aim to help clients define and attain practical solutions to problems. A second difference is the characteristics of the interventions used in each discipline. In coaching psychology interventions, the coach-coachee relationship is central to the coachees development of self-regulated change, whereas Positive Psychology Interventions (PPI's) typically apply a self-help format.

Since its foundation, positive psychology (PP), the '*scientific study of positive human functioning and flourishing intra-personally* (e.g., *biologically, emotionally, cognitively*), *inter-personally* (e.g., *relationally*), *and collectively* (e.g., *institutionally, culturally, and globally*)' (Seligman and Csikszentmihalyi, 2000; Oades et al., 2017), has grown into a field of applied science (Atad and Grant, 2021).

The field covers an array of topics, most commonly focused on life satisfaction, happiness, motivation, achievement, optimism and organisational citizenship and fairness (Rusk and Water, 2013). Gable and Haidt (2005, p. 103) defined positive psychology as '*The study of the conditions and processes that contribute to the flourishing* (*wellbeing*) *or optimal functioning of people, groups, and institutions*'. A vast number of PPI's have been developed and validated (Donaldson et al., 2014), with the aim to enhance subjective or psychological wellbeing or to cultivate positive feelings, behaviours, or cognitions (Sin and Lyubomirsky, 2009).

Strength development is viewed as a key process in positive psychology due to the shift from a deficit-based approach towards human functioning: a move from 'what's wrong and how can we fix it', to 'what's right and how can we strengthen it'. McQuaid (2017, p. 285–284) simply describes strengths as, '*the things you are good at and enjoy doing*', which is reflective of Linley and Harrington's (2006) definition of strengths as '*a natural capacity for behaving, thinking, or feeling in a way that allows optimal functioning and performance in the pursuit of valued outcomes*'. Strength-based interventions that aim to promote the awareness, cultivation and application of personal strengths have been reported to have many positive individual and organisational outcomes (McQuaid, 2017). Strengths research is one of the most integrated concepts from positive psychology into coaching psychology.

Interestingly, coaching psychology (CP) also launched in the same year as positive psychology. Atad and Grant (2021) described how coaching psychology was a 'grassroots' movement, led by founders of the Coaching Psychology Unit at the University of Sydney and the Special Interest Group in Coaching Psychology in the BPS in the United Kingdom. CP also experienced its own rapid growth in research and practice (Green and Palmer, 2019), which is discussed below.

At the heart of coaching, noted by multiple coaching writers, was its facilitative nature (Passmore and Lai, 2019). Coaching pioneer John Whitmore's working with Graham Alexander and Alan Fine in the later 1970s and 1980s, and informed by the work of Tim Gallwey (1986), focused on the self-awareness and personal responsibility which coaching created. This led to Whitmore (1992) defining coaching as having the potential to maximise a person's performance by adopting a facilitation approach to learning rather than teaching.

This has direct parallels with Deci and Ryan's (1985) work on self-determination theory (SDT). SDT identifies the conditions that elicit and sustain motivation, focusing on self-regulated intrinsic motivation. These include the needs for competence, autonomy and relatedness (Deci and Ryan, 1985). While Whitmore never formally engaged with SDT Whitmore's definition of coaching can be seen as a direct application of Deci and Ryan's (1985) SDT theory and therefore an early indicator of coaching as an applied aspect of positive psychology.

In Brock's (2010) reflection on the common themes, the facilitative nature of coaching is the strongest similarity across definitions. Brock (2010) also emphasised the interpersonal interactive process that places the coaching relationship at the centre of the facilitation and essential for positive behavioural change. This perspective was maintained in later definitions, which introduced the purpose of coaching to drive positive

behavioural changes (Passmore and Lai, 2019) For example, Lai (2014) reported that this was driven by the reflective process between coaches and coachees and continuous dialogue and negotiations that aimed to help coachees' achieve personal or professional goals.

In summary, in spite of the complementary nature of PP and CP, the fields remain sisters as opposed to fully integrated areas of practice, with coaching psychology drawing from the well of positive psychology, alongside wells of neuroscience and industrial and organisational psychology.

A CONCEPTUAL MODEL FOR COACHING DEVELOPMENT

To date, little has been written about the development of the coaching sector, as a specific industry. This may reflect in part the relative immaturity of the industry, but a wider review of industrial literature reveals the categorisation of sector development is limited. One of the few conceptual models is Rostow's (1959) generalised model of the six stages of economic growth. This offered a linear model of development, which reviews traditional society; the preconditions for take-off; the take-off; the drive to maturity; the age of high mass consumption; and beyond consumption (the search for quality). The model is summarised in **Table 1**.

Rostow argued that these stages captured the dynamic nature of economic growth, reflecting the nature of consumption, saving, investment and the social trends that impact it. Rostow's framework offered insight into the triggers for change at each stage. However, as a generalised model, it is unlikely that all industries or sectors follow the same pathway. Some may never take-off, and others remain as mass consumption. It is also important to note that Rostow's model is based on observations from a predominantly Western economic perspective situated within a capitalist economic model of growth.

We believe this model provides a heuristic guide, a map, for those observing the development of coaching, and offers an opportunity to predict, based on trends in other industries, how coaching may develop over the coming few decades. In undertaking an analysis of the model, it may be helpful to explore it through a specific sector. The example we selected was clothing manufacture, as being a process which like language, dates back to the prehistory, but which has also changed and developed over the centuries.

TABLE 1 | Rostow's stages of economic growth.

Stage		Key characteristics	Key manifestations
1	The traditional society	Subsistence economy Primary sector economy No surplus Lacks modern technology Poor economic mobility No centralised system for growth	Small technological advancements that improve processes
2	The preconditions for take-off	Shift towards an industrial society: modern alternatives to traditional approaches Advancements driven by technology and science Wholly primary sector economy	Increased demand for key industries or sectors Improvement of conditions for productivity and trade, including investment Creation of industrial markets Reduction of waste surplus
3	The take-off	Rapid self-sustained growth Secondary economy expands Industrialisation continues to dominate Urbanisation increases	Growth limited to key sectors Sectors become resilient
4	The drive to maturity	Diversification of sector development Shift to consumer-driven investment	Acceleration of new sectors and deceleration of old sectors Significant investment into transportation and social infrastructures
5	The age of mass consumption	Enabling of widespread consumption of consumer goods Expansion of tertiary sector	Increase in urbanisation Hypergrowth across secondary and tertiary sectors Population has growing disposable income (Increased inequalities between high and low socio-economic countries)
6	Beyond consumption (the search for quality)	Impact of high consumption changes consumer behaviour/mindset: seeks for durability and sustainability	Application of scientific insights and research Resources are draining Natural and man-made disasters having an impact of the economy

THE CLOTHING SECTOR

The clothing sector has undergone a transformation over the past 10,000 years. We might start by considering 'the sector' at the time of the Neolithic Revolution, as humans transitioned from hunter gathers to farmers. In hunter-gatherer societies, clothing was primarily a form of protection: protection from cold, plants, animals and battles with fellow tribes. Although given evidence from modern day hunter-gatherer societies, there are also limited examples of parts of clothing being used for status, for example Native American head-wear (Grinnell, 2008). As humans settled, this too started evolve with the emergence of greater status divisions and the development in manufacturing of items, allowing greater differentiation of objects. In the earliest period, most people will have collected the raw materials, engaging as a group in killing an animal. They will have prepared the materials in small groups, stripping the flesh and processing the hide and finished the item will individuals sewing to weaving items together to form the clothing.

As food surpluses emerged as a result of the shift towards settled farming, specialisms started to also emerge. Clothing production shifted from the collective task for small groups and individuals, to the one or more specialists, such as a tailor. This process of specialisation continued with the emergence of training and the development of trades: where individuals could progress over several years of training form apprentice through journeyman to master craftsman. Alongside, this came trade bodies and guilds in the 12th and 13th centuries, to represent the profession and to protect members rights (Ogilvie, 2011). The industrial revolution brought further change with production moving from cottage industries, small shops or upstairs of building used as part home and part clothing 'factory' to formal factory production using mechanisation to increase consistency and reduce costs. This process has continued with continued development of automation and over the past 30 years through the digital revolution, which has witnessed a shift from individual's controlling machines to machines controlling machines. **Table 2** summarises the transformation of the clothing sector and demonstrates how Rostow's model could be applied.

TABLE 2 | Model of clothing sector development based on Rostow's model.

Stage		Key characteristics	Key manifestations
1	The traditional society	Subsistence lifestyle	Humans wrapped furs, leathers, and plants around their bodies
		Need for survival (stay warm and dry)	
2	The preconditions for take-off	Specialisation revolution	Foundational technology for modern day clothing production was discovered, basic sewing needles
		Need for trade	Master craftsmen specialised in tailoring, which enabled trade
		Cottage industry	
		Labour intensive	
3	The take-off	Labour revolution	Tailors master their craft
		Need to productivity	Workers employed to produce materials for textiles and clothing
		Basic clothing production practices developed and defined	Technological innovations increased productivity and efficiency of producing key textiles, such as cotton
		Trading of materials and clothing	Surplus materials and clothing could be traded.
		Clothing manufacturing as a personal craft	
4	The drive to maturity	Industrial revolution	Application of technology to transform textiles into mass-produced, consumer goods
		Shift from craft into a service	Factories specialised in production and manufacturing of certain products and clothing
		Automated production	Master craftsmen (i.e., designers) become highly specialised and desired
		Need for expansion	Emergence of sector bodies to represent the profession and protect members' rights, guilds, and trade bodies
		Clothing manufacturing as a technical process	Globalisation increased trade and exchange of clothing goods
5	The age of mass consumption	Diversification revolution	Increased accessibility of lower labour and production costs, often due to automation of machinery and processes
		Shift to consumer-driven market	Population has a growing disposable income and consumers demand access to fashion items
		Need to reduce production costs and increase profits	Increased availability of high street and cheap, fast-fashion brands; clothing not designed for life-time use.
6	Beyond consumption (the search for quality)	Decline and fall: impact of sector practices and society on sector, people, and environment	Human rights violations against factory workers in low-economic countries in order to meet demands from consumers in high-economic countries
		Clothing production and manufacturing as human rights and climate emergency	Rise in sustainable fashion practices to negate the impact clothing production and throw-away society has on the environment

COACHING: THE FUTURE OF RESEARCH AND PRACTICE

We argue that coaching can learn from the evolution of these other sectors and from the wider conceptual model proposed by Rostow, to better understand the future direction of the coaching and its implications for practice and research.

We start by suggesting that coaching is likely to have a prehistory past. While some argue that coaching was born in 1974 (Carter-Scott, 2010), we believe it is almost certain hunter gathers will have engaged in the use of listening, questioning and encouraging reflective practice to help fellow members of their tribe to improve their hunting skills or their sewing. There is some evidence from Maori people, in New Zealand, that such questioning styles have been used for centuries to aid learning (Stewart, 2020). However, the spoken word leaves no trace for archaeologists to confirm the development of these practices.

While the clothing sector developed in full sight, leaving traces for archaeologists in graves and wall paintings, coaching remained a hidden communication form, until its emergence in societies where written records documented different forms of learning. At that moment, the Socratic form was born. It is often this moment which until now has been regarded as the birth of the positive psychology practice of coaching. It has taken a further 2,500 years for coaching to move from a learning technique used by teachers to a specialisation increasingly concentrated in the hands of the few, which requires training, credentials, supervision and ongoing membership of a professional body. While there is good evidence of individuals using coaching in the 1910s (Trueblood, 1911), 1920's (Huston, 1924; Griffith, 1926) and 1930's (Gordy, 1937; Bigelow, 1938), the journey of professionalisation started during the 1980s and 1990s, with the emergence of formal coach training programmes and the formation of professional bodies, such as the European Mentoring and Coaching Council in 1992 and International Coaching Federation in 1995. The trigger for this change is difficult to exactly identify, but the growth of the human potential movement during the 1960s and 1970s and its focus on self-actualisation, combined with the growing wealth held by organisations and individuals meant a demand for such 'services' started to emerge from managers and leaders as part of the wider trends in professional development which started in the 1980's.

This trend of professionalisation has continued for the last three decade. The number of coaches has grown to exceed some 70,000 individuals who are members of professional bodies and industry, although given data from recent studies which reveal that over 30% of coaches have no affiliations, we estimate over 100,000 people earn some or all of their income from coaching (Passmore, 2021). In terms of scale, the industry is estimated to be worth $2.849 billion U.S. dollars (International Coaching Federation, 2020), but in many respects, it has remained a cottage industry, dominated by sole traders and small collectives, with little consolidation of services by larger providers, with little use of technology and science to drive efficiencies or improve outcomes.

Given model and recent developments in technology and the growth of coaching science over the past 10 years is coaching reaching a tipping point? Is coaching about to enter the next phase of sector development? Is coaching about to begin the transition from professional service delivered by a limited number of high-cost specialists to an industrial process capable of being delivering low-cost coaching for the many with higher standards in product (service) consistency?

What makes this change likely? There are three factors in our view propelling coaching towards its next stage in development. Firstly, the growth of online communications platforms, such as Microsoft Teams, Zoom and Google Hangout, are enabling individuals to connect with high-quality audio and video images. The impact of the COVID-19 pandemic during 2020–21 has seen the development these platforms now reach almost universal adoption. At the same time, a growing number of employees have switched from 'always in the office' modes of working to either working from home or hybrid working, working 2, 3 or 4 days a week from home (Owen, 2021). Such models provide lower costs for employers, and evidence suggests many employees favour the flexibility working from home provides.

Secondly, the period 2010–2020 witnessed a growth in the science connected with positive psychology and coaching, proving practitioners with a good understanding of the theory and research. Access to this research has been enhanced by an increasing move to Open Access journals, the emergence of research platforms, such as ResearchGate, sharing published papers and tools such as Sci-Hub, granting access to published science, alongside search tools such as Google Scholar allowing efficient discovery of relevant material by practitioners, as well as academics with access to university library databases. In combination, these online tools are democratising the science of coaching and are stimulating the next phase of development.

The third factor is the growth of investor interest in digital platforms, which have seen significant growth during the 2010–2020 period, enabling start-ups to secure the investment need for the development of products, from online mental health (Headspace) to online learning (Lyra Learning - LinkedIn Learning).

The next phase we predict will be an emergence, growth and ultimately domination of coaching by online large-scale platforms, who offer low-cost and on-demand access to coaching services informed by science, in multiple languages and to a consistently high-quality standard. Echoing the changes in clothing production, with mechanisation using machines like Eli Whitney's cotton gin, and Arkwright's spinning machine which revolutionised clothing production.

We have developed Rostow's model and propose a 5P's model for the coaching industry development. This is summarised in **Table 3**. A journey from unconscious practice used by hunter-gatherer societies, through formal use in learning, to specialisation and professionalisation, to the deployment of technology and onwards towards a more conscious use across society of positive psychology approaches, including coaching as a tool to enhance self-awareness and self-responsibility, embedded in technology.

TABLE 3 | 5P's model of coaching industry development.

Stages	Characteristics	Change
Stage 1: Peoplisation: (50,0000–5,000 years ago)	Coaching as unconscious conversational tool, part of daily dialogue:	Coaching emerges as part of sophisticated language
Stage 2: Purposisation: (5000–50 years ago)	Coaching with explicit learning goals	Coaching adopted by specialists, such as Greek Philosophers and others, to enhance learning
Stage 3: Professionalisation: (50 years ago to today)	Specialist coach training, standards and certification	Emergence of professional bodies setting standard, training and accreditation leading to the creation of a profession
Stage 4: Productisation: (Mid 2020s onwards)	Coaching with science and technology	Emergence of specialist companies combining technology and science to offer lower cost, consistent and high-quality coaching process and outcomes
Stage 5: Popularisation	Many streams of coaching emerge	Coaching continues as a niche upmarket service by professionals, as an industrial process for the many at work and consciously adopted for use in personal encounters as part of daily dialogue for all encounters embedded in technology

TABLE 4 | 10-phase model of coaching research.

Phases	Examples of study
Phase 0 - Pre-science	Trueblood, 1911; Huston, 1924; Gordy, 1937; Bigelow, 1938
Phase 1: Case study and surveys	Diedrich, 1996; Winum, 2005
Phase 2: Qualitative studies – theory generation	Duff and Passmore, 2010
Phase 3: Small sample RCT's and theory testing	Grant et al., 2010
Phase 4: Large sample RCT's	Passmore and Rehman, 2010
Phase 5: Meta-Analysis studies	Jones et al., 2016; Theeboom et al., 2014; Sonesh et al., 2015
Phase 6: Systematic Literature Review	Grover and Furnham, 2016; Athanasopoulou and Dopson, 2018; Bozer and Jones, 2018
Phase 7: Identifying the active ingredients	De Haan, 2021
Phase 8: Exploring difference and exceptions	Schermuly and Grabmann (2018); De Hann, 2021
Phase 9: The coaching assignment	Research questions might include:
	How does homework impact on outcomes across the coaching assignment?
	How does a tripartite commissioning, review and evaluation impact on coaching outcomes?
Phase 10: The System	How does coaching impact on the wider system of stakeholders?
	How does team coaching differ in its relationship, active agreements and outcomes from 1–1 coaching?

RISKS

It is worth noting that across sectors the move from one stage to the next created disruption and negative consequences in uncontrolled markets. In agriculture, shifts in production, such as land enclosures, and introduction of mechanisation led to landlessness and starvation, in clothing manufacturing production disruptions lead to low pay and exploitation. These changes also stimulated agricultural revolts and the emergence of Luddites, as workers affected by change pushed back against these change in their daily work patterns, income levels or status.

In coaching, we can see similar push back from some in coaching, who fear the negative impacts of research and technology, as coaching starts to move away from being a cottage industry, where fee rates are unrelated to training, qualifications or other measurable indicators (Passmore et al., 2017) towards providing greater consistency, evidence driven practice. Such push back is likely not only to be from individuals but also guilds (professional bodies) wo see their power being undermined by the rise of large-scale, Google-LinkedIn, providers, who's income, corporate relationships and global reach will shift the power balance in the industry.

Given this awareness of the risks of change, it is beholden on the new technology firms to be sensitive to the needs of all stakeholders. We advocate a Green Ocean strategy (Passmore and Mir, 2020). Under such a strategy, the focus is on collaboration, seeking sustainable win-win outcomes, which benefit all stakeholders, and take at their heart environmental considerations and ethical management, balancing such needs against the drive for quarterly revenues.

THE IMPLICATIONS FOR POSITIVE PSYCHOLOGY - COACHING RESEARCH

In previous papers, we have proposed a model reviewing the journey of positive psychology coaching research (Passmore and Fillery-Travis, 2011). This offered a series of broad phases, noting the journey of published papers from case studies to more scientific methods, such as randomised control trials, between the 1980s and 2010. The past decade, 2011–21, has witnessed a continued development along the scientific pathway, thanks to the work of researchers such as Anthony Grant, Rebecca Jones, Erik de Haan and Carsten Schermuly.

Specifically, the publication of randomised control trials has grown from a handful of papers in 2011 to several dozen by 2021, while still limited in comparison to areas of practice

such as motivational interviewing (Passmore and Leach, 2021), the expanded data set has provided evidence for systematic literature reviews and combination studies, such as meta-analysis. These papers have provided evidence that coaching works, with an effect size broadly similar to other organisational interventions, as well as giving insights at to the most important ingredients of the coaching process.

It is this blossoming of higher quality, quantitative studies, which has led us to believe the science in coaching is maturing. While much work still needs to be done over the coming decade, the insights to date can be used to inform practice at a scale leading to Stage 4 in our 5P coaching sector model.

The coming decade may see opportunities for greater collaboration between coach service providers, as these organisations increase in scale and profitability, and university researchers, keen to access large data sets enabled by the greater use of technology and the global scale of the new coach service providers.

Reflecting these industry changes and the proliferation of research, we have also updated the research journey model, reflecting these developments. We suggested the emergence of new phase of research exploring individual, exceptions and negative effects of coaching (Passmore, 2016; Passmore and Theeboom, 2016). This has started to happen with work by Schermuly and Grabmann (2018) and De Hann (2021). We have linked research papers to the model of coach development in **Table 4** and have extended it to create 10 phases.

The emergence of large coaching providers, operating on digital platforms, with the ability to collect, hold and analyses large volumes of data, the opportunity exists to significantly step up the quantity and quality of research including RCT's and exploring exceptions and specific presenting issues, ingredients and tools. Of specific interest will be questions including: How does the coach (or client) personality impact on the relationship and outcomes? What roles does similarity in terms of race, gender or sector background have on outcomes? What factors contribute to client trust? How significant is empathy as a factor and in want types of coaching is it most valued? What role do discovery meetings, contracting, external support networks and 'homework' play in successful coaching assignments?

Over the next 20 years, we can start to unpick these aspects with the help of big data, and unlike some aspects of technological research, let us argue in favour now of sharing knowledge through Open Access, so everyone can gain, and the quality of each and every coaching conversation can be enhanced.

CONCLUSION

In this paper, we have explored coaching as an expression of positive psychology. We have offered two conceptual frameworks, one for research and one for practice. We hope these frameworks will stimulate further discussion by coaching and positive psychology communities. Our view is that the coaching has become an 'industry' and is following a pathway of development similar to many other industries. Recent technological developments, combined with a quickening pace in coaching research, will move coaching from a 'cottage industry' towards a fully mechanised process, enhancing accessibility, consistency and reducing cost. This will start with platforms and is likely to lead towards a growing use of automation. This scale provides opportunities for more data, more research and a deeper understanding of the intervention, creating a virtuous circle of development. This too will stimulate the continued development of coaching research pathways considering the assignment and the wider system.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article, 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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frontiers in Psychology

REVIEW
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Building Positive Organizations: A Typology of Positive Psychology Interventions

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Research indicates that Positive Psychology Interventions (PPIs) in the work context have a small positive impact on improving desirable work outcomes, and a small to moderate effect on reducing undesirable work outcomes, suggesting that the effects of PPIs are not trivial, but also not large. Whereas this may be related to the difficulty of changing oneself or one's happiness levels, the relatively small effects of PPIs may also be due to the predominant use of one-off interventions instead of more structural interventions that reflect policy level commitment. Furthermore, since most PPIs tend to focus on the individual, one could question the long-term effectiveness of such interventions, especially when the work environment remains unchanged. In this manuscript, I introduce a typology of PPIs in organizations by distinguishing between the organizational level they target (the individual or group level), and between one-off and structural interventions. I argue that different types of interventions can strengthen each other, and that to make a sustainable contribution to the optimal functioning of workers, PPIs need to comprise a wide variety of one-off and structural interventions targeting both individuals and groups in organizations. Furthermore, I make suggestions for improving the long-term effectiveness of PPIs by drawing on the literature on transfer of training, nudging, and positive design.

Keywords: positive psychology, positive psychology intervention (PPI), employee well-being, positive organizational scholarship (POS), positive institutions, transfer of training, positive design, nudging

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INTRODUCTION

Most adults spend a large part of their life working, and their well-being at work accounts for a large part of the variation in their life satisfaction (Judge and Watanabe, 1993). Furthermore, happy employees have been found to perform better than their less happy colleagues (Cropanzano and Wright, 2001). For these reasons, many scholars and practitioners develop and investigate Positive Psychology Interventions (PPIs) that are aimed to enhance worker well-being. PPIs refer to intentional activities or methods (training and coaching, etc.) based on (a) the cultivation of valued subjective experiences, (b) the building of positive individual traits, or (c) the building of positive institutions (Meyers et al., 2013). Examples of well-known PPIs are interventions that try to enhance feelings of gratitude (Davis et al., 2016), optimism (Malouff and Schutte, 2017), or kind behavior (Curry et al., 2018). Whereas the ultimate aim of PPIs is to increase the well-being of an individual or group (Schueller et al., 2014), when considered in an organizational context

PPIs may also be applied to indirectly enhance outcomes such as performance, job satisfaction, leadership skills, and work-life balance (Meyers et al., 2013). A recent meta-analysis on PPIs in a wide variety of contexts (Carr et al., 2020) concluded that PPIs have small to medium positive effects on outcomes related to well-being, and small to medium negative effects on outcomes related to ill-being. A systematic review and a meta-analysis on PPIs in the work context pointed out that on average these interventions have a small positive impact on improving desirable work outcomes, and a small to moderate effect on reducing undesirable work outcomes (Meyers et al., 2013; Donaldson et al., 2019b). So even though the effects of PPIs are not trivial, they are also not large. Apart from the difficulty of changing oneself or one's happiness levels, and maintaining such behavioral changes (Sheldon and Lyubomirsky, 2021), this may be due to the predominant use of interventions that are based on singular constructs (e.g., gratitude or optimism), that are short-term in nature (Kushlev et al., 2017; White et al., 2019), and that are not structurally embedded in the organizational policies. Furthermore, since most PPIs tend to focus on the individual, one could question the long-term effectiveness of such interventions, especially when the (social) work environment remains unchanged.

In this manuscript, I address the role of PPIs in the creation of positive organizations that facilitate optimal functioning of its members. I introduce a typology of four different types of PPIs in organizations by distinguishing between the organizational level they target (the individual or the group level), and between one-off and structural interventions. I argue that different types of interventions can strengthen each other, and that in order to make a sustainable contribution to the optimal functioning of workers, PPIs need to comprise a wide variety of one-off and structural interventions targeting both individuals and groups. Furthermore, I make suggestions for improving the long-term effectiveness of PPIs by drawing on the literature on transfer of training, nudging, and positive design.

WHAT WE KNOW ABOUT THE EFFECTIVENESS OF POSITIVE PSYCHOLOGY INTERVENTIONS

Several meta-analyses have been conducted to establish the effectiveness of PPIs in a variety of settings. The first meta-analysis (Sin and Lyubomirsky, 2009) was based on 51 studies that tested interventions, therapies, or activities primarily aimed at increasing positive feelings, positive behaviors, or positive cognitions, and that included pre- and post-intervention measures of well-being or depression, as well as a comparison group. This study pointed out that PPIs have a significant positive effect on well-being and a significant negative effect on depressive symptoms. This study also revealed that PPIs are more effective for people who are depressed, older, or highly motivated to improve, and that longer interventions and interventions that are delivered to individuals (versus groups) are more effective.

Bolier et al. (2013) chose to meta-analyse only randomized controlled studies that were explicitly labeled as PPIs. Based on forty articles they reported small but significant effects for both well-being and depression. Whereas the effects of PPIs at a three to 6 months follow-up were still significant for well-being, they were no longer significant for depression. Furthermore, they found that interventions were more effective if they lasted longer, if recruitment was conducted via referral or hospital, if they were delivered on an individual basis, and if the study design was of low quality. They also established that people with psychosocial problems benefited more from PPIs.

Based on a reanalysis of the studies that were previously included in the meta-analyses of Sin and Lyubomirsky (2009) and Bolier et al. (2013); White et al. (2019) found that when small sample size bias was considered, the effect of PPIs on well-being were small but still significant, whereas the effect of PPIs on depression were generally not statistically significant.

The most recent meta-analysis (Carr et al., 2020) broadly viewed PPIs as evidence-based interventions which have the primary aim of increasing well-being and included 347 PPIs involving over 72,000 participants from clinical and non-clinical child and adult populations. The authors concluded that PPIs have small to medium positive effects on well-being, strengths, and quality of life, and small to medium negative effects on depression, anxiety, and stress, that were maintained at 3 months follow-up. Further, they established that effects were stronger for individuals in non-western countries, and with clinical problems, and that longer programs containing multiple PPIs were more effective.

When looking at the effect of PPIs in the organizational context, less information is available. Meyers et al. (2013) conducted a systematic review of PPIs applied in the organizational context. Based on an analysis of fifteen studies they conclude that PPIs consistently enhance employee well-being. The effects on performance were more ambiguous, which according to the authors could have been caused by a limited sample size or shortenings of the interventions due to the pressure to include them into busy working days. The authors explain the ambiguous effects of PPIs on negative emotional states such as anxiety, burnout, depression, and stress by statistical floor effects since employee populations score rather low on these negative constructs.

A recent meta-analysis by Donaldson et al. (2019a) included intervention studies from positive organizational scholarship (POS), positive organizational behavior (POB), and positive organizational psychology literature (POP), comprising interventions targeting psychological capital, job crafting, strengths gratitude, or well-being. Based on 22 studies they found that PPIs had a small positive effect on improving desirable work outcomes, and a small to moderate effect on reducing undesirable work outcomes. Interestingly, whereas previous meta-analyses found that delivery methods on an individual basis (e.g., individual coaching) were more effective in improving well-being (Sin and Lyubomirsky, 2009; Bolier et al., 2013), they observed a larger effect of PPIs that were delivered in groups, even though individual interventions had a stronger effect on decreasing undesirable work outcomes. Furthermore, they found that gratitude and strengths interventions had stronger mean effect sizes than other interventions on desirable outcomes,

whereas interventions targeting psychological capital (i.e., hope, optimism, resilience, and self-efficacy (Luthans et al., 2006) had stronger effect sizes on undesirable outcomes.

The Psychologistic Fallacy of Positive Psychology Interventions

When looking at the meta-analytic studies, it is striking to see that PPIs focus almost exclusively on individual outcomes such as well-being and depression. Even the studies that focused on PPIs in the organizational context hardly included outcomes beyond the individual level. The review by Meyers et al. (2013), which explicitly aimed to cover outcomes at multiple organizational levels (individual, team, department, and organization), only identified one study that investigated changes in an organizational level variable (service delivery rate of primary care practices) (Ruhe et al., 2011) and one study that investigated changes at the group level (group potency and group identification) (Peelle, 2006). The meta-analysis by Donaldson et al. (2019b) included only two studies that contained outcomes at the collective level, referring to team interactions (Spence Laschinger et al., 2012), and (individual level) perceptions of organizational virtues such as forgiveness, trust, integrity, optimism, and compassion (Williams et al., 2016).

The predominant use of PPIs that focus on the individual is in line with research showing that self-initiated and proactive behaviors can have an important influence on the well-being of workers (Parker et al., 2010; Oprea et al., 2019), and with the trend to encourage workers to take responsibility for their own well-being (Neck and Houghton, 2006). In addition, these individual level PPIs may be particularly relevant for self-employed workers or employees who have little contact with their supervisor or co-workers (Nielsen, 2013). However, the limited focus on individual traits and states is not in line with definitions of PPIs, which also refer to the aim of building positive institutions (Meyers et al., 2013), or enhancing the well-being of groups (Parks and Biswas-Diener, 2013). This neglect of broader socio-environmental influences is also known as the "psychologistic fallacy" (Bacharach et al., 2008); by primarily addressing a person's psyche, the broader social forces that impact upon on individual's well-being are ignored (Kern et al., 2020). Given the multi-level nature of work organizations that requires an investigation of intervention outcomes at individual, team, and organizational level (Rousseau, 1985), the focus on individual-level dependent variables represents an important shortcoming of the literature on PPIs in organizations.

The scarcity of PPIs that target the group level is also in sharp contrast with studies that point out that positive states, traits, and behaviors also exist at the group level. For example, West et al. (2009) found that positive psychological capacities such as efficacy, optimism and resilience also function at the team level, and that these team capacities are associated with important team outcomes. van Woerkom et al. (2020) argue that the team context has an important influence on whether individuals' strengths will be noticed and appreciated by others, and ultimately, whether these strengths will be used. They found that collective awareness of the individual strengths that are represented in the team and the coordination of team roles based on these strengths is associated with both individual performance and leader-rated team performance (Meyers et al., 2020). Furthermore, Fortuin et al. (2021) found that the extent to which team members exhibit mood-enhancing, energizing, and uniting behaviors, directed toward other team members contribute to a positive team climate and teamwork engagement.

By incorporating principles from the systems sciences into the design of the intervention, PPIs can consider that individuals cannot be separated from the broader social systems that they are part of Kern et al. (2020). An example of an intervention informed by systems sciences is Appreciative Inquiry (AI), which aims to create high motivation, high spirit, and cooperation among organizational members as well as a positive and appreciative climate (Whitney and Cooperrider, 1998). AI interventions focus the attention on positive change in an organization by collecting stories of organizational successes, developing ideas for a positive future, designing an organization that makes optimal use of available strengths, and setting up action plans for becoming such an organization (Cooperrider and Whitney, 2005).

Positive Psychology Interventions as Quick Fixes

The meta-analyses also reveal that the classic PPI is relatively short. In the meta-analysis by Sin and Lyubomirsky (2009), only five of the 49 PPIs that targeted well-being, and only five of the 25 PPIs that targeted depression, lasted longer than 12 weeks. Of the 39 interventions that were included by Bolier et al. (2013) the majority (21) comprised 2 weeks or less. The meta-analysis of Carr et al. (2020) was based on interventions with an average of ten sessions over a 6-week period. When looking at studies in the organizational context, in the systematic review by Meyers et al. (2013) only one of the 15 studies lasted for longer than 11 weeks. Of the 22 studies that were included in the meta-analysis by Donaldson et al. (2019b), the majority (12 studies) included interventions that lasted for less than a month.

Further, only very few studies report on the sustainability of PPIs. Based on their review of 40 studies that reported on PPIs targeting adults in real world settings Hone et al. (2015) conclude that less than half of the studies (43%) assessed individual behavior at least 6 months post-intervention, that only one study reported details of current intervention or program status (2.5%), while none of the studies reported on the costs of maintenance. Furthermore, even though three different meta-analyses (Sin and Lyubomirsky, 2009; Bolier et al., 2013; Carr et al., 2020) pointed out that longer interventions are more effective, possibly because they give participants the opportunity to convert the positive activities they are learning into habits (Fredrickson et al., 2008), short PPIs are more popular in organizations, due to their reduced costs and lost working time (Meyers et al., 2013).

The predominant short-term nature of PPIs and the lack of knowledge about the sustainability of their effects might of course be related to practical problems when conducting long-term (experimental) research in organizations. However, it could also suggest that PPIs are often implemented as quick fixes to

TABLE 1 | Types of positive psychology interventions in organizations.

	Targeting individuals	Targeting groups
One-off	E.g., a 4-week web-based strengths intervention	E.g., a 1-day intervention focusing on appreciative inquiry into best practices and peak experiences in a team
Structural	E.g., implementing a feedforward interview in the performance appraisal procedures	E.g., the implementation of well-being related HR practices

address problems with worker well-being, instead of considering them as part of integrated culture change processes and a way of ingraining positive practices in the fabric of an organization (Garcea et al., 2009). A more sustainable implementation of a positive psychology approach in organizations has implications for every part of leadership and HR practices. For this reason, Llorens et al. (2013) recommend incorporating PPIs into the general HR practices of the organization, thereby making them "natural procedures", that can easily be prompted when needed, and to warrant commitment of the whole organization by providing them with information about the expected gains.

For instance, to sustain worker resilience in the long-term a short one-off training is obviously not sufficient but would need to be complemented by the development of caring relationships among managers and employees, enhancing social support, promoting work–life balance practices, the provision of counseling services, and flexible work arrangements that help workers cope with work and non-work demands (Bardoel et al., 2014). Similarly, implementing a strengths workshop that helps workers to identify their strengths and use these more often at work is unlikely to be successful if such a training is not embedded in an organizational climate and accompanying HR practices (Biswas-Diener et al., 2017). A sustainable implementation of a strengths-based approach requires recruitment and selection practices that are informed by knowledge about the strengths of applicants and the strengths that are lacking in the team, and socialization practices that recognize and highlight newcomers' strengths at the very beginning of the employment relationship (Cable et al., 2013). Further, idiosyncratic deals that individuals negotiate with their team leader and co-workers (Rousseau et al., 2006) allow for opportunities to tailor job content to individual strengths, and strengths-based performance appraisals (Bouskila-Yam and Kluger, 2011) aimed at discovering unique qualities of workers can give them the opportunity to create a job role in which they can use their strengths to contribute to the team task.

Another way to ensure the sustainability of PPIs is to enhance the well-being of workers by targeting interventions at their leaders. Because leaders can promote a culture of support for employees and hold positions at which they can provide important resources to promote worker well-being, these types of interventions may lead to more sustainable effects (van Woerkom et al., 2021). For instance, Kelloway et al. (2013) show that positive leadership behaviors such as praising, helping, or thanking individuals are associated with employee well-being. Avey et al. (2011) showed that when leaders enact the features of psychological capital (i.e., hope, optimism, resilience, and self-esteem), follower positivity and performance were enhanced. However, a potential risk of interventions targeting leaders is that changes in leader behavior do not always trickle down to the subordinate level (Slemp et al., 2021).

FOUR TYPES OF POSITIVE PSYCHOLOGY INTERVENTIONS

By distinguishing between interventions targeting individuals or groups, and between one-off and structural interventions, four different types of PPIs emerge (see **Table 1**). This Typology of Positive Psychology Interventions in Organizations (TYPPIO) widens the scope of practitioners and scholars beyond the classical one-off PPI that targets positive states or traits of individuals but let the (social) work environment remain unchanged and alerts them to other types of interventions that address the multi-level nature of work organizations or make use of the opportunity to incorporate interventions into the fabric of the organization (Garcea et al., 2009). Further, this typology enhances awareness of the different roles that different types of intervention may play in enhancing worker well-being. By studying combinations of different types of intervention; individual-level and group-level interventions, and one-off and structural interventions, we can expand our knowledge of the potential of positive psychology to facilitate worker well-being in the long run and add to the building of positive organizations. Below, we discuss examples of each of these four types of interventions, and the role they may play in building positive organizations in a sustainable way.

One-Off Interventions Targeting Individual Level Outcomes

A typical example of a one-off PPI targeting individual outcomes is a 4-week web-based intervention aimed at enhancing the application of signature strengths at work that was investigated by Harzer and Ruch (2016). In this intervention, participants first filled in the Values in Action Inventory of Strengths (VIA-IS; Peterson and Seligman, 2004), and then learned about their four highest character strengths through a web-based training platform. Subsequently, they were asked to think about the ways they currently used their signature strengths in daily activities and tasks at work, and to develop if-then-plans about how to use their four highest character strengths in new and different ways in daily activities and tasks at work. Next, participants were instructed to implement these plans. The authors established that this intervention enhanced the perception of the job as a calling, and satisfaction with life until 6 months after the intervention period.

Even though it is striking that such a relatively light intervention led to effects 6 month later, it is questionable whether these effects can be prolonged if the work environment

does not change, and structural interventions that help and remind workers to use their strengths on an ongoing basis are lacking. Further, based on the findings of Seligman et al. (2005) it seems that the novelty-aspect in this exercise is particularly relevant, and that simply displaying more strengths-based behavior does not go along with increases in well-being. This calls into question the effectiveness of prolonging this type of intervention.

However, one-off interventions like this can still play an important role in the creation of positive organizations. First, they may function as an important first step in the transition to a more positive organization by providing workers and leaders with new knowledge and insights based on positive psychology theories, which may in time lead to more structural interventions when they succeed in convincing people of the value of positive psychology. Second, these interventions may indirectly also influence organizational culture, as was shown by Williams et al. (2016) who studied the effects of a 3-day training in psychological capital. Even though this training addressed individual cognitions, they found that respondents with higher levels of PsyCap chose to focus on positive aspects of the organization environment and therefore evaluated the organizational culture more positively. Third, due to hedonic adaptation, workers might over time adapt to the emotional impact of more structural positive organizational practices (Lyubomirsky, 2011), such that they will experience a boost in well-being at the start of the positive change, followed by a return to their original baseline level of well-being as they grow accustomed to the change and begin to take it for granted (Parks et al., 2012). Short one-off interventions that target individual level outcomes may act as boosters of more structural positive interventions that workers might have grown accustomed to.

Structural Interventions Targeting Individual Level Outcomes

Job redesign that increases the amount of control that employees have over their work is an example of a structural intervention that enhances the well-being of individual workers. For instance, an intervention that gave call center workers more control over their work plan and their development planning, led to stronger perceptions of job control, and an improved mental health (Bond and Bunce, 2001; Bond et al., 2008). Another example of an intervention targeting individual outcomes that could be implemented on a structural basis is a feedforward interview that was implemented as an alternative to the traditional performance appraisal interview (Budworth et al., 2015). For the delivery of this intervention, managers were trained to focus an employee's attention on a positive work experience involving goal attainment by asking for a specific incident where they felt particularly good about attaining a goal. Furthermore, managers were instructed to ask follow-up questions on the circumstances that enabled their employees to be effective, about the actions that made them feel energized, and about what they could do in coming year to create similar circumstances. This training shifted the role of the manager from judging an employee's past performance to appreciative inquiry of what an employee will do in the future. The researchers found that the feedforward intervention increased performance 4 months later, relative to the traditional performance appraisal procedure.

Even though the authors of this study unfortunately did not report whether their study in fact led to lasting changes in the performance review practices in the organization, this intervention is a good example of a seemingly effective organizational practice that can replace current structural practices, instead of being implemented as a one-off intervention on top off current practices. This would mean that implementing this intervention does not involve the investment of additional time, apart from a one-time investment in the development of new procedures and training managers and can sustainably be embedded in the organization.

One-Off Interventions Targeting Group Level Outcomes

Since happiness comes from trying to make others feel good rather than oneself (Titova and Sheldon, 2021), targeting group interactions can be an effective way to enhance well-being in organizations. Furthermore, group interventions can stimulate a social support climate, thereby fostering the commitment and motivation that is needed to sustain intervention effects (Knight et al., 2019). This may especially be the case when employees and employers have a joined responsibility for the design of the intervention, and when the intervention targets leader and employee behaviors as mutually supportive ways to foster employee well-being (see e.g., Kompier et al., 1998; Holman and Axtell, 2016).

An example of an intervention in this category is described in a study by Peelle (2006) among cross-functional teams. The author found that a 1-day intervention focusing on appreciative inquiry into best practices and peak experiences led to higher levels of group identification and in turn group potency, compared to an intervention focusing on creative problem solving. Another example in this category is a 6-month workgroup intervention that aimed at enhancing civility, respect, and engagement in the workplace and in social encounters among people in hospital units (Leiter et al., 2011, 2012). Hospital units were surveyed 3 months before the intervention and unit managers were provided with a profile of their overall results regarding civility, respect, and engagement in comparison with other units for discussion with their staff. Next, all units identified their own goals, agendas, and processes for improving their working relationships in weekly sessions under the guidance of a dedicated facilitator. The intervention resulted in more frequent expressions of appreciation, and in changed workgroup processes, such as including respect as a continuing agenda item on workgroup meetings and improving procedures for registering complaints about mistreatment at work.

Structural Interventions Targeting Group Level Outcomes

Even though field experiments with structural interventions addressing group level outcomes are uncommon, several studies report that HR practices aimed at enhancing worker

well-being have a positive impact on group outcomes. For example, Acosta et al. (2012) established that an organization's systematic, planned, and proactive efforts to improve employees and organizational health are associated with higher levels of teamwork engagement. These efforts included practices at the task level (e.g., by redesigning tasks to improve autonomy and feedback), social environmental level (e.g., by bidirectional communication to improve social relationships), and organizational level (e.g., by practices that improve the work-family balance). Further, Huettermann and Bruch (2019) found that HR practices aimed at maintaining and promoting employees' psychological well-being, enhance employees' collective well-being. More specifically, these HR practices included the prevention of and recovery from work-related psychological health problems, the critical role of top management in communicating the importance of the HR practices, and of leaders in delivering health-related HR practices, and the ongoing evaluation of the HR practices to ensure their effectiveness and sustainability. According to the authors, these practices instilled a positive mindset about the potentially enhancing nature of stress, which in turn, decreased employees' shared perceptions of how emotionally drained their colleagues are from their work, and increased shared perceptions of how physically, cognitively, and emotionally invested their colleagues are in their work.

Even though future research will have to point out if the aforementioned HR practices have a sustainable effect on group level outcomes, the structural embeddedness of these practices in the organizational procedures make it more likely that their effects will be long lasting.

ENHANCING THE SUSTAINABILITY OF POSITIVE PSYCHOLOGY INTERVENTIONS IN ORGANIZATIONS

By investigating a combination of one-off and structural interventions, and interventions that target individual and collective outcomes, we can develop a fuller understanding of the potential of PPIs to contribute to the building of positive organizations. Further, to sustain the effects of PPIs in organizations, researchers and practitioners may benefit from several streams in the literature that so far have been largely neglected in the literature on positive psychology. Below, I discuss some suggestions based on the literature on transfer of training, behavioral change, positive design, and nudging.

Transfer of Training

The literature on transfer of training signals that training effectiveness in organizational contexts depends on the extent to which the learning that results from a training experience transfers to the job and leads to meaningful changes in work behavior (Blume et al., 2009). Transfer of training is influenced by three primary factors, i.e., learner characteristics, intervention design and delivery, and the work environment. Based on a review of the literature Burke and Hutchins (2007) conclude that cognitive ability, self-efficacy, pre-training motivation, anxiety or negative affectivity, openness to experience, perceived utility of the training, having specific plans for achieving career related goals, and organizational commitment are learner characteristics that are associated with transfer of training. Regarding the intervention design, they found that setting explicit learning goals, a training content that is perceived as relevant to the work task, providing practice and feedback, behavioral modeling (i.e., descriptions of a models' key behaviors) and error-based examples (i.e., sharing with trainees what can go wrong if they do not use the trained skills back on the job) were relevant factors. Furthermore, they established that supervisory support and peer support are factors in the work environment that enhance transfer. More generally, a transfer climate, referring to cues in the work environment that prompt trainees to use new skills, incentives for correct use of skills, and remediation for not using skills has also been associated with higher chances of transfer. Additionally, they found that transfer is limited when trainees are not provided with opportunities to use new learning in their work setting, for instance because their workload is too high. Other studies on transfer of training suggest that pre-training interventions such as offering attentional advice, preparatory information, and advance organizers, may enhance training effectiveness (Mesmer-Magnus and Viswesvaran, 2010). Also assisting trainees in monitoring their progress toward meeting their objectives or reminding them to continuously answer the question "why am I doing this" may enhance the effectiveness of training (Mesmer-Magnus and Viswesvaran, 2010). Further, post-training interventions such as goal-setting and self-management (Gist et al., 1991; Werner et al., 1994) have proved to improve learning outcomes.

The extensive research on the factors that play a role in transfer of training is particularly relevant to the design of one-off PPIs that are delivered in the form of a training or coaching program. Whereas knowledge about trait-level characteristics of participants (e.g., openness to experience) associated with transfer of training may be more difficult to translate to PPI design, the knowledge about state-level participant characteristics, as well as features of the intervention design and the work environment that contribute to transfer of training can help to make the design of PPIs stronger and embed one-off interventions more structurally in the work environment. For example, the web-based strengths intervention that was developed by Harzer and Ruch (2016) could be strengthened by organizing supervisor or peer support for strengths use or providing a post-training intervention on goal-setting and self-management.

Positive Design

Another stream in the literature that could be helpful in enhancing the sustainability of PPIs in organizations is the literature on positive design. This literature proposes that interventions do not only include trainings, coaching programs, or apps, but also new organizational policies or practices, or changes in the physical environment (Desmet, 2021). Desmet (2021) identifies four design strategies that can be used to enhance the effectiveness of PPIs by appealing to the needs of the user, and motivating them to adhere to the intervention,

i.e., empathic design, participative design, gamification, and persuasive design. Empathic design refers to putting oneself in the position of the target group, their experiences, and latent needs (Koskinen et al., 2003), for instance by meeting the users of the intervention and visiting the places where they will make use of the intervention. Co-design is a strategy in which designers and end-users cooperate to come up with a good design and is based on the idea that end-users of the intervention are experts of their own experiences and therefore have can a unique contribution in the design process. Gamification refers to enhancing motivation and engagement by applying gaming principles in non-gaming environments. For instance, by introducing rewards, making progression visible, and facilitating social interaction, specific activities can be made more challenging and fun, thereby accommodating basic needs for affirmation, growth, autonomy, and self-expression. Persuasive design tries to change attitudes or behavioral patterns of end users by forcing or seducing them into a specific behavior, for example by transferring knowledge, making desired behavior easier, reminding people of intended behavior, activating their norms, using social competition and rewards, or giving immediate feedback (Kelders, 2012).

By applying empathic design, participative design, gamification, and persuasive design PPIs can become more structurally embedded in the physical and social work environment, thereby making their effects more sustainable. Because habits are often strongly connected to the environments in which they occur, changing the environment in cooperation with workers can be a very effective intervention to support behavioral change. For instance, the effect of a 1-day intervention focusing on appreciative inquiry into best practices and peak experiences among cross-functional teams (Peelle, 2006) could be strengthened by designing a room where these teams can meet and engage in fun and relaxing activities during breaks, or by implementing a game that rewards expressing appreciation to other team members.

Nudging

Another helpful stream in the literature related to persuasive design is that on nudging. The concept of nudging is based on research that shows that many behaviors are directed by unconscious processes and that decisions are often not made based on rational thinking processes, but on quick and automatic heuristic processing (Kahneman, 2011) that is influenced by cues in the environment that people are unaware of. Nudging interventions gently suggest a specific choice by rearranging the choice context (Marchiori et al., 2017), without restricting alternative options or changing financial incentives (Thaler and Sunstein, 2008). Typical nudges change the physical environment or standard options, provide the possibility to correct impulsive choices, or provide feedback on choices (Thaler and Sunstein, 2008).

Several studies investigated the effectiveness of nudging in organizational contexts. One study found that placing a sit-stand desk by default at standing height increased stand-up working rates by approximately seven times (Venema et al., 2018). Other studies found that changing default printer settings to double-sided printing led to significant reductions in paper waste (Egebark and Ekström, 2016), and that desk-based electricity use can be reduced by programming devices to automatically switch off after a period of non-activity (Staddon et al., 2016). A nudge that informed people that an increasing number of people is switching from to-go cups to sustainable alternatives led to a reduced use of disposable cups at work (Loschelder et al., 2019). Making desirable behavior more visible can also be an effective nudge, as was shown by a study that found that medical staff engaged more often in hand hygiene behaviors when they were openly observed (Wu et al., 2018).

Whereas nudges tend not to be effective when people have a strong preference for the alternative option, they are most effective in situations where people are indifferent to the behavior at hand, have good intentions that they forget about, experience conflicting preferences, or do not know what to do because the situation is new to them (Venema and van Gestel, 2021). All these situations may apply after workers have participated in a one-off PPI and may intent to display certain behavior (e.g., focusing on the positive, using their strengths, etc.) but are still unfamiliar with this behavior, forget about it in the madness of the working day, or are being confronted with negative experiences at work. By changing the choice architecture at the workplace, nudging could be a valuable tool for supporting behavioral change that could be incorporated in the design of PPIs. For instance, the effect of a 6-month workgroup intervention aimed at enhancing civility, respect, and engagement in the workplace (Leiter et al., 2011, 2012) could be prolonged by making expressing gratitude to co-workers by default the first point on the agenda of team meetings, or by incorporating feedback on strengths in performance review procedures. Also, the concept of nudging could be used to scrutinize the current choice environment at the workplace for unintended counterproductive nudges in terms of the defaults that are in place and the norms that are being conveyed (Venema and van Gestel, 2021).

CONCLUSION

Research on PPIs has greatly contributed to the field of positive psychology in general, and to the field of positive organizational psychology in particular, especially because these studies are generally based on strong, experimental or quasi-experimental designs. However, despite definitions of PPIs that mention the aim of building positive institutions (Meyers et al., 2013), or enhancing the well-being of groups (Parks and Biswas-Diener, 2013), these studies are largely based on interventions that target positive states and traits of individuals but let the (social) work environment remain unchanged. Given the multi-level nature of work organizations, and the importance of positive states, traits, and behaviors at the group level this represents an important shortcoming of the literature. Another drawback of the literature on PPIs in organizations is that it is based on relative short, one-off interventions and that very little is known about the sustainability of their effects (Hone et al., 2015). This could indicate that PPIs are often implemented as quick fixes to problems with worker well-being, instead of as part of integrated

culture change processes that are ingrained in the fabric of the organization (Garcea et al., 2009).

In this manuscript, I distinguished between four different types of interventions that can all play a role in the building of positive organizations, i.e., one-off interventions targeting individuals, one-off interventions targeting groups, structural interventions targeting individuals, and structural interventions targeting groups. One-off interventions can play an important role in the beginning of a change process when workers need to be informed about the value of positive psychology. However, structural interventions in the form of HR or leadership practices that are based on the principles of positive psychology are needed to promote, increase, and improve the well-being of all employees on the long term (Paul and Garg, 2014). When these structural interventions are in place, one-off interventions can again strengthen their effect by acting as a booster when the structural attention for specific positive practices in the organizations has begun to wane. Furthermore, one-off interventions can be embedded more structurally in the organization by incorporating insights from research on transfer of training, positive design, and nudging in their design. Whereas structural PPIs that target the group or organizational level are more difficult to assess with (quasi) experimental designs, the effectiveness of these interventions can still be evaluated with a wide array of methods, e.g., by conducting interviews with stakeholders, recording field study notes from workshops, and obtaining experience sampling or diary data (Nielsen and Abildgaard, 2013).

However, if organizations are to embed the principles of positive psychology on a more structural basis in their HR and leadership practices, this will require a shift from a focus on managing employee deficits to a focus on their strengths (Garcea et al., 2009). HR should move to a new phase and start to promote, increase, and improve the well-being of all workers on the long term, and not just workers who are sick, distressed or underperforming (Schaufeli and Salanova, 2010).

AUTHOR CONTRIBUTIONS

MW was responsible for the entire article and approved it for publication.

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The Future of Positive Psychology and Disability

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For much of the history of the application of psychology to disability, the research and clinical focus of the field was deficits-oriented: documenting what people with disability could not do, proposing theories of why they could not do these things, creating measures to assess this incapacity and incompetence, and building interventions and treatments predicated on disease and pathology. It has been only in the last few decades that conceptualizations of disability allowed for consideration of strengths and positive attributes along with the presence of disability and only in the past two decades that a positive psychology of disability has emerged. This article will briefly summarize the factors that led to the emergence of a focus on the positive psychology of disability and a strength-based approach in the field, examine the state of knowledge and practice as it pertains to the positive psychology of disability, and will examine challenges that serve as barriers to progress in this area and opportunities for advancement. Among these is examining how "optimal human functioning" can be understood in ways that includes, and not excludes, people with disability. The importance of shifting the disability research and practice focus to emphasize flourishing, well-being, and self-determination of and for people with disability will be discussed, as well as the necessity for the field of positive psychology to more aggressively reach out to include people with disability among those populations whom the field values and includes.

Keywords: disability, strength-based, self-determination, quality of life, optimal human functioning

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INTRODUCTION

For much of the history of psychology and before that of medicine and psychiatry, disability has been conceptualized within the context of diseases and disorders (Wehmeyer, 2013a). Societal responses to disability, whether in education, residential services, or rehabilitation services, emphasized segregation and homogeneous grouping in the name of being better able to deliver supposedly critical specialized, and often highly medicalized, services, and treatments. From institutions for people with epilepsy or intellectual disability to center- and facility-based recreation and leisure services for people with physical disabilities, to separate schools for students with emotional or behavioral disorders, to group homes and sheltered workshops for people with intellectual and developmental disabilities, the systems developed to provide services to people with disabilities were segregated and based on conceptualizations of disability as pathology, disease, or deficit (Smith and Wehmeyer, 2012).

Through the latter part of the 20th century and into the 21st century, multiple factors and events converged and coalesced to create opportunities for people with disabilities to break free from the stereotypes, biases, and discrimination that limited their autonomy and self-determination. In the next section of this article, I briefly describe these multiple factors and events and, following, use that as a base for considering the future of positive psychology and disability.

FROM PATHOLOGY TO POSITIVE PSYCHOLOGY

The transformation of disability from being viewed as a pathology to consideration within positive psychology began worldwide post-WWII with the demands of parents and family members for alternatives other than institutionalization and isolation (Abeson and Davis, 2000). This parental movement resulted in legislation and civil protections that, often for the first time, ensured access to education, rehabilitation, and the community for many people with disabilities (Thompson et al., 2017). According to Thompson et al. (2017), the field had moved from a medical-institutional paradigm driving services to the normalization-community services paradigm. Services in this era were driven by a principle of normalization that emphasized community inclusion and normal routines of the day (Nirje, 1969). Unfortunately, while many people moved from large congregate settings to smaller, community-based settings and many students with disabilities gained access to education, these were still primarily congregate or segregated in nature, and services were still driven by a pathology perspective of disability. In the latter two decades of the 20th century, however, the medical field recognized that viewing chronic and long-term health conditions, including disability, through a pathology lens had limited utility. Conceptualizations that emphasized more than just pathology or disorder were introduced, culminating in 2001 in the World Health Organization's International Classification of Functioning, Disability, and Health (ICF; World Health Organization, 2001). The ICF conceptualized disability not as a disease or a disorder, but as the outcome of the interaction among health conditions (impairments), personal factors, and environmental factors. The ICF introduced so-called person-environment fit or social-ecological models to the disability context, and disability was conceptualized not as an internal pathology within the person, but as resulting from the interaction between what one can do and what the environment or context supports. The result, according to Thompson et al. (2017) was that the field moved toward a supports paradigm where emphasis was on enhancing personal capacity, modifying environments and contexts to promote participation, and providing supports that enable people to function successfully in typical environments and activities.

At the same time that the ICF was introduced, the field of positive psychology was emerging with its emphasis on positive individual traits, personal strengths, and well-being (Seligman and Csikszentmihalyi, 2000; Peterson, 2009). The ICF provided, for the first time, a language for a strength-based approach to disability, which aligned with the intent and objectives of the positive psychology movement (Wehmeyer, 2013b). In the past two decades, some progress has been made in applying positive psychology and strength-based approaches to the disability context and that is briefly covered in the next section.

State of Knowledge and Practice as It Pertains to the Positive Psychology of Disability

The publication of the *Oxford Handbook of Positive Psychology and Disability* in 2013 (Wehmeyer, 2013b) provided the first comprehensive examination of the application of positive psychology to the disability context. In that volume, Shogren (2013) provided an historical analysis of the state of research with regard to the emphasis on positive psychological constructs in the disability literature and of the disability focus in the positive psychology literature. In a nutshell, what Shogren et al. (2006b) found was that in a three-decade analysis of journals in the field of intellectual disability, there was a steady positive trend of the percentage of papers addressing constructs in positive psychology or strength-based approaches but that the focus on disability in positive psychology journals was minimal and limited mainly to research on chronic illnesses.

Even though there were clear limitations to the literature, there were positive psychological constructs that had a rich history in the disability context, in particular quality of life and self-determination, and there were a number of such constructs that had an emerging focus in the disability context, including mindfulness and character strengths. Within the disability context, the quality of life construct has provided "an outcomes-based evaluation framework associated with specific life domains that enable both the consideration of personally valued life outcomes and the design of large systems of supports" (Wehmeyer, 2020, p. 7). In fact, as conceptualized by Schalock (1996), quality of life is a meta-construct, incorporating and defined by multiple positive psychological constructs, including the core dimensions of self-determination and financial, physical, and mental well-being, as well as emphasizing outcomes of social inclusion, personal development, and interpersonal relationships. Quality of life, argued Schalock and Verdugo (2013), has provided a framework for a disability service delivery system that is "based on the values of dignity, equality, empowerment, self-determination, non-discrimination, and inclusion" (p. 46). Quality of life is not a "thing" that people have but is a multidimensional construct that provides a means to design and evaluate supports for people in service systems (Schalock, 1996).

Another positive psychological construct that has extensive application to the disability context is self-determination. Research over the past three decades has been driven by a theoretical framework, Causal Agency Theory, which provides a theory of the development of self-determination (Wehmeyer, 1992, 2001; Shogren et al., 2015a; Wehmeyer et al., 2017). This theoretical perspective has drawn from Self-Determination Theory (SDT; Ryan and Deci, 2000, 2017), but unlike SDT, which is a meta-theory of motivation, Causal Agency theory attempts to understand how people become self-determined

and, as a result, facilitate the design and evaluation of interventions and supports that support this development. Causal agency theory defined self-determination as:

> … a dispositional characteristic manifested as acting as the causal agent in one's life. Self-determined people (i.e., causal agents) act in service to freely chosen goals. Self-determined actions function to enable a person to be the causal agent in his or her life (Shogren et al., 2015a, p. 258).

Acting in a self-determined manner implies that people make or cause things to happen in their own lives, rather than someone or something else making or causing them to act in other ways. Self-determined action refers to action that is volitional and agentic (Shogren et al., 2015a). There is a rich literature driven by Causal Agency Theory documenting that young people with disability who are more self-determined achieve better school and post-school outcomes (Shogren et al., 2012, 2015b), that youth and adults with disability who are more self-determined have more positive quality of life and life satisfaction (Wehmeyer and Schwartz, 1998; Lachapelle et al., 2005; Shogren et al., 2006a), and that people with disabilities can become more self-determined when provided opportunities to learn and put in practice skills related to causal agency, they do become more self-determined (Wehmeyer et al., 2012a,b).

As noted, there are several other positive psychology constructs that are receiving increased attention in disability research, including mindfulness and character strengths (Shogren et al., 2017). In the field of education, a focus on positive education is emerging as it relates to the education of learners with disabilities (Kern and Wehmeyer, 2021). Hope, optimism, resilience, and coping are also topics that have an emerging literature base, the latter two particularly in the fields of social and rehabilitation psychology (Dunn, 2019; Wehmeyer and Dunn, 2021). Finally, issues pertaining to disability identity have played an increasing role in efforts to move toward strength-based approaches to disability (Andrews and Forber-Pratt, 2021).

Challenges That Serve as Barriers to Progress in the Application of Positive Psychology in the Disability Context and Opportunities for Advancement

There are a number of challenges that serve as barriers to progress in the application of positive psychology to the disability context, from the siloed nature of academic and clinical disciplines to limited funding for research in this area. But the overarching barrier to progress in this area is that how disability is understood in society, in general, and in psychology and related disciplines, in particular, remains mired in pathology-based conceptualizations. Positive psychology is, fundamentally, the study of flourishing, optimal human functioning, and well-being (Seligman and Csikszentmihalyi, 2000). Far too many people, both in the public and in psychology, continue to perceive disability as a burden to be borne or as an illness or disease to be fixed or cured. People with disabilities continue to experience stigma associated with others' views about and understandings of disability and continue to pity or, sometimes, fear people with disability. The inevitable results are not only discrimination and marginalization, but also the inability of others to see that people with disability possess strengths and can, indeed, flourish and experience well-being. Put bluntly, the public and the field of psychology too often do not understand how "optimal human functioning" can apply to the life experiences of a person with a disability.

DISCUSSION

As documented in the prior sections, there has been progress in shifting the disability research and practice focus to emphasize flourishing, well-being, and self-determination, yet barriers related to attitudes about and understandings of disability itself remain. In the closing section, I propose a number of actions that need to occur to increase a focus on positive psychology in the disability context.

The Future of Research and Practice in the Application of Positive Psychology to the Disability Context

Although there are actions that are needed in both positive psychology and disability-related fields to ensure that the progress in applying positive psychological constructs to the disability context continues, the following action items focus exclusively on the field of positive psychology.

Researchers and Practitioners in Positive Psychology Must More Aggressively Reach Out to Include People With Disability

As noted previously, although the application of positive psychological constructs in disability-related research has increased steadily, the same does not seem to be as true for research in positive psychology. To the degree that research-derived interventions and treatments drive practice, the relative scarcity of such disability-focused research in positive psychology is an area for growth. There are some disciplines within psychology, notably rehabilitation psychology, that have begun to embrace a positive approach, but the opportunity exists for positive psychologists to lead into the future by embracing disability as part of the continuum of human experiences and by showing how people with disabilities can be supported to flourish.

Psychologists With Disabilities Need to Have an Active Voice in Shaping the Field of Positive Psychology

One of the ways in which positive psychology can increase its focus on the disability experience is by training, hiring, and supporting psychologists with disabilities to enter and stay in the field. The presence of psychologists with personal experience with disability will energize the discussion about what it means to flourish in a diverse society and ultimately bring insights about the human experience and condition that will otherwise be overlooked or ignored.

Models of Disability That Emphasize Disability as Part of the Human Experience Must Drive Research and Practice

The World Health Organization's shift toward social-ecological or person-environment fit models of conceptualizing disability dates back to the early 1980s, and the disability community's emphasis on understanding disability within a social context dates back to at least the same era. These ways of understanding and conceptualizing disability provide a language for strength-based approaches to supporting people with disabilities to live full, rich lives in their communities. By positive psychology embracing these understandings and practices, the field can move forward to consider how flourishing and optimal human development co-occur with the experience of disability.

The field of positive psychology is in its nascence. The fact that there is already a focus on the application of positive psychological constructs to the disability context gives hope that the discipline can grow with a disability focus as part of its core. As the editor of the *Handbook of Positive Psychology and Disability*, published in 2013, I have seen considerable growth in the disability literature pertaining to positive psychological constructs. There are obvious areas of potential growth and expansion for the next decade. For one, positive psychological constructs for which research and practice in the disability context is just emerging have potential for growth. These include constructs, such as hope, optimism, character strengths, mindfulness, and resilience. As a disability culture and identity focus spreads there will be greater opportunities to explore the relationships between a positive disability identity and positive psychology. Further, as described previously, there is a long history of research in the disability context on quality of life. But this work focuses mainly at organizations and the services they provide. Research on flourishing and well-being among people with disability is an area of potential growth and benefit. The field of positive education is a growing subdiscipline in positive psychology and there is potential for applying topics, such as youth development, creativity, self-determined learning, and positive emotions in the disability context for research and practice. Although there is a well-established research and practice base focusing on self-determination in the disability context, agency is a central theme in positive psychology, and there is a need for an expanded focus on motivation and agency in the disability context. Finally, although there is a rich research and practice base in assessment pertaining to positive psychology, too often such tools are not normed with nor developed with people with disabilities, so there is opportunity to increase the number of assessments developed to include people with disability and to validate existing measures with people with disability.

In summary, the progress in applying positive psychology to the disability context in the past decade has been encouraging, and by embracing some of the action items identified in the article, there are rich and varied opportunities available that will keep this progress moving into a future that includes and embraces people with disabilities as important to the field of positive psychology.

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The author confirms being the sole contributor of this work and has approved it for publication.

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CONCEPTUAL ANALYSIS
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Current Progress and Future Directions for Theory and Research on Savoring

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As research on savoring has increased dramatically since publication of the book *Savoring: A New Model of Positive Experience* (Bryant and Veroff, 2007), savoring has gradually become a core concept in positive psychology. I begin by reviewing the evolution of this concept, the development of instruments for assessing savoring ability and savoring strategies, and the wide range of applications of savoring in the psychosocial and health sciences. I then consider important directions for future theory and research. To advance our understanding of how naturalistic savoring unfolds over time, future work should integrate the perceptual judgments involved in not only the later stages of attending to and regulating positive experience (where past research has concentrated), but also the initial stages of searching for and noticing positive stimuli. Whereas most research has investigated *reactive* savoring, which occurs spontaneously in response to positive events or feelings, future work is also needed on *proactive* savoring, which begins with the deliberate act of seeking out or creating positive stimuli. To advance the measurement of savoring-related constructs, I recommend future work move beyond retrospective self-report methods toward the assessment of savoring as it occurs in real-time. The development of new methods of measuring meta-awareness and the regulation of attentional focus are crucial to advancing our understanding of savoring processes. I review recent research on the neurobiological correlates of savoring and suggest future directions in which to expand such work. I highlight the need for research aimed at unraveling the developmental processes through which savoring skills and deficits evolve and the role that savoring impairments play in the etiology and maintenance of psychopathology. Research is also needed to learn more about what enhances savoring, and to disentangle how people regulate the intensity versus duration of positive emotions. Finally, I encourage future researchers to integrate the study of anticipation, savoring the moment, and reminiscence within individuals across time.

Keywords: savoring, positive emotion regulation, happiness, well-being, positive psychology

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No day comes twice. Each moment savored more precious than a span of jade.

—Zen tradition

OVERVIEW

Savoring has been defined as "the capacity to attend to, appreciate, and enhance the positive experiences in one's life" (Bryant and Veroff, 2007, p. xi). When I first began working on the concept of savoring in 1980, psychologists universally recognized that when *bad* events occur, people do not automatically feel negative emotions—indeed, how much distress people experience in response to stressful events was presumed to depend on how people appraised and coped with these events. As the first-century, Greek philosopher Epictetus (c. 100 A.D./1983) observed, "What upsets people is not things themselves but their judgments about the things" (p. 13). Yet in 1980, the prevailing assumption in psychology was that when *good* events occur, people naturally feel positive emotions in response.

To me, however, what was true for bad events also seemed true for good events. As the French writer Francois de La Rochefoucauld (1694/1930) argued, "Happiness does not consist in things themselves but in the relish we have of them" (p. 51). In fact, I believed the two processes—coping and savoring—involved different sets of skills that were not mirror opposites:

> Being able to handle adversity is vital in life, but having a capacity to cope seems not to be the same as having the capacity to enjoy life. In other words, just because people are not down, doesn't mean they're up. (Bryant and Veroff, 2007, p. 1).

I begin this article by reviewing the historical evolution of the concept of savoring, the development of measurement tools for assessing the conceptual components of savoring ability and savoring strategies, and the wide range of applications of savoring that have emerged in the psychosocial and health sciences. I then address important directions for future work on savoring, including promising new areas of application.

HISTORICAL EVOLUTION OF THE CONCEPT AND MEASUREMENT OF SAVORING

Before considering the future of work on savoring, it is useful to explain the origin of the construct and the evolution of its conceptual and operational definitions, and to provide a summary of current progress. As I describe below, the historical roots of savoring lie in large-scale survey research that I did in the early 1980s in collaboration with the late Joseph Veroff (23 November, 1929–30 September, 2007), during my post-doctoral fellowship at the University of Michigan. This research extended earlier work Joe and his colleagues had done on the dimensions underlying people's self-evaluations of their own mental health (Veroff et al., 1962).

Origins of the Concept of Savoring

The First Empirical Hints of Savoring

In our initial publication (Bryant and Veroff, 1982), Joe and I examined a diverse array of self-report measures of subjective adjustment that had been administered in two large, nationally representative, face-to-face, cross-sectional surveys of United States adults—one from 1957, the other from 1976—covering a broad spectrum of self-evaluations of "general happiness, worries, feelings of self-worth, symptoms of stress, recognition of problems experienced in work, marriage, and parenthood, and feelings of inadequacy and well-being attached to each of these roles" (Bryant and Veroff, 1982, p. 653). We then used exploratory and confirmatory factor analyses to test hypotheses about the structure of people's self-evaluations of their subjective experience across the two surveys. Supporting *a priori* predictions, we found that three basic dimensions underlay appraisals of subjective experience: (a) positive affective evaluation, (b) negative affective evaluation, and (c) the evaluation of personal competence.

Because the evaluation of competence related more closely to negative affective evaluation than to positive affective evaluation, we concluded that this self-efficacy dimension reflected an evaluation of personal competence in dealing with *negative* experience more than an evaluation of personal competence in enacting *positive* experience. We noted other research (deCharms, 1968; Reich and Zautra, 1981) that suggested the perception of oneself as the locus of control for positive outcomes may be a critical, independent factor we had been unable to examine in our analyses, given that no measures of this dimension were available. We reported preliminary results that elaborated on this notion:

> A factor analysis of the items added to the 1976 survey, in addition to the ones that were common to both years. . .distinguishes two types of personal competence—one centering on the capacity to cope with stress, the other on the capacity to derive positive experience. This distinction needs careful examination in future research and theory development (Bryant and Veroff, 1982, p. 672).

Highlighting the distinction between the capacity to handle negative experience and the capacity to derive positive experience laid the foundation for theory and research on savoring.

In a second article (Bryant and Veroff, 1984), Joe and I analyzed the wider range of measures collected in the 1976 national survey, seeking evidence for a four-factor model of people's self-evaluations of subjective experience that involved evaluations of: (1) negative experience; (2) positive experience; (3) personal competence in handling negative experience; and (4) personal competence in deriving positive experience. Our findings supported several important conclusions. First, people's self-assessments in response to *positively* focused items (e.g., happiness, value fulfillment, life satisfaction) differ from their responses to *negatively* focused items (e.g., anxiety, physical ill health, feelings of vulnerability). We termed the former items indices of psychological *well-being* and the latter items indices of psychological *distress*. Second, people make separate self-evaluations of sources of experience arising from the *external*

world (e.g., feelings of vulnerability and uncertainty) and from *within the self* (e.g., lack of gratification and lack of self-confidence). These two conceptual distinctions—between (a) self-evaluations of *positive* versus *negative* experience and (b) self-evaluations of experiences originating in the *external world* versus originating in the *self*—were to become instrumental in guiding my initial work on savoring. In discussing the implications of our results, we emphasized that, "Future research that includes items directly focusing on perceived competence in handling difficulties and in deriving pleasant experiences is needed to determine whether these are, in fact, separate dimensions" (Bryant and Veroff, 1984, p. 124).

Just as coping embodies the cognitive and behavioral mechanisms through which people process *negative* events and regulate *negative* feelings in response to such events, we reasoned that there must be a parallel set of cognitive and behavioral mechanisms through which people process *positive* events and regulate *positive* feelings in response to positive events. At the time, however, there was no theory or evidence to support the existence of this hypothesized process, which we viewed as "the positive counterpart of coping" (Bryant and Veroff, 2007, p. 2).

In Search of the Missing Link

After co-authoring this second article, I accepted a position as Assistant Professor of Psychology at Loyola University Chicago in 1982 and embarked on an independent program of research, with the initial goal of testing the hypothesis that people's self-evaluations of their ability to manage negative inner experience are distinct from their self-evaluations of their ability to manage positive inner experience. My first steps were to give the process of managing pleasant inner experiences a name, develop a measure to assess perceived competence in deriving positive feelings, and to test more directly the four-factor model of self-evaluations (i.e., negative external experience, positive external experience, competence in handling negative inner experience, and competence in deriving positive inner experience).

After considering a variety of possible terms for the process of managing positive inner experience (e.g., relishing, accentuating, capitalizing), I settled on the term *savoring*, because it "most vividly captures the active process of enjoyment, the ongoing interplay between person and environment" (Bryant and Veroff, 2007, p. 3), and it implies the act of mindfully appreciating something that is personally pleasurable. Laying the groundwork for a study to delineate savoring as a distinct phenomenon, I recast the original four-factor model of self-evaluations within the theoretical framework of perceived control (White, 1959; Rotter, 1966; Phares, 1976), by combining two prevailing conceptual distinctions: (1) people make separate self-assessments of their capacity to control *positive* versus *negative* outcomes (Gregory, 1978; Reich and Zautra, 1981); and (2) people's controlling responses can be classified as attempts to change the *world*, i.e., primary control, versus attempts to change *oneself* to fit in with the world, i.e., secondary control (Rothbaum et al., 1982). As I noted in my article reporting this research:

> By crossing primary-secondary control with positive-negative experience, a four-factor model of perceived control emerges that consists of self-evaluations of one's ability to *(a)* avoid negative events (primary-negative control), *(b)* cope with negative events (secondary-negative control), *(c)* obtain positive events (primary-positive control), and *(d)* savor positive events (secondary-positive control). (Bryant, 1989, p. 774).

I then created a set of 15 items reflecting self-evaluations of the four types of perceived control and administered these items to a large sample of young adults along with the indices of subjective well-being and distress from Bryant and Veroff (1984).

Supporting hypotheses, confirmatory factor analyses revealed that responses to these items defined four underlying factors, two reflecting control over *external events* (Avoiding and Obtaining) and two reflecting control over *internal feelings* (Coping and Savoring). Further confirming hypotheses, Coping and Savoring were largely unrelated to each other (sharing only 7% of their variance), whereas Avoiding and Obtaining were more strongly interrelated (sharing 25% of their variance). In addition, Savoring, like Obtaining, related more strongly to indices of subjective well-being than to indices of subjective distress. Savoring, however, was significantly related to general happiness, whereas Obtaining was not. These latter results suggest perceived control over positive *emotions* has more to do with happiness than does perceived control over positive *events*. Confirming de La Rochefoucauld's 1694 observation, clearly positive events alone are not enough to produce happiness. People also need to be able to attend to and relish (savor) the positive feelings that emerge from positive events. Follow-up work replicated these findings and extended their generalizability to adolescents (Meehan et al., 1993).

The Development of Instruments for Assessing Savoring

The Savoring Beliefs Inventory

Encouraged by this evidence that people make global self-evaluations of their capacity to savor positive feelings, my next step was to refine the broad concept of perceived savoring capacity to include a finer-grained focus on temporal aspects of savoring positive experience. In particular, I hypothesized that people make separate but correlated self-assessments of their ability to savor (a) *future* positive events before they occur (anticipation), (b) *present* positive events while they are unfolding (savoring the moment), and (c) *past* positive events after they occur (reminiscence)—all three of which are essential components of the fundamental human capacity to attend to and appreciate positive experience.

In a series of six studies, I developed and presented evidence supporting the structural, discriminant, convergent, and predictive validity, as well as the internal consistency and temporal reliability, of the Savoring Beliefs Inventory (SBI; Bryant, 2003) as a self-report measure of people's dispositional beliefs about their ability to appreciate positive experience in each of these three temporal domains. With this measure, respondents use a 7-point Likert-type scale (1 = *strongly disagree*, 7 = *strongly agree*) to rate their level of agreement with 12 positively worded and 12 negatively worded statements, in order to indicate how capable they believe they are of appreciating positive experiences through anticipating (8 items), savoring the moment (8 items),

and reminiscing (8 items). The SBI provides not only separate subscale scores for Anticipating, Savoring the Moment, and Reminiscing, but also a global Total Score, as measures of people's perceived capacity to appreciate positive experience.

Over the past two decades, the SBI has frequently been used in positive psychology. As cross-cultural research on savoring has grown, international researchers have translated and validated the SBI in a variety of languages, including *French* (Golay et al., 2018), *Spanish* (Robles et al., 2011), *Romanian* (Căzănescu et al., 2019), *Chinese* (Lin et al., 2011), *Japanese* (Kawakubo et al., 2019), *Korean* (Kim and Bryant, 2017), *Persian* (Aghaie et al., 2017), and *Turkish* (Metin-Orta, 2018). Bryant and Veroff (2007) also reported the development and validation of the Children's Savoring Beliefs Inventory that is appropriate for respondents with at least a fifth-grade reading level.

A large body of research supports the reliability and validity of the SBI as a measure of savoring capacity (Smith and Bryant, 2017). In addition, systematic scrutiny of the individual SBI items strongly supports the instrument's content validity (Kawakubo et al., 2019).

Beliefs about one's ability to savor overlap conceptually with meta-cognitive beliefs about positive emotion. In particular, perceived competence in regulating positive emotions is correlated with meta-cognitive beliefs about the controllability and utility of positive emotions (Becerra et al., 2020). Indeed, believing that positive emotions are both controllable and useful may provide a cognitive foundation to support the acquisition of savoring skills.

Measures of Positive Emotion Regulation

Closely related to people's beliefs about their ability to savor is the notion that while they are experiencing a positive event, individuals may engage in a variety of different thoughts and behaviors, which Bryant and Veroff (2007) termed *savoring responses* or *strategies*, that regulate their positive feelings.

To measure people's use of specific cognitive and behavioral savoring strategies in response to positive events, Bryant and Veroff (2007) developed the Ways of Savoring Checklist (WOSC). Since then, a variety of other measures of positive emotion regulation have been created, including: (a) Feldman et al.'s (2008) *Responses to Positive Affect*, which measures emotion-focused and self-focused positive rumination and dampening thoughts in response to positive feelings; (b) Gentzler et al.'s (2010) self-report measure of emotion regulation strategies that maximize or minimize positive feelings in response to positive events; (c) Nelis et al.'s (2011) *Emotion Regulation Profile-Revised* (ERP-R), which assesses positive emotion regulation strategies in response to positive events; (d) Livingstone and Srivastava's (2012) inventory of *Positive Up-Regulation Activities*, which assesses people's use of three types of regulatory strategies (engagement, betterment, and indulgence) to create or maintain positive emotions; (e) Ramsey and Gentzler's (2020) *Positive Events and Responses Survey for Adults*, which provides a global measure of savoring responses to six hypothetical positive events; (f) Weiss et al.'s (2015) *Difficulties in Emotion Regulation Scale–Positive*, which measures non-acceptance of positive emotions, and difficulties in goal-directed behavior and in behavioral self-control when experiencing positive emotions; (g) Wright and Armstrong's (2016) *Inventory of Responses to Positive Affective States*, which provides subscales assessing characteristic responses to positive feelings; and (h) Preece et al.'s (2018) *Perth Emotion Regulation Competency Inventory*, which assesses the perceived ability to regulate positive and negative feelings.

It is beyond the scope of this paper to review all existing measures related to positive emotion regulation. Instead, I will briefly review two instruments that, in my opinion, provide the most comprehensive, multidimensional assessment of the degree to which people use specific thoughts and behaviors to amplify or dampen positive feelings in response to positive events—namely, the WOSC and the ERP-R. Other measures of positive emotion regulation certainly have their place in assessing global levels of amplifying and dampening (Gentzler et al., 2010), overall cognitive regulatory style (Feldman et al., 2008), emotion regulation ability (Preece et al., 2018), characteristic responses to positive affect (Livingstone and Srivastava, 2012), or problems in regulating positive feelings (Weiss et al., 2015). However, the WOSC and ERP-R are particularly useful in capturing both a broad- and narrow-band profile of the particular strategies people use to savor positive events.

The Ways of Savoring Checklist

The 60-item WOSC (Bryant and Veroff, 2007) assesses the degree to which people engage in *ten savoring strategies* (sharing with others, memory building, self-congratulation, sensory-perceptual sharpening, comparing, absorption, behavioral expression, temporal awareness, counting blessings, and kill-joy thinking) in relation to a recent positive event. Bryant and Veroff (2007) reported strong evidence supporting the reliability and discriminant validity of the WOSC as a measure of savoring strategies. The WOSC also includes an initial set of 12 questions assessing cognitive appraisals of the target positive event (e.g., its desirability, foreseeability, frequency of occurrence, and one's degree of personal responsibility for the event's occurrence) and 2 final questions assessing level and duration of enjoyment.

To create an abbreviated trait measure of savoring, Jose et al. (2012) used exploratory factor analysis to create a 30-item short form of the WOSC by selecting the three strongest loading items from each of the 10 savoring subscales, to produce global Amplifying and Dampening scales. To study savoring using experience sampling methodology, Jose et al. (2012) also modified the WOSC to create a three-item Momentary Savoring scale based on sharing with others, counting blessings, and sensory-perceptual sharpening—amplifying strategies consistently associated with stronger positive emotional reactions to positive events. Garland et al. (2019b) used four items from the WOSC, based on Jose et al.'s (2012) abridged measure, to form an adapted Momentary Savoring Scale for use as an indicator of a Positive Psychological Functioning latent variable, which mediated the impact of mindfulness training in reducing pain and risk of opioid misuse.

To promote cross-cultural research on the specific strategies people use to savor positive outcomes, researchers have adapted and validated versions of the WOSC in *Greek* (Pezirkianidis et al., 2021), *Hungarian* (Szondy et al., 2014), *Portuguese* (Carvalho, 2009), *Japanese* (Miyakawa et al., 2019), and *Korean* (Kim and Bryant, 2017). In addition, Hacin et al. (2014, July) created

an abbreviated 20-item WOSC (with separate Amplifying and Dampening subscales) which they translated and validated in nine languages (Chinese, Czech, English, German, Hungarian, Portuguese, Russian, Slovene, and Spanish).

Emotion Regulation Profile-Revised

Paralleling work on the WOSC, Nelis et al. (2011) developed the 48-item Emotion Regulation Profile-Revised (ERP-R) as a self-report measure of savoring strategies. Using this instrument, Quoidbach et al. (2010a) distinguished among four types of *amplifying* strategies (behavioral display, being present, capitalizing, and positive mental time travel) and four types of *dampening* strategies (suppression, fault finding, distraction, and negative mental time travel). Whereas the ERP-R includes a wider range of *dampening* strategies than the WOSC, the latter includes a wider range of *amplifying* strategies than the former. Note that three of the ERP-R's amplifying subscales and one of its dampening subscales are conceptually equivalent to counterparts of the WOSC—namely, behavioral display parallels the WOSC subscale of behavioral expression; capitalizing parallels the WOSC subscale of sharing with others (see Langston, 1994); being present parallels the WOSC subscale of absorption; and fault finding parallels the WOSC subscale of kill-joy thinking. Quoidbach et al. (2010a) presented evidence to support the validity of the eight ERP-R subscales, as well as global Amplifying and Dampening subscales, although they reported reliability data only for the two global subscales.

Despite the strong overlap in subscale content, the WOSC and ERP-R adopt quite different approaches to assess individual differences in the use of savoring strategies. Whereas the WOSC uses a continuous 7-point scale to measure the degree to which respondents engaged in individual thoughts or behaviors during a recent positive event, the vignette-based ERP-R uses a dichotomous (yes/no) response scale to assess whether or not respondents would engage in particular forms of amplifying or dampening in response to six hypothetical positive events.

Dispositional styles of savoring may sometimes reflect *positive rumination*, which Feldman et al. (2008) defined as "the tendency to respond to positive affective states with recurrent thoughts about positive self-qualities, positive affective experience, and one's favorable life circumstances" (p. 509). People with bipolar disorder are particularly prone to engage in emotion-focused positive rumination (Johnson et al., 2008). Because positive rumination reflects what people "generally think and do" when they feel happy (Feldman et al., 2008, p. 511), positive rumination represents a more stable cognitive trait, whereas savoring strategies are cognitive and behavioral responses to specific positive events or emotions that vary more across situations (Bryant and Veroff, 2007).

The Adaptive Utility of Savoring Strategies Is Context-Specific

It is important to note that particular strategies for emotion regulation are neither uniformly adaptive nor maladaptive—instead, whether or not a given strategy is adaptive may depend on the specific situation involved (Gentzler and Root, 2019). For example, after winning the first set of a five-set match in a tennis tournament, it might be *maladaptive* to celebrate, if it causes you to lose your competitive focus, or motivates your opponent to concentrate harder; and it might be *adaptive* to dampen your positive emotions in order to maintain your focus. In other situations, such as graduating from college, on the other hand, it might be *adaptive* to celebrate, if it solidifies personal meaning and builds a cherished memory; and it might be *maladaptive* to dampen positive emotions, if doing so makes one feel unfulfilled. Likewise, differences in cultural norms make Westerners more likely to display their positive emotions in public as a way to celebrate, whereas Eastern Asians are more likely to restrain their public displays of positive emotion to avoid making others envious (Choi et al., 2019). Thus, the adaptive value of savoring strategies is not universal, but rather is specific to particular situations and cultures (see Smith et al., 2019).

Consistent with this conclusion, research evidence indicates that greater regulatory diversity is associated with greater overall happiness among adults. In particular, the happiest individuals generally have a wider range of savoring strategies that they use across a greater variety of situations (Quoidbach et al., 2010a). Having a broader savoring repertoire and knowing when and how to use optimal combinations of various savoring strategies seems most beneficial.

The Dramatic Growth in Research on Savoring

Empirical work on savoring has increased dramatically since Joe and I published our book, *Savoring: A New Model of Positive Experience* (Bryant and Veroff, 2007). One way to illustrate this expansive growth is to note representative examples of the wealth of savoring research that has flourished in the health and psychosocial sciences since the book appeared in print. Space limitations preclude an exhaustive review of current savoring-related applications. The examples listed below are merely the tip of the iceberg, and are intended to provide a general sense of the breadth of this work rather than a comprehensive survey of the literature.

Positive Psychology

Illustrating the many ways savoring has been applied, positive psychologists have developed an impressive array of cognitive-behavioral techniques for teaching clients how to savor as a way of reducing emotional deficits associated with depression (McMakin et al., 2011), hopelessness (Chen and Zhou, 2017), anxiety (Pereira et al., 2021), schizophrenia (Meyer et al., 2012), and anhedonia (Strauss, 2013). Researchers have also used savoring exercises to strengthen depressed people's help-seeking intentions (Straszewski and Siegel, 2018), as well as to increase optimism (Biskas et al., 2018), happiness (Salces-Cubero et al., 2019), and life satisfaction (Smith and Bryant, 2019) among non-depressed individuals. Smith et al. (2014b) and Smith and Bryant (2017) review the large body of empirical evidence that illustrates savoring promotes positive psychological functioning.

Clinical and Health Psychology

Likewise, clinicians and health researchers have investigated the role of savoring in treating autism (Cai et al., 2018) and anxiety

disorders (Eisner et al., 2009); preventing depression (Ford et al., 2016); reducing pain (D'Raven et al., 2015); helping people cope with stress (Samios et al., 2020), cancer (Hou et al., 2017), and acquired physical disability (Dunn and Brody, 2008); repairing the negative effects of state dysphoric rumination (Stone et al., 2020); reducing the link between marijuana use and marijuana problems (Luba et al., 2020) and reducing pain and opioid misuse risk (Garland, 2021). Research with older adults has also investigated the role of savoring in promoting resilience (Smith and Hollinger-Smith, 2015) and positive attitudes toward aging (Bryant et al., 2021), improving physical health (Geiger et al., 2017), buffering the deleterious effects of illness on subjective well-being (Smith and Bryant, 2016), and lowering cardiovascular reactivity and boosting agency (Borelli et al., 2020). Savoring has also been identified as a resource in bereavement (Permanadeli and Sundararajan, 2021), in lowering suicide risk (Klibert et al., 2019), and in protecting soldiers from the psychological effects of combat exposure (Sytine et al., 2018); and kill-joy thinking has been found to mediate the relationship between depression symptomatology and gambling disorder severity (Rogier et al., 2019). In addition, researchers have used savoring to increase people's consumption of healthy foods (Coary and Poor, 2016), decrease overeating (Black and Areni, 2016), and promote healthy relationships with food (Batat et al., 2019).

Families and Close Relationships

Specialists in the area of children and families have examined the role of savoring in promoting healthy mother-child attachment (Gentzler et al., 2015), enhancing life quality for parents of young children (Burkhart et al., 2015), cultivating healthy family functioning (Cheung et al., 2019), helping children adjust to adolescence (Gentzler et al., 2013), helping caregivers adapt to stress in caring for chronically ill loved ones (Hou et al., 2016), and nurturing family ties for deployed military personnel (Borelli et al., 2014). Researchers have also studied the relationship between mothers' levels of savoring and children's adaptive skills (Song et al., 2019), the prospective influence of maternal modeling of savoring on child depression (Moran et al., 2019), and the detrimental impact of maternal depression on children's savoring skills (Morrow et al., 2021). In addition, work on relational savoring has explored savoring as a predictor of relationship satisfaction (Lenger and Gordon, 2019), as an interpersonal resource for couples facing stress (Samios and Khatri, 2019), and as an intervention to enhance the quality of couples therapy (Antoine et al., 2020) and of long-distance romantic relationships (Borelli et al., 2015). In addition, Pitts (2019) has extended the concept of savoring into the fields of communication and language within the context of social relationships; and other work has studied the use of social network sites to boost savoring (Yu et al., 2020).

Organizational Behavior

Researchers in the field of organizational behavior have explored the role of savoring in reducing work-family conflict (Camgoz, 2014), boosting perceived job performance (Lin et al., 2011), enhancing organizational commitment among employees (Castanheira and Story, 2016), and improving workers' mental and physical health (de Bloom et al., 2013). Other researchers have highlighted the benefits of savoring in the workplace for both businesses and their employees and have proposed strategies that organizations can use to enhance savoring among personnel (Fritz and Taylor, 2021).

Marketing

Marketing researchers have explored the role of savoring in maximizing the quality of guests' experience in the hospitality industry (Chun, 2011), enhancing consumers' enjoyment of recreational activities (Chun et al., 2017), understanding people's decisions in planning retirement (Hardisty and Weber, 2020), and boosting the persuasiveness of advertising (Moore, 2010). Likewise, investigators in the field of leisure research have studied the role of savoring in enhancing tourists' experiences (Yan and Halpenny, 2021) and emotional responses (Filep et al., 2013), in amplifying vacationers' enjoyment of restaurants (Sthapit, 2017) and of Airbnb experiences (Sthapit et al., 2021), and in promoting therapeutic recreation (Carruthers and Hood, 2007) and meaningful engagement through leisure (Iwasaki et al., 2018). Savoring has also been used as a product design principle to trigger, amplify, and prolong user enjoyment (Pohlmeyer, 2014).

Education and Other Applications

Educational researchers have used savoring to foster student creativity (Lee et al., 2016), promote engagement and learning (Chang et al., 2021), reduce anxiety in foreign language classrooms (Jin et al., 2021), weaken the link between perfectionism and student distress (Klibert et al., 2014), and protect teachers from psychological burnout (Picado, 2012). Savoring has also been used as a resource in athletics (Doorley and Kashdan, 2021), and as a mechanism to understand how prayer enhances well-being (Crainshaw, 2014) and how time spent in nature boosts positive emotions (Sato et al., 2018).

Neuropsychology

There has also been an increased interest in the neuropsychology of savoring. Concerning savoring through reminiscence, for example, fMRI data reveal that enhanced activity in the striatum and medial prefrontal cortex is associated with increased positive emotion when recalling positive, relative to neutral, autobiographical memories (Speer et al., 2014). Concerning savoring the moment, EEG data indicate that participants instructed to savor monetary rewards show greater changes in reward positivity (i.e., a positive-amplitude deflection in event-related brain potential following reward feedback), compared to a control condition (Irvin et al., 2020). Along these lines, there is evidence that an intervention designed to enhance savoring increases neural responsivity to positive affect, which reduces opioid misuse (Garland et al., 2019a).

In the realm of clinical neuropsychology, there is also evidence that the depressive symptom of anhedonia (i.e., blunted response to pleasure and reward) reflects an underlying neurological deficit in the capacity to up-regulate positive emotion. In particular, when instructed to use cognitive appraisal to enhance emotional response to positive images,

depressed individuals (compared to those who are not depressed) are unable to sustain activation of neural circuits in the nucleus accumbens (NAcc) and frontostriatal network that underlie positive affect and reward (Heller et al., 2009). These findings suggest that training depressed people to prolong engagement with tasks that activate the NAcc may be an effective behavioral treatment to enhance their ability to amplify positive emotion.

More recently, Wilson and MacNamara (2021) have provided the first empirical evidence that savoring is an effective and lasting means of increasing subjective and neural response to visual imagery. Participants instructed in how to savor positive pictures, compared to those who passively viewed these images, not only rated the pictures as more pleasant, but also showed increased picture-elicited late positive potential (LPP) in fronto-central and parieto-occipital regions of the brain (i.e., a neural marker of emotional arousal). Moreover, when viewing the same stimuli 20 min later (in the absence of instructions to savor), pictures that had been savored earlier were rated as more pleasant and more arousing and continued to elicit a larger LPP, compared to pictures that had not been savored.

Evolution of the Conceptual Definition of Savoring

As with many constructs in psychology, the conceptual definition of savoring has evolved over time. Throughout this evolution, however, two bedrock concepts have remained central—namely, that savoring involves both (1) *some degree of mindful awareness of positive feelings*, as well as (2) *the management and regulation of positive experience*. I now briefly consider the evolution of theoretical perspectives on each of these key concepts.

Savoring as Meta-Awareness of Positive Feelings

An essential defining feature of savoring is that it "involves not just the awareness of pleasure, but also a conscious attention to the experience of pleasure" (Bryant and Veroff, 2007, p. 5). In other words, "savoring by virtue of its state of mindful meta-awareness is an experience of second-order consciousness" (Bryant and Veroff, 2007, p. 12). Reflecting this key conceptual element, my initial search for evidence of savoring as a human concern sprang from the notion that people are aware of their competence in deriving positive feelings and make self-evaluations of this ability that are distinct from positive feelings *per se* (Bryant, 1989). Along these lines, English essayist Samuel Johnson hinted at the vital nature of meta-awareness in savoring when he asserted in 1753, "Happiness is enjoyed only in proportion as it is known" (Hawkesworth et al., 1793, p. 216).

Likewise, the development of the Savoring Beliefs Inventory (SBI; Bryant, 2003) was also grounded in the notion that people attend to and are consciously aware of their capacity to derive positive experience. More specifically, the SBI is predicated on the assumption that people's beliefs about their capacity to savor are reflections of their actual savoring ability. As Publilius Syrus (42 B.C./1856) observed over 2,000 years ago, "No man [*sic*] is happy who does not think himself so" (p. 53). Thus, savoring beliefs, by definition, involve a conscious awareness of one's ability or inability to experience and manage positive experience.

Bryant and Veroff (2007) were the first to highlight explicitly a key conceptual component of savoring that must be always be present in order for savoring to exist—namely, a deliberate attentional focus on ongoing positive feelings. As Bryant and Veroff (2007) put it, "in savoring, people partially set a positive experience apart from their immediately attending self, such that the attending self interacts more directly with the focused experience" (p. 12). Thus, savoring must involve a mindful meta-awareness of positive experience (see Bryant and Smith, 2015), or else it is simply pleasurable enjoyment (Smith et al., 2014a).

The notion that people can experience pleasure without realizing it might at first blush seem logically impossible. Yet, evidence suggests people "can have experiences (experiential consciousness) without being contemporaneously aware of the nature of those experiences (meta-awareness)" (Schooler and Mauss, 2010, p. 244). For example, the brain may show valenced pleasure-displeasure responses to subliminal stimuli, to which people do not consciously experience an emotional reaction (Winkielman and Berridge, 2004). The willful regulation of emotion presupposes awareness of one's emotional states (Price and Hooven, 2018).

Savoring as the Management of Positive Experience

Concerning savoring as the management of positive experience, I initially considered savoring to be a form of secondary-positive control over positive feelings that may stem from "beliefs about *(a)* cognitive or behavioral strategies that one can use to amplify or prolong enjoyment of positive events, *(b)* one's ability to anticipate future positive outcomes in ways that promote a sense of pleasure in the present, *(c)* one's ability to recall past positive events in ways that enhance present well-being, or *(d)* friends or relatives who can help one enjoy positive events, even if one cannot do so alone" (Bryant, 1989, pp. 775-776). Note that this initial formulation associates savoring with generating, intensifying, and prolonging positive feelings in response to positive outcomes (Kurtz, 2018), which implies that *savoring* (as emotional up-regulation) is conceptually the opposite of *dampening* (as emotional down-regulation)—a perspective that others have also adopted (e.g., Wood et al., 2003; Quoidbach et al., 2010a).

In my more extensive later work on savoring, in contrast, I "considered both amplifying and dampening responses to be efforts to regulate positive emotions that reflect different styles of savoring" (Bryant et al., 2011, p. 110). For example, people may dampen the joy of anticipation by downplaying upcoming positive events, in order to protect themselves from future disappointment (Norem and Cantor, 1986). Likewise, the cognitive savoring strategy of "kill-joy thinking," which stifles positive feelings, is more common among East Asians than North Americans (Bryant and Veroff, 2007; Smith et al., 2019) and serves to regulate positive emotions in culturally normative ways. In a parallel fashion, although efforts to cope by "catastrophizing" one's circumstances actually amplify distress, theorists nonetheless consider such reactions to be coping responses aimed at managing psychological distress (Keefe et al., 1989).

As illustrated above, the contemporary conceptualization of savoring has gradually evolved from a traditionally

Western-cultural view of savoring as the capacity to create, intensify, and sustain positive experience, to a more nuanced cross-cultural view of savoring as the capacity to regulate positive emotion in ways that are personally and culturally appropriate, regardless of whether those regulatory efforts entail amplifying, dampening, or a combination of both. As Smith et al. (2019) observed, depending on individual, situational, and cultural factors, savoring may involve amplifying or dampening positive emotions, as well as increasing or decreasing their duration; and "greater enjoyment can occur through either an *increase* in savoring responses that amplify the duration and intensity of positive feelings or a *decrease* in responses that dampen positive feelings" (Smith et al., 2019, p. 151).

PROMISING DIRECTIONS FOR FUTURE THEORY AND RESEARCH

Having reviewed the current state-of-the-art of work on savoring, I now focus on future directions for theory and research in this area. In particular, I highlight nine promising avenues for advancing theory, research, knowledge, and application in the years ahead: (1) exploring the dynamics of naturalistic savoring; (2) studying both reactive and proactive savoring; (3) integrating the perceptual judgments involved in the later stages of attending to and regulating positive experience (where past work has focused), as well as the initial stages of seeking out and noticing positive stimuli; (4) developing new ways to study people's meta-awareness of positive feelings; (5) investigating the regulation of attentional focus in savoring; (6) understanding the developmental processes through which savoring skills and deficits evolve; (7) clarifying the role that savoring impairments play in the etiology and maintenance of psychopathology; (8) discovering new situational variables that enhance savoring; and (9) integrating the study of anticipation, savoring the moment, and reminiscence within individuals across time.

Investigating Naturalistic Savoring

Because relatively little empirical work has focused on how savoring unfolds in everyday life, future work should systematically investigate the dynamics of naturalistic savoring. It is somewhat surprising that we currently know very little about when, how often, for how long, and in what ways people typically engage in episodes of savoring in their daily lives. In the earliest study of savoring in everyday life, Jose et al. (2012) assessed life events, savoring strategies, and mood at random times between 8 a.m. and 8 p.m. once daily for 30 days in a sample of undergraduates, and found that trait savoring produced higher levels of momentary savoring, which both mediated and moderated the impact of daily positive events on momentary happy mood; "habitual" savorers were more likely to maintain happy mood in the absence of positive life events, compared to people who did not consistently savor positive daily events.

Extending this naturalistic work, Heiy and Cheavens (2014) measured college students' use of 20 positive and 20 negative emotion-regulatory strategies in response to positive or negative emotions experienced in the past 4 hrs, at random times during waking hours three times daily, and found that on average participants engaged in savoring strategies in response to about 7 positive emotion experiences across 10 days; they concluded that people may regulate positive emotion (compared to negative emotion) more often and with greater success. More recently, Colombo et al. (2021) measured undergraduates' use of three categories of positive regulation—namely, "mindfulness and stimulus control for the category 'attentional deployment'; broadening and counting blessings for the category 'cognitive change'; and emotion expression and sharing for the category 'response modulation savoring strategies' " (p. 5)—in reaction to positive events 3 times daily for 2 weeks, and found that the less individuals felt positive emotion at one point in time, the more they increased their use of amplifying strategies from this time point to the next. Thus, low momentary positive affect may motivate people to savor.

Clearly, more experience-sampling and daily-diary studies are needed to advance our understanding of how savoring occurs in everyday life. Rather than relying exclusively on retrospective assessments, however, this future work should study savoring as it occurs in real-time. As Bryant et al. (2011) noted, for example, prior cross-sectional and longitudinal research has ignored the temporal sequence in which multiple savoring responses occur: "Given a particular positive event, the same savoring responses arranged in different temporal orders might well produce different emotional consequences" (p. 116). For instance, if people use both amplifying and dampening strategies in response to the same positive event, we might expect to find recency effects, such that initial dampening followed by amplifying might produce greater positive affect, compared to initial amplifying followed by dampening (Bryant et al., 2011).

To advance our understanding of how savoring unfolds over time, I recommend future work focus on integrating the perceptual judgments that underlie the sequence of cognitive processes involved in searching for, noticing, attending to, and regulating positive experience (which comprises both positive stimuli and positive emotions). Prior research on savoring has focused almost exclusively on emotion regulation, and has largely ignored the initial stages of seeking out, detecting, and focusing attention on positive stimuli or feelings. Future work is also needed to disentangle how people regulate the *intensity* versus *duration* of positive emotions in everyday life (see Tugade and Fredrickson, 2007).

Distinguishing Reactive and Proactive Savoring

Whereas most prior studies have investigated *reactive* savoring, which occurs spontaneously in response to positive events or feelings, future work is also needed on *proactive* savoring, which begins with the deliberate act of seeking out or creating positive experience, rather than passively waiting until one happens to notice positive stimuli. Along these lines, Quoidbach et al. (2015b) have extended Gross's (1998) seminal process model of negative emotion regulation to the realm of positive emotion. Particularly relevant to proactive savoring are the up-regulation mechanisms of *situation selection* (in which people purposefully put themselves in situations likely to produce positive emotions)

and *attentional deployment* (in which people choose to direct their perceptual attention to positive situational features).

There is reason to believe that proactive savoring is a valuable personal resource in managing one's subjective well-being. For example, Catalino et al. (2014) found people who intentionally created conditions in daily life that were likely to produce positive emotions—such as gardening or spending time with a friend—reported greater happiness and life satisfaction and fewer symptoms of depression, compared to those who did not intentionally create such conditions. I propose that savoring mediates the benefits of situation selection. Given that enhancing awareness of positive experiences and strengthening positive emotion regulation can boost well-being (Smith et al., 2014b), a promising avenue for future research is to develop interventions to increase proactive savoring.

Proactive savoring requires the effortful allocation of time and energy to create a positive experience "from scratch" that one can savor, whereas *reactive* savoring, in contrast, merely requires awareness of an ongoing positive experience one has not intentionally created, but can savor. For this reason, proactive savoring may well be less common than reactive savoring across all three temporal domains. Proactive *savoring of the moment* fosters the joy of anticipation, whereas reactive momentary savoring fosters the joy of surprise. Proactive *reminiscence* serves to keep one's storehouse of pleasant memories fresh and accessible, compared to only reminiscing reactively when external circumstances bring positive memories to mind. Likewise, proactive *anticipation* can heighten the joy of positive events both before and during their occurrence. Future work is needed to understand how to help people optimize their proactive efforts to set the stage for savoring. For example, prioritizing pro-hedonic goals may encourage optimal situation selection (Livingstone and Isaacowitz, 2015).

Increasing Perceptual Sensitivity to Positive Stimuli

In relation to proactive savoring, people may be able to enhance their sensitivity to positive stimuli, in order to facilitate searching for and noticing things to savor. Neuroscience research shows that positive mood can broaden the scope of attention at both the perceptual and conceptual levels (Uddenberg and Shim, 2015). Indeed, people who are happy and satisfied with life preferentially attend to positive stimuli (Raila et al., 2015). Thus, savoring may in some ways be a self-sustaining process.

In the same vein, Jose et al. (2020) found that the use of amplifying strategies prospectively predicted an increase in the reported frequency of positive life events (i.e., an effect termed "uplift propagation") over 3 months, whereas dampening responses did not significantly predict changes in uplift frequency over time. This uplift-propagation effect may result from a broadening and building of perceptual awareness of external positive events that savoring produces (Jose et al., 2020). Future experimental work should directly test the hypothesis that increasing how often people savor increases their reported frequency of positive events by making them more aware of existing uplifts, rather than by motivating them proactively to create more uplifts in their daily lives.

Given that humans possess finite attentional resources and that negative stimuli dominate our attentional field more than positive stimuli, people may not be naturally prone to savoring. Consistent with this conclusion, negative information is processed more quickly and thoroughly than positive, people exert more energy trying to eliminate bad moods than to induce good moods, and the effects of good events dissipate more rapidly than the effects of bad events (Baumeister et al., 2001).

The regular practice of savoring should strengthen the capacity to notice and attend to positive experience (Bryant and Smith, 2015). Indeed, neuroscience evidence indicates that "rewards 'teach' visual selective attention so that processing resources will be allocated to objects, features and locations which are likely to optimize the organism's interaction with the surrounding environment and maximize positive outcome" (Chelazzi et al., 2013, p. 58). Future work should examine whether, "through the repeated practice of attending to positive stimuli and positive feelings, one may become habitually predisposed over time to seek out, attend to, and savor positive experience" (Bryant and Smith, 2015, p. 319).

People may also increase their attentional bandwidth in searching for "savorable" stimuli by avoiding things that would divide their attention. Future experimental work might investigate the effectiveness of cognitive and behavioral approaches, such as (a) blocking environmental distractions, (b) setting aside ego concerns, and (c) avoiding multi-tasking, time pressure, worrying, and complaining, as ways to increase signal-to-noise ratio and heighten sensitivity to internal and external positive stimuli. Specific types of techniques may work better to heighten sensitivity to different forms of positive stimuli—for example, *concentrating one's gaze* to boost the impact of visual stimuli, or *closing one's eyes* to intensify pleasing physical sensations, both being instances of sensory-perceptual sharpening (Bryant and Veroff, 2007).

Measuring Meta-Awareness of Positive Feelings

An important future goal—and perhaps the most difficult—is to develop valid real-time methods of measuring the meta-awareness of positive feelings that is a necessary precondition for the process of savoring. Indeed, Bryant and Veroff (2007) argued that it is "necessary for one to be aware of one's own enjoyment, or else there can be no savoring by our definition of the term" (p. 71).

As Smith and Bryant (2017) emphasized:

> Research on savoring has sometimes relied on recalled enjoyment or time spent in pleasurable activity as a measure of active savoring, without directly assessing the meta-awareness of positive experience that lies at the heart of savoring. In the moment, however, people may be unaware of the enjoyment they later recall; or they may slow down simply to rest or relax, rather than to savor. Theorists and researchers should keep in mind that neither retrospective enjoyment nor momentary lingering directly captures the conscious awareness of ongoing positive feelings that is the quintessence of savoring. (p. 152).

Whereas researchers can readily measure behavioral and physiological components of savoring in a variety of ways,

the meta-experiential component is far more challenging to assess. At present, the only well-established method we have to measure people's internal experiences of awareness, cognition, and emotion is through retrospective self-reports obtained via open-ended qualitative questions or closed-ended rating scales or checklists. Yet, asking people to report their inner experience creates introspection and awareness that may change internal processes (Kassam and Mendes, 2013). Although researchers can ask participants to vocalize thoughts and feelings in real time, and use process-tracing methods such as verbal protocol analysis to study the content, order, intensity, and duration of these verbal expressions (Ericsson and Simon, 1993), such procedures are reactive and may well change the phenomena under study. Ultimately, EEG techniques may provide the definitive method of assessing meta-awareness.

Regulating Attentional Focus While Savoring

In describing the focus of attention when one is savoring, Bryant and Veroff (2007) differentiated two general perceptual orientations in terms of whether the dominant attentional focus is outside (i.e., *world*-focused) or inside (i.e., *self*-focused) oneself. Both world- and self-focused attention can co-occur during the same savoring experience. As Bryant and Veroff (2007) noted: "Savoring processes involve noticing and attending to something positive, interpreting and responding cognitively or behaviorally to this stimulus (with savoring responses or strategies), experiencing positive emotional reactions as a consequence, attending to these positive feelings in an appreciative way, and often repeating this sequence of operations iteratively over time in a dynamic transactional cycle" (pp. 13-14).

Garland (2021) has adopted this idea in a "mindful savoring" exercise to help chronic drug users restructure reward processing from dependence on drug-related rewards to reliance on natural rewards, by teaching them to attend to the pleasing color, texture, scent, and feel of a rose, while also perceiving their reactions to the flower. When they become aware of good feelings, patients turn attention inward and focus on their internal experience and any affective associations that arise until these sensations fade, at which point they shift attention outward to appreciate the flower again. "Hypothetically, this toggling of exteroceptive and interoceptive attention on pleasant perceptions, sensations, cognitions, and emotions may overcome [habituation]. . .to intensify and prolong the pleasant experience" (Garland, 2021, p. 171).

On the other hand, there is also evidence that excessive self-monitoring can inhibit enjoyment. For example, people instructed to provide real-time evaluations of how happy they are while listening to music report less enjoyment than participants who simply listen to the music (Schooler et al., 2003). Thus, too much attention to good feelings, as opposed to just experiencing these feelings, may short-circuit savoring and disrupt enjoyment. As Ford (2019) observed, "paying close attention to one's positive feelings may have an unfortunate side effect of attenuating those feelings" (p. 20).

The question naturally arises: At what point or in what contexts is savoring ineffective or counterproductive? Note that savoring requires one not only to *feel* good, but also to *reflect on* one's good feelings. When reflecting on their good feelings, however, people may have insufficient attentional resources both to experience their affect and to evaluate it at the same time. As a result, anything that causes one to perseverate in making self-evaluations of positive feelings—e.g., inordinately valuing happiness (Mauss et al., 2011; Zerwas and Ford, 2021)—may make it harder for one to be aware of the affective experience itself. The more people wonder how happy they are or compare their feelings to what they wanted or expected to feel, the less happy they will be. As John Stuart Mill noted in 1873, "Ask yourself whether you are happy, and you cease to be so" (Mill, 1873, p. 100).

Regulating attentional focus while savoring is a complex mental task. Because the human capacity for conscious information processing is limited, external and internal attention are competing mental states—people can typically focus on either external or internal information alone one at a time and not simultaneously, although they can switch their attention quickly between external and internal foci (Benedek, 2018). Future research is needed to explore the naturally occurring dynamics of attentional focus during savoring experiences, as well as the determinants of shifts in outward- versus inward-directed attention.

Neuroimaging methods are likely to be crucial in this work, given substantial evidence that increased alpha activity, particularly in the right parietal cortex, is associated with internally directed attention (Cooper et al., 2003; Benedek et al., 2011). In addition, fMRI findings suggest that being strongly *externally* aware activates lateral fronto-parietal areas, whereas being strongly *internally* aware activates medial brain areas (Vanhaudenhuyse et al., 2011).

Future work might study structured savoring experiences to pinpoint reliable neuro-indicators of attentional shifts from positive stimuli (visual, auditory, olfactory, gustatory, haptic, or cognitive) to internal feelings. Researchers could randomly manipulate how long individuals are instructed to attend to: (a) positive stimuli before shifting attention to positive emotional responses, and (b) positive feelings before redirecting attention back to the initial positive stimulus. Other participants might simply be exposed to positive stimuli with no instructions about attentional focus, to assess naturally occurring experience as a standard of comparison.

Moreover, neuro-researchers could also test hypotheses about associations between neurological measures of attentional switching and hedonic LPP spikes. Including retrospective self-report measures in this work would enable hypothesis testing about links between different patterns of attentional switching and experienced positive affect in response to savoring.

Understanding How Savoring Skills and Deficits Develop

Another major challenge for future work is to broaden our understanding of the processes through which children acquire skills or deficits in savoring (see Bryant et al., 2011). Traditional developmental models (e.g., Kopp, 1989; Calkins, 1994) presume the ability to regulate emotion is a process

that begins during infancy and continues to develop through early childhood and adolescence, involving a combination of the *child's* temperament and neuroregulatory systems, and the primary *caregiver's* interactive style. Regarding the capacity for meta-awareness of emotion, psychoanalytic theory highlights the crucial development of "mentalized affectivity" in enabling individuals to identify, process, and express feelings, as well as to create new meaning by reflecting on affective experience (Jurist, 2005). Contemporary models of the acquisition of regulatory skills in early childhood also emphasize the pivotal role of parent-child attachment (Brumariu, 2015), parental socialization, observational learning, social referencing, and expressive language (Cole et al., 2010), as well as family emotion expressiveness and marital quality (Morris et al., 2007).

Supporting the importance of parental modeling in fostering positive emotion regulation, longitudinal research has prospectively linked *parents*' styles of savoring to savoring styles in both *children* (Moran et al., 2019) and *adolescents* (Fredrick et al., 2019). Related work has shown that levels of *parental* savoring in response to adolescents' positive affect predict levels of *adolescent* savoring with respect to both amplifying (Nelis et al., 2019) and dampening (Raval et al., 2019). Other research with adults has linked avoidant-attachment to lower amplifying and greater dampening of positive affect in response to positive events (Goodall, 2015). Providing further insights, ecological momentary assessments reveal that when their children are present, mothers high in avoidance report lower positive emotion than mothers low in avoidance (Kerr et al., 2019). Extending this work, Palmer and Gentzler (2018) have provided experimental evidence that avoidant-attachment predicts lower savoring of interpersonal events, but is unrelated to savoring of non-interpersonal events.

Considered together, this body of evidence suggests that parents transmit styles of savoring to their children in the process of child rearing. More extensive longitudinal research is needed to identify the exact mechanisms through which modeling, parent-child attachment, and family dynamics shape specific savoring skills or deficits among children. To promote positive parenting, future work might develop interventions to raise parents' awareness of the importance of savoring skills and teach them how to instill adaptive savoring in their children.

Clarifying the Relationship Between Psychopathology and Impairments in Savoring

Dysregulation of positive emotions is important to understand because it not only deprives people of the benefits associated with positive emotions (du Pont et al., 2016), but also is related to various forms of psychopathology. Work on transdiagnostic clinical processes (e.g., Hechtman et al., 2013; Dalgleish et al., 2020) suggests that disruptions in positive emotion regulation generalize across a variety of diagnoses, although the specific ways these disturbances manifest themselves differ across disorders (Kring, 2008). For instance, problems in *up-regulating* positive emotions are a defining characteristic of depression (Carl et al., 2013); and difficulties in *down-regulating* positive feelings are a distinguishing feature of bipolar disorder (Gruber, 2011).

There appears to be a reciprocal relationship between savoring and psychopathology. On the one hand, savoring deficits, and the characteristic patterns of amplifying and dampening they involve, may influence the development of psychopathology. For instance, research indicates that stronger dampening of positive affect predicts increases in symptoms of depression (Raes et al., 2012; Raval et al., 2019); and interventions designed to help people up-regulate their positive emotions decrease depression (Taylor et al., 2017). Indeed, savoring-based approaches to treating depression may inform the development of transdiagnostic therapies (Silton et al., 2020).

On the other hand, psychopathology may also shape savoring. For example, the use of some savoring strategies may stem from *positive urgency*, a trait first identified by Cyders et al. (2007) that involves the dysfunctional tendency to engage in impulsive, risky behavior in response to positive emotions. Along these lines, positive urgency may increase the use of behavioral expression (i.e., expressing inner positive feelings through outward physical behaviors) as a generalized style of mood enhancement, which is predictive of problems with alcohol and gambling (Cyders et al., 2007).

Savoring capacities may also serve as a protective factor for people who have difficulties regulating negative emotion. Supporting this notion, there is evidence that the ability to savor buffers the relationship between poor coping skills and higher symptoms of anxiety (Chiu et al., 2020). For example, the ability to savor the moment may facilitate attentional disengagement from negative stimuli by increasing awareness of the positive aspects of an event, thereby augmenting the regulation of negative emotions (Chiu et al., 2020). Likewise, anticipating future positive events and savoring past positive memories may also strengthen efforts to cope, by engendering hope and optimism in the face of adversity and providing perspective and self-insight in relation to present problems.

Several formidable challenges await future work on savoring in relation to the etiology and maintenance of psychopathology. In particular, theorists and researchers face the daunting tasks of unraveling the complex processes through which (a) deficits in savoring contribute to the development and persistence of psychopathology and (b) psychological disorder impairs savoring. Applied clinical research is also needed to develop effective interventions to prevent or overcome savoring deficits, in order to enhance life quality for children, adolescents, and adults.

Identifying New Situational Variables That Facilitate Savoring

We still have much to learn about how to increase people's capacity to savor positive experiences. As Gregory et al. (2021) noted, "surprisingly little is known about what enhances savoring in the moment" (p. 1). Research suggests momentary savoring is heightened by mindfulness (Cheung and Ng, 2020), novelty (Mitas and Bastiaansen, 2018), awareness of temporal scarcity (Kurtz, 2008), and perceptions of uncertainty (Gregory et al., 2021), but diminished by impatience (House et al., 2014), perfectionism (Smith and Bryant, 2012), reminders of wealth

(Quoidbach et al., 2010b), and a sense of experiential abundance (Quoidbach et al., 2015a).

Future theory and research are needed to expand our understanding of the conditions that increase or decrease not only savoring in the moment, but also savoring through anticipation and reminiscence. Although one might assume factors that make time appear more fleeting would enhance savoring by promoting a sense of temporal scarcity, such effects are not necessarily as straightforward as they seem. For example, mortality salience may either make one more attuned to emotionally pleasant stimuli (DeWall and Baumeister, 2007) or produce a numbing effect on emotional reactions to positive stimuli (Goode and Iwasa-Madge, 2019). Likewise, focusing on the imminent ending of a positive life experience may either increase enjoyment and appreciation of the time one has left (Kurtz, 2008) or produce greater sadness and worrying through anticipatory nostalgia (Batcho and Shikh, 2016). A vast and complex unknown awaits future investigation with respect to situational facilitators of savoring.

Further complicating matters, although novelty and uncertainty can enhance enjoyment, people tend to underestimate the pleasures of repeating positive experiences they have enjoyed before (O'Brien, 2019). In particular, we are prone to neglect pleasurable situational nuances that we can discover only through continued exposure. Indeed, people will pay costs to avoid repeating positive experiences in order to maximize their enjoyment, when in some contexts repetition would be equally or more enjoyable (O'Brien, 2019). I hypothesize that those who are more skilled at savoring are better able to seek out, find, and appreciate the unforeseen pleasures that await discovery in repeating familiar positive experiences.

Integrating the Study of Anticipation, Savoring the Moment, and Reminiscence

Another challenging area for future research involves studying all three temporal forms of savoring simultaneously within individuals in everyday life. Evidence suggests the balance between episodic recall of positive experiences and positive anticipation promotes wisdom and a sense of purpose and direction in life (Webster, 2016). Very little work has tested integrative hypotheses about how the ways in which people look forward to upcoming positive life events influence their savoring and enjoyment of these events when they occur, and how the ways in which people anticipate and savor the moment shape their reminiscing about these events afterward. Yet, this "temporal cycle" of savoring is an ongoing process throughout our lives and sometimes occurs for more than one positive event at a time in the course of a single day.

Concerning the rich interplay between future-, present-, and past-focused savoring, anticipating an upcoming consumption experience can heighten enjoyment not only as it unfolds in real time, but also when it is recalled afterward (Chun et al., 2017). Likewise, the commonly used savoring strategy of memory building can both heighten enjoyment of a positive event in the present, as well as facilitate later reminiscence (Bryant and Veroff, 2007).

Adding further temporal complexity, "people can enhance current joy by looking forward to looking back on the present (*anticipated recall*) or looking back on having looked forward to the present (*recalled anticipation*)" (Bryant and Veroff, 2007, p. 174). Moreover, looking forward to future reminiscence may also intensify the joy of anticipation, just as looking back on past anticipation may intensify the joy of reminiscence. A great, untapped challenge is to learn how to help people harness this complex interplay of mental time-travel in savoring.

To reframe de La Rochefoucauld's (1694) perceptive insight, the essence of happiness is not the good things in our lives, but rather the relish we get from savoring these good things. Perhaps the most important lesson that positive psychology can teach people is to become more aware of how to manage positive experience more effectively in their lives and to prioritize and set time aside for the practice of savoring. For as Robert Louis Stevenson (1881) aptly observed, "There is no duty we so much underrate as the duty to be happy" (p. 122). It is my fondest hope that theory and research on savoring will continue to flourish in the years ahead.

AUTHOR CONTRIBUTIONS

The author confirms being the sole contributor of this work and has approved it for publication.

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Don't Miss the Well-Being Train: A Radical Proposal for Revolution in Positive Psychology

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INTRODUCTION

Positive psychologists have added a great deal of knowledge about positive mental states and behaviors, especially over the last 20 years. As evidence is produced in support of the connections between positive psychological constructs, the model of mental flourishing is slowly being filled in. But, just like the broader well-being research and policy community (Lee et al., 2021), the discipline remains divided about how to conceptualize and measure well-being (Hone et al., 2014; Ackerman et al., 2018). This lack of unity makes it difficult to establish how measures of positive mental functioning connect with the bigger picture of the good life for the one living it, and deter its use in broader research and policy agendas. For example, the influential World Happiness Report 2020 (Helliwell et al., 2020) is edited by only economists and contains the phrase Positive Psychology just once.

As more and more governments prioritize well-being, knowing how to measure well-being has never been more important. Unless positive psychologists can quickly converge on a view about what well-being is, how positive psychological constructs connect to well-being, and the best practices for measuring these, they may not have the influence they deserve on the policymaking agenda. Instead, economists, demographers, statisticians, and the status quo will have the most influence on which measures become entrenched as the ways to conceptualize and measure well-being. This has certainly been the case in Aotearoa New Zealand. The input into and commentary on the Living Standards Framework (the fundamental well-being policy framework for the nation) has overwhelmingly been from economists, then statisticians, with very minor roles played by demographers, philosophers, and positive psychologists.

For Positive Psychology to help model well-being and steer public policies in a positive direction, urgent interdisciplinary work is needed. Modeling and measuring well-being require the proper conceptualization of the concept in the first instance. I propose that positive psychologists work with philosophers and other social scientists to achieve this conceptual clarity. The next step is to establish the criteria for a good measure of well-being, with extra criteria for various use-cases, especially policymaking. Again, this should be an interdisciplinary endeavor. Finally, interdisciplinary teams should evaluate proposed measures of well-being.

A major concern for Positive Psychology in achieving all of this is the potential reluctance of established figures to allow progress away from the extant psychological scales and models of well-being. To combat this, I propose a highly unorthodox method that would take advantage of the wealth of knowledge established figures have, while passing the gatekeeper role to the next generation of researchers—a reverse shark tank.

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REVOLUTIONARY CHANGE

As Kuhn (1962) noted, scientific progress is usually incremental and bound within its dominant paradigm. For Positive Psychology, that might mean validating Diener's Satisfaction with Life Scale (Diener et al., 1985) in a new culture or devising a set of items that more accurately measures positive affect. More productive periods of scientific progress, according to Kuhn (1962), tend to follow from paradigm shifts—big changes in underlying models or dominant methods. Positive Psychology's current paradigm appears to be focussed on conceptualization, generation, and validation, resulting in the proliferation of models and partial models of human well-being (see e.g., Lee et al., 2021). A unification and rationalization period (similar to what happened in personality research and resulted in the "Big Five"; John and Srivastava, 1999) is the obvious next step. We need a paradigm shift in Positive Psychology to consolidate the decades of successful research into a unified model or set of models (for various purposes). Importantly, methodological issues, including dealing with cultural differences and ordinal scales also need to be addressed in this process, with clear and agreed upon guidelines for minimum viable and best practice.

Such a paradigm shift will not be easy to achieve, but it could be hugely important. If Positive Psychology can unify around a model of well-being and work out which scales best integrate with it, cross-fertilization of research programmes should be easier. Furthermore, other disciplines and policymakers are more likely to consider elements of Positive Psychology settled enough to inform their work. Assuming the work to unify around a particular model of well-being is deeply informed by interdisciplinary researchers and policymakers, those other groups are also much more likely to use the insights of Positive Psychology to guide their work.

GATE-KEEPING IN POSITIVE PSYCHOLOGY AND BEYOND

As I mentioned, this paradigm shift will not be easy. An under-discussed but potentially important obstacle to Positive Psychology achieving this radical change is the possible reluctance of established figures to allow progress away from the scales and models they have created.

On the pragmatic side, the established scales have already been extensively validated and the dominant models extensively used. We already know how the scales operate in various cultures and what other variables of interest they tend to predict. We also have benchmarks of the dominant models to compare new results against. I know from discussions with tight-budgeted national statisticians that the pragmatic draw of established measures and models is very strong. But this pragmatic issue might not be the only barrier for a new unified model of well-being to overcome.

Kuhn (1962) identified established academics as a major obstacle to scientific paradigm shifts. The senior professoriate of Positive Psychology are scientific gatekeepers in many ways and the decisions they make can be affected by subconscious biases. Senior positive psychologists hold great editorial power over publication decisions, but can be biased against unfamiliar or novel models and methods due to confirmation bias (Greenwald et al., 1986; Solomon, 2001; Jelicic and Merckelbach, 2002), perhaps driven by availability and overconfidence bias (Dunning, 2005; Rollwage et al., 2020). And since confirmation bias is directed at ideas, rather than people, even triple-blind review processes cannot protect from it. Consider a senior editor at a Positive Psychology journal receiving a manuscript that uses a methodology they are unfamiliar with; feeling uncertain about the quality of the methodology, they may send it to a reviewer that they know has very high standards. While well-meaning, decisions like these may raise the bar for novel and potentially revolutionary research to be published. The editor and reviewer may well share similar views about which topics and methods are important. As discussed by Lee et al. (2013), when the reviewer submits their own paper to the editor's journal, the editor might send the paper to reviewers with lower standards as a way to thank he reviewer for their service, thereby potentially lowering the bar for authors that are more likely to shared views with the editor. Senior positive psychologists also attract and direct most of the grant funding. While, I assume, the vast majority of people in these roles try to be impartial, Lacey (1999, p. 6) has argued that they cannot help but be swayed by the topics they are interested in, the methods they are familiar with, and perhaps even "expedient alliances" with other senior researchers. These biases provide several reasons for why powerful academics might make decisions that help ensure that their scales and their models continue to be the focus of any attempt to unify Positive Psychology. It is difficult to gauge, with any precision, the extent to which these biases are affecting the progress in Positive Psychology specifically. Nevertheless, the wealth of evidence supporting the existence of biases that can affect the progression of science, gives us reason to take Kuhn's (1962) warnings seriously. But how should Positive Psychology deal with this barrier to fruitful unification?

Kuhn (1962), again, is instructive. The greatest enemy to senior academics is time. Fatigue, ill-health, and occasionally other interests or demands lead senior academics to retire and relinquish their roles as gate-keepers. We (with regret[1]) currently find ourselves in a period of incremental leadership change. The original pioneers of Positive Psychology are, one way or another, passing the gate-keeper roles onto successors. The successors, of course, are also mainly hand-picked very well-known positive psychologists that studied or worked with the outgoing leaders. None of this is sinister. Rather, it is sociologically and psychologically natural, and certainly expected. The main issue for Positive Psychology is that its relevance to the overall well-being research and policy discussions needs to be demonstrated soon if Positive Psychology is to be meaningfully involved. It would be a huge risk to wait for incremental leadership change that may only result in superficial incremental change, rather than fundamental scale and model consolidation. So, what should be done?

[1]Please understand that I am not trying to say anything negative about any particular individuals. In particular, I mean no disrespect to recently retired or especially recently deceased colleagues.

Naturally, major funding is required. Previous major funding has been directed at the goal of scale and model unification. A few major projects have fruitfully brought together Positive Psychologists and others to—among other goals—debate how to conceptualize and measure well-being. A good example of a general project is Haybron's Happiness and Well-Being project (https://www.happinessandwellbeing.org/). A good attempt at reaching interdisciplinary consensus on conceptualizing and measuring well-being is reported on in Lee et al. (2021). Lee et al.'s contribution includes a sustained debate between groups of experts about the merits of different approaches to measuring well-being. No consensus was reached in the end, but the process and the arguments involved are instructive for all well-being researchers. Presumably the gate-keeper effect of the senior well-being researchers involved had some influence on how the discussion evolved, and possibly decreased the chances that consensus could be reached. So, it seems that major funding is not enough by itself. But what else is required? In particular, if the entrenched views and power of senior Positive Psychologists is a barrier to paradigm-shifting scale and model consolidation, how can we overcome this?

REVERSE SHARK TANK

The wisdom of Positive Psychology's current leaders can be harnessed in a way that promotes paradigm-shifting scale and model consolidation, but it will not be easy and it may require a highly unorthodox approach.

In the popular television show, Shark Tank, contestants pitch their business ideas to established angel investors—gatekeepers of the business world—with successful pitches resulting in funding offers. The way most funding opportunities work in Positive Psychology is similar—senior positive psychologists act as gate-keepers, often advising on or deciding which grant applications are funded. Some problems with this approach, including how it favors established approaches and incremental scientific progress, were discussed above. But what if the process were reversed?

Imagine a process that had funders and an interdisciplinary team of early/mid-career researchers as the reviewers and deciders. In this "reverse shark tank," interdisciplinary teams, including many led by senior researchers, would pitch their ideas for unifying scales and models of well-being to gatekeepers that have fewer reasons to resist revolutionary paradigm-shifting change in Positive Psychology. The relatively young gatekeepers in the reverse shark tank would be much less likely to be deeply attached to existing scales and models because they are less likely to be the authors of them or have staked their careers on them. For the same reason, the new gatekeepers would be more likely to support the ongoing research programme based on the process. They would also have much of their research careers left to do so. In this way, the reverse shark tank process harnesses the great wealth of expertise held by the current leaders of Positive Psychology, while reducing the psychological and sociological impediments to revolutionary change that appear to have been holding Positive Psychology back from having a greater influence in wider well-being related research and policy.

Ideally, the pitting of leaders against other leaders would encourage meaningful cooperation and compromise between leaders with different approaches and leaders from different disciplines as they strive to make the most compelling pitches. Clearly stating the goal of the reverse shark tank process as revolutionary change to create best practice scales and a unified model of well-being should also deter incremental business-as-usual proposals and promote genuinely novel approaches.

CONCLUSION

Nothing I've said here is meant blame senior academics for what are merely common sociological and psychological forces. Nor have I meant to belittle or ignore the various projects that have attempted and in various ways succeeded in making progress in scale and model development, or in influencing public policy (I certainly cannot mention them all here, but a good recent example would include the various projects running out the Centre for Positive Psychology in Melbourne, such as the well-being literacy project; Oades, 2017). Rather, I hope this will be seen as a call for Positive Psychology and its friends to redouble efforts to make our research more robust and useful for practical purposes. This hope is based on my views that Positive Psychology has so much to offer everyone and that it would be a shame if that opportunity was not pursued to its fullest extent. And while I know my Kuhn-inspired sociological reflections and reverse shark tank idea were brief and possibly idealistic, I hope they can encourage Positive Psychology to flourish in this way.

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BRIEF RESEARCH REPORT
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The Role of Passion in Psychological and Cardiovascular Responses: Extending the Field of Passion and Positive Psychology in New Directions

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The present study fills a void in research on passion by examining for the first time the role of passion in physiological responses. The aim of the study was to investigate the role of passion, and the mediating role of cognitive appraisals, in the psychological and physiological responses to a stressful situation related to one's passion. Students (43 women, 12 men, *M* age = 27.21 years), who were passionate for their studies, completed the Passion Scale for their studies and the Cognitive Appraisal Scale (assessing perceptions of challenge/threat). Then, they engaged in an education task under stressful conditions, and a subsequent unrelated leisure task under no-stress. Physiological reactivity was measured throughout the entire session and their perceptions of situational vitality and positive and negative emotions were assessed directly after the education task. Results showed that harmonious passion (HP) positively predicted challenge appraisals that, in turn, were positively related to positive emotions, vitality, and positive cardiovascular adaptation while engaging in the stressful education task, but less so with the leisure task (unrelated to one's passion for academia). On the other hand, obsessive passion (OP) positively predicted threat appraisals. In turn, threat appraisals were positively related to negative emotions, negatively associated with vitality, and not related to cardiovascular reactivity. The present findings suggest that HP creates the onset of an adaptive psychological and physiological response whereas the response is less adaptive with OP.

Keywords: passion, challenge and threat appraisals, physiological responses, Biopac, cardiovascular reactivity

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INTRODUCTION

The last 20 years or so has seen an explosion of research in positive psychology (Seligman and Csikszentmihalyi, 2000), or the study of the factors that make life more fulfilling. One such factor is the concept of passion. Passion is defined as a strong inclination toward an activity that people like (or even love), find important, in which they invest time and energy, and that is part of identity (Vallerand, 2015). Indeed passion can fuel motivation, enhance wellbeing, and provide meaning in everyday life. However, passion can also arouse negative emotions, lead to inflexible

persistence, and interfere with achieving a balanced, successful life. This is the duality of passion (Vallerand, 2015).

Vallerand et al. (2003) opened up the scientific field of passion when they published their article on the Dualistic model of passion (DMP) and a series of studies supporting it. Since then, hundreds of studies have been conducted and have supported the DMP. This model posits the existence of two types of passion: harmonious and obsessive. Harmonious passion (HP) originates from an autonomous internalization of the activity in identity and leads people to choose to engage in the activity that they love. It mainly leads to adaptive processes such as flow (i.e., a complete absorption of oneself in what one's doing; Csikszentmihalyi, 1988), mastery goals (i.e., personal improvement goals; Elliot and Church, 1997), and task coping (i.e., problem-focused strategies altering a situation; Lazarus and Folkman, 1984). It also leads to adaptive outcomes such as positive emotions, subjective vitality, and wellbeing (for reviews, see Curran et al., 2015; Vallerand, 2015; Vallerand and Houlfort, 2019; Pollack et al., 2020). Conversely, obsessive passion (OP) originates from a controlled internalization in identity and leads people to experience an uncontrollable urge to engage in the activity that they love. It predicts less adaptive processes (Vallerand, 2015) such as avoidance goals (i.e., avoiding being worse than others; Elliot and Church, 1997), avoidance coping (i.e., behavioral and psychological withdrawal from a situation; Kowalski and Crocker, 2001), ego-involvement (e.g., self-esteem as contingent on one's performance; Mageau et al., 2011), and less adaptive outcomes such as negative emotions and lower wellbeing (Vallerand, 2015).

Of particular interest for this study, research reveals that HP is positively related to challenge appraisals, while OP is positively associated with threat appraisals (e.g., Schellenberg et al., 2013; Schellenberg and Bailis, 2016; Lavoie et al., 2021). Challenge and threat appraisals are considered as two different constructs on two different continua (i.e., low to high challenge and low to high threat; Seery, 2013). According to the Transactional Model of Stress (Lazarus and Folkman, 1984), challenge appraisals occur when perceived coping resources match or exceed the perceived situational demands (Seery, 2011). The situation is then seen as an opportunity for gain or growth (Lazarus and Folkman, 1987). Challenge appraisals are positively related to positive emotions (e.g., Skinner and Brewer, 2002; Lavoie et al., 2021), vitality (i.e., feeling energized; Ryan and Frederick, 1997; Brown et al., 2017), and adaptive physiological responses (Tomaka et al., 1993) such as increases in cardiac output (CO; i.e., volume of blood in liters expelled from the heart per minute; Frings et al., 2012) and decreases in total peripheral resistance (TPR; i.e., the resistance to blood flow from all the circulatory system; Larkin and Cavanagh, 2016). On the other hand, threat appraisals occur when evaluated demands *exceed* one's perceived coping resources (Seery, 2011). The individual then anticipates losses, and little or no gain (Lazarus and Folkman, 1987). Threat appraisals are positively related to negative emotions (e.g., Skinner and Brewer, 2002; Lavoie et al., 2021), negatively related to vitality (Brown et al., 2017), and they are associated with little change or minor decreases in CO, and little change or small increases in TPR (Tomaka et al., 1993). It is to be noted that task engagement no matter the type of cognitive appraisals, is associated with increases from baseline in heart rate (HR; i.e., the number of heart beats per minute; Seery, 2011).

Research on passion, just like the field of positive psychology, has generally focused on self-report measures. Although passion research has also used objective measures of performance and informant reports of other people's wellbeing (e.g., Vallerand et al., 2007, 2008; Carbonneau and Vallerand, 2016), no research so far has looked at the role of passion in physiological responses. Looking at such responses would represent an important new direction for passion research that would bolster current findings and open up a window into new unchartered territories such as cardiovascular health. Research in positive psychology has recently started to look at physiological measures. For instance, research has started to look at the link between positive psychology variables such as gratitude (Enko et al., 2021) and emotions (Kaczmarek et al., 2021) and cardiovascular responses. Such efforts in positive psychology are important. However, the above studies did not include passion. Such research must be pursued in order to further extend the field of passion and positive psychology.

In line with the above, the goal of the present study was to extend past research on the role of HP and OP in self-reports of challenge/threat appraisals, positive and negative emotions, and subjective wellbeing by also assessing physiological measures such as cardiovascular reactivity (Blascovich, 2013). Further, we assessed these physiological measures both while participants engaged in a task related to their passion for academia (an education task) and in a control task (a novel leisure task). In line with past research (e.g., Lavoie et al., 2021) and the DMP (Vallerand, 2010, 2015), an integrated model was tested in which it was hypothesized that HP should foster adaptive cognitive responses of challenge appraisals, while OP should be positively related to cognitive threat appraisals. In turn, challenge appraisals should positively predict positive emotions and subjective wellbeing. Furthermore, in line with previous research (Tomaka et al., 1993), only challenge appraisals should predict challenge (adaptive) cardiovascular responses while engaging in the education task (task related to participants' passion for academia), but less so with the leisure task (task unrelated to participants' passion for academia). On the other hand, threat appraisals were expected to be positively related to negative emotions, but negatively related to wellbeing.

METHODS

Participants and Procedures

Participants were 55 undergraduate students (43 women, 12 men, *M* age = 27.21 years, *SD* age = 6.81) recruited in a large French-Canadian university in Montreal. The sample size was based on recommended procedures of a minimum sample size of 5 five cases per free parameter in the model (Tabachnick and Fidell, 2001). Thus with 7 dependent variables, we needed at least 35 participants and we finally employed 55 participants. Participants received a $10 compensation for their participation. Upon their arrival, participants were informed of the general

purpose of the study and gave their informed consent. Next, they were connected to physiological recording sensors and monitors measuring cardiac impedance (i.e., a measure of blood flow in the thoracic cavity; Frings et al., 2012), cardiac electrical activity using the electrocardiogram with a standard lead II configuration, respiration rate (RR) (i.e., mean respiration per minute) using a respiration belt transducer place around the chest, and blood pressure (BP) recorded by the CNAP^{TM} monitor 500 (CNSystems Medizintechnik AG, Graz, Austria) using finger and arm cuffs. All physiological signals were acquired throughout the whole study using the Biopac MP160 physiological data acquisition system and the AcqKnowledge 5 software computed the physiological indexes. After the devices were in place, all participants were asked to complete a set of questionnaires and tasks in the following order: (a) engaging in a 5-min relaxation period (baseline), (b) demographic questions, (c) the Passion Scale, (d) the Challenge and Threat Appraisals Scale, (e) engaging in a timed education task, (f) the PANAS, (g) the Subjective Vitality Scale, and (h) engaging in a leisure task. Physiological reactions during the baseline and both tasks were used in our analyses (see below).

Measures and Tasks

For all scales, except the PANAS, a 7-point scale was used (1 = *do not agree at all* to 7 = *very strongly agree*). For the PANAS, a 5-point scale (1 = *very slightly or not at all*, 5 = *extremely*) was used. For each scale, a mean score was calculated.

Relaxation Period

Based on previous research (e.g., Frings et al., 2012; Brimmell et al., 2019), participants engaged in a 5-min relaxation (baseline) period. Participants were asked to use relaxation methods they knew or to take deep breaths.

Demographic Questions

Participants' age and gender were assessed.

Passion for University Studies

The Passion Scale (Vallerand et al., 2003; Marsh et al., 2013) consists of two 6-item subscales assessing OP (e.g., "I have difficulties controlling my urge to do my studies"; $\alpha = 0.69$), and HP (e.g., "My studies are well integrated in my life"; $\alpha = 0.81$).

Challenge and Threat Appraisals

The Cognitive Appraisals Scale (Skinner and Brewer, 2002; Berjot and Girault-Lidvan, 2009) includes two subscales measuring challenge appraisals (7-item subscale; e.g., "A challenging situation motivates me to increase my efforts," $\alpha = 0.64$), and threat appraisals (11-item subscale; e.g., "I lack self-confidence," $\alpha = 0.94$). Participants indicated how they feel "in general" because we wanted to examine the effects of cognitive appraisals on both the education and the leisure tasks.

Education Task

The education task was presented as an "excellent predictor of academic ability." It consisted of five series of figures with one missing pattern (e.g., Raven's matrices; Raven et al., 1998). Participants had to find which image correctly completed each series of illustrations in less than 45 s. The task was presented so as to induce stress in two ways. First, it was presented as a "predictor" of participants' academic ability. Second, performance was timed to create a pressurized educational environment (for research on time constraints and stress, see Maule and Hockey, 1993) similar to a university exam setting. Participants were told that their performance would be calculated with reference to everyone else who has completed this task and that it would be based on the correctness of their answers and time taken to complete each matrix. Thus, it was impossible for them to guess if they had performed well or not on the task.

Positive and Negative Affect

The French version of the short Positive and Negative Affect Scale (PANAS; Watson et al., 1988; Gillet et al., 2013) includes two 5-item subscales assessing positive (e.g., "I feel interested"; $\alpha = 0.62$) and negative emotions (e.g., "I feel upset"; $\alpha = 0.69$). Participants indicated how they felt "at this very moment" following the education task.

Situational Subjective Vitality

A 5-item version of the Subjective Vitality Questionnaire (Ryan and Frederick, 1997) was used to assess participants' situational subjective vitality after completing the education task (e.g., "I feel alive and vital."; $\alpha = 0.89$).

Leisure Task

The leisure task was clearly presented as an activity unrelated to participants' studies. Participants were instructed that the task was similar to some they may engage in their "hobbies" and that "people do for fun." Participants were presented with two words and they had to figure out which word was connected with both of them. Participants were asked to solve 10 such riddles.

Challenge / Threat Physiological Indices

Each physiological response such as heart rate, stroke volume (i.e., the volume of blood expelled by the heart per beat; Frings et al., 2012), and BP were scored as follows. For the baseline period (i.e., 5-min relaxation), only the data collected during the last 2 min were considered to calculate the mean scores of each physiological response (Frings et al., 2012). For the education and leisure tasks, the data collected during the whole task were considered to calculate the mean scores (Frings et al., 2012). A single physiological index of challenge and threat for each period (baseline, education task, and leisure task) was calculated using indices derived from the physiological measures. The heart rate and the stroke volume were multiplied to calculate the cardiac output (CO). The total peripheral resistance (TPR) was calculated using this formula: (mean BP / CO) $\times$ 80 (Sherwood et al., 1990). Then, the challenge / threat index was calculated as follows (see Blascovich et al., 2004; Brimmell et al., 2019). First, TPR and CO were converted in z scores. Then, TPR z scores were reverse scored before being summed with CO z scores. Higher scores on this index indicated challenge.

RESULTS

Preliminary Analyses

There were no missing values in the data set. Box plots and Mahalanobis distances with a critical chi-square value at $p = 0.001$ revealed no univariate and multivariate outlier. Inspection of skewness indices showed that negative emotions were not distributed normally. Thus, we used a Log10 transformation to make data conformed more closely to the normal distribution ($|\text{skewness}| < 1$). Moreover, as shown by bivariate scatterplots and residual plots, all variables were related to each other in a linear manner. Variables also revealed no multicollinearity (VIF < 5). Means, standard deviations, and correlations between all variables are presented in **Table 1**. Moreover, to ensure that the education task created a pressurized environment as intended, we compared participants' respiration rates (RR; number of respiration per minute) during the baseline period (i.e., relaxation), the education task, and the leisure task. A higher RR level indicates a higher activation level as would be found during higher stress levels. An analysis of variance (ANOVA) with repeated measures uncovered that participants' RR was higher during the education task ($M = 18.26$) than during the baseline period ($M = 15.41$) and the leisure task ($M = 17.67$), Wilk's $\Lambda = 0.77$, $F_{(2,50)} = 7.68$, $p = 0.001$, $\eta p^2 = 0.235$. Similarly, participants' heart rates during these three periods were compared. A higher HR level indicates higher engagement. An ANOVA with repeated measures unveiled that participants' HR was higher during the education task ($M = 79.53$) than during the baseline period ($M = 77.64$) and the leisure task ($M = 78.23$), Wilk's $\Lambda = 0.78$, $F_{(2,52)} = 7.56$, $p = 0.001$, $\eta p^2 = 0.23$. There was no difference in RR and HR between the baseline period and the leisure task. Overall, these findings support the fact that participants experienced higher levels of stress and engagement during the education task than at other times during the session.

Main Analyses

The proposed model posited that HP for one's studies should be positively related to challenge appraisals and OP should be positively related to threat appraisals. In turn, the challenge cognitive appraisals should be positively related to the challenge/threat physiological indices, positive emotions, and situational subjective vitality. On the other hand, the threat cognitive appraisals should be positively related to negative emotions and negatively to situational subjective vitality. The model was composed of two exogenous variables (i.e., HP and OP) and seven endogenous variables (i.e., challenge and threat cognitive appraisals, challenge/threat physiological indices during the education and leisure tasks, positive and negative emotions, and situational subjective vitality). To test the hypothesized model, a path analysis was conducted using MPlus version 8.6 (Muthén and Muthén, 1998–2017). Paths from HP to challenge appraisals and from OP to threat appraisals were specified, followed by paths from challenge appraisals to the challenge / threat physiological indices during the education and leisure tasks, positive emotions, and subjective vitality. In addition, paths were drawn from threat appraisals to negative emotions and subjective vitality. Finally, covariances among the two exogenous variables and among the error terms were estimated.

Results indicated that the hypothesized model did not have an acceptable fit to the data. In line with recommended procedures (Kline, 2015), visual inspection were conducted and suggested adding a positive path from HP to subjective vitality. Such a path is in line with previous findings (e.g., Vallerand et al., 2007, 2008; Dubreuil et al., 2014). This modified model had good fit to the data (see Kline, 2015), $\chi^2 = 16.70$, $df = 15$, $p = 0.337$; RMSEA = 0.05 [0.00, 0.14], $p = 0.476$; CFI = 0.99; TLI = 0.97; SRMR = 0.06. The standardized solutions are presented in **Figure 1**. Results showed that HP was positively associated with challenge appraisals ($\beta = 0.28$, $p = 0.011$) whereas OP was positively related to threat appraisals ($\beta = 0.36$, $p = 0.002$). In turn, the challenge appraisals were positively related to positive emotions ($\beta = 0.34$, $p = 0.001$), subjective vitality ($\beta = 0.32$, $p = 0.002$), the challenge / threat physiological index during the education task ($\beta = 0.36$, $p = 0.026$), but not significantly with the challenge / threat physiological index during the leisure task ($\beta = 0.22$, $p = 0.162$). By contrast, the threat appraisals were positively associated with negative emotions ($\beta = 0.40$, $p = 0.001$) and negatively related to subjective vitality ($\beta = -0.21$, $p = 0.012$). Finally, there was a positive path from HP to subjective vitality ($\beta = 0.37$, $p = 0.001$).

Indirect effects (see **Table 2**) were significant or approaching significance, except in one case. All bias-corrected 95% bootstrapped confidence intervals, except one, did not include zero, which supports the meaningful effects of challenge and threat appraisals as mediators of the relationships between passion and the outcome variables.

In sum, the present findings confirmed the differential role of HP and OP in the way individuals appraised stressful situations related to their passion. Because HP led to challenge appraisals, it was associated with adaptive outcomes both at the psychological and physiological levels. On the other hand, through threat appraisals, OP led to less adaptive outcomes. These findings replicate past research on the role of passion in outcomes and extend the processes outlined by Lavoie et al. (2021) at the physiological level with cardiovascular responses.

DISCUSSION

Overall, the results of the present study lead to at least three major conclusions. First, these findings replicated past research on the role of HP and OP in leading, respectively, to positive and negative emotions (see Curran et al., 2015; Vallerand, 2015 for reviews). They also replicated the mediating role of challenge and threat appraisals, respectively, in the HP-positive emotions and OP-negative emotions relationships (Lavoie et al., 2021). Thus, the type of passion (HP or OP) does matter as pertains to emotions and determines the outlook that one holds in the situation (challenge vs. threat) and the type of emotions that ensue. Of additional interest, this analysis also applies to a measure of wellbeing, namely situational vitality. HP positively

TABLE 1 | Means, standard deviations, and correlations among the study variables.

	M (*SD*)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Harmonious passion (1)	5.18 (0.96)		0.12	0.29*	−0.04	0.32*	0.06	0.55*	−0.13	0.14
Obsessive passion (2)	3.04 (1.06)			0.08	0.35*	0.04	0.18	−0.03	−0.28†	0.20
Challenge appraisals (3)	5.02 (0.78)				−0.12	0.32*	0.03	0.43*	0.26†	0.28†
Threat appraisals (4)	3.94 (1.46)					−0.07	0.41*	−0.27*	0.05	0.13
Positive emotions (5)	3.13 (0.73)						−0.29*	0.63*	−0.24	−0.15
Negative emotions (6)	1.92 (0.74)							−0.15	0.20	0.35*
Subjective vitality (7)	4.48 (1.26)								0.04	0.12
Challenge/threat physiological index ET (8)	−0.10 (1.97)									0.70*
Challenge/threat physiological index LT (9)	−0.05 (1.91)									

ET, education task; LT, leisure task.
*$p < 0.05$.
†$p < 0.10$.

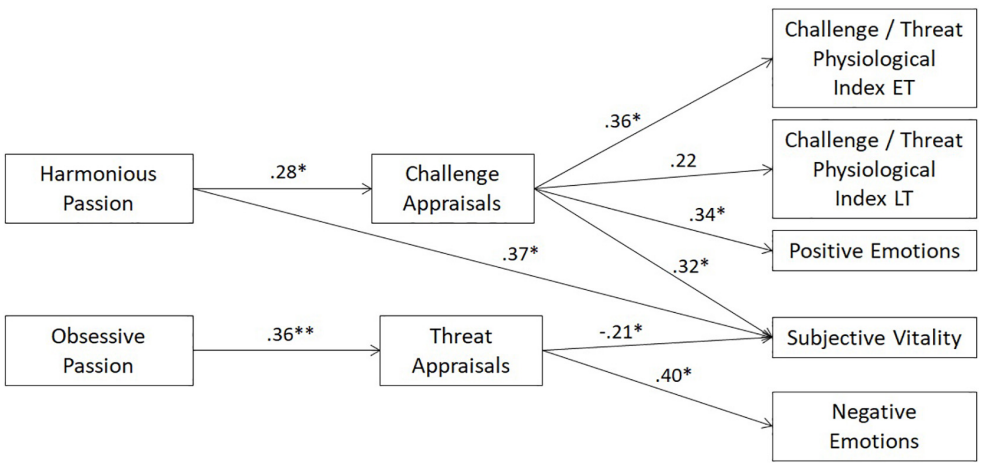

FIGURE 1 | Results of the Path Analysis. Standardized path coefficients are presented. For clarity concerns, covariances are not presented. $N = 55$. ET, education task; LT, leisure task. *$p < 0.05$ and **$p < 0.01$.

TABLE 2 | Bootstrap estimates of the indirect effects and their associated bias-corrected 95% confidence intervals.

Predictor	Mediator	Outcome	β	95% CI	*p*-values
HP	Challenge appraisals	Challenge/threat physiological index ET	0.10	[0.01, 0.28]	$p = 0.065$
HP	Challenge appraisals	Challenge/threat physiological index LT	0.06	[−0.01, 0.19]	$p = 0.186$
HP	Challenge appraisals	Positive emotions	0.10	[0.02, 0.24]	$p = 0.057$
HP	Challenge appraisals	Subjective vitality	0.09	[0.02, 0.22]	$p = 0.056$
OP	Threat appraisals	Subjective vitality	−0.08	[−0.17, −0.02]	$p = 0.058$
OP	Threat appraisals	Negative emotions	0.14	[0.04, 0.32]	$p = 0.035$

HP, harmonious passion; OP, obsessive passion; ET, education task; LT, leisure task.

predicted situational vitality, both directly and indirectly through challenge appraisals, while OP negatively predicted situational vitality through threat appraisals.

A second conclusion is that cognitive appraisals were found to also predict cardiovascular reactivity. Specifically, challenge appraisals led to adaptive cardiovascular indices whereas threat appraisals were not related to such physiological measures. In addition, the present findings suggest that HP creates the onset of adaptive psychological and physiological responses whereas the responses are less adaptive with OP. Furthermore, as hypothesized such effects seem to be stronger on the task related to participants' passion for academia (education task) than on the other task (leisure task). These are the *first* findings to show that passion (and especially HP) can influence physiological measures through its relationship with cognitive appraisals. Future research is needed to clarify the role of OP in physiological responses. Future research is also necessary to see if the physiological effects found in this study can be replicated in other achievement-oriented life domains such as work, sports, and music and the arts.

A final conclusion pertains to the field of positive psychology. Most studies in the field have relied on self-report measures (see Kim et al., 2018). Although such scales are useful, especially when valid and reliable, it nevertheless remains that the use of objective indicators is important to solidify a field that has largely relied on self-report measures. Some research in positive psychology has recently started to use physiological measures (e.g., Cousin et al., 2020). However, the present research is the first to show correspondence between passion and cardiovascular reactivity measures, thereby extending the field of passion and positive psychology in new and exciting directions. For instance, research has shown that using one's strengths at work leads to HP for work that in turn facilitates increased performance and psychological wellbeing (Dubreuil et al., 2014). Is it possible that using one's strengths opens up a path of challenge rather than threat, thereby facilitating adaptive cardiovascular responses as well? Future research along this path is clearly encouraged.

This research has some limitations. First, the sample size was limited and no control variables were used. Therefore, future research should be conducted with a higher number of participants and with covariates to identify more precisely the role of passion and cognitive appraisals in participants' psychological and physiological responses. Secondly, although the physiological measures suggested that the education task was more stressful than the leisure task, future research should counterbalance the two tasks. Finally, a different cognitive appraisals scale should be used in future research. Indeed, the cognitive appraisals scale used in this research has theoretical roots that diverge from the work of Lazarus (1991, 1999). As posited by Meijen et al. (2020), a cognitive appraisals scale could be developed in future research to better reflect the components of the Lazarus' model.

In sum, the present findings suggest that HP creates the onset of adaptive challenge-oriented psychological and physiological responses, which may indicate some resilience as shown by a positive adaptation following a stressful situation (Fletcher and Sarkar, 2013). On the other hand, OP is conducive to threat-oriented and less adaptive responses. Future research along those lines, where the psychological and physiological dimensions are weaved in together, should extend the field of positive psychology in exciting new directions.

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 Comité Institutionnel d'Éthique de la Recherche Avec des Êtres Humains de l'UQAM. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

RV wrote the Introduction and Discussion sections and worked on the conceptualization of the questionnaire and the final model. VP wrote parts of the Introduction and Discussion sections, also wrote the Methods and Results sections, collected some of the data, analyzed the data, and worked on the conceptualization of the questionnaire and the final model. CR collected and cleaned the data, worked on the conceptualization of the questionnaire, created the research protocol, and set up the physiological measures. All authors contributed to the article and approved the submitted version.

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Beyond the "Third Wave of Positive Psychology": Challenges and Opportunities for Future Research

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The positive psychology (PP) landscape is changing, and its initial identity is being challenged. Moving beyond the "third wave of PP," two roads for future research and practice in well-being studies are discerned: The first is the state of the art PP trajectory that will (for the near future) continue as a scientific (sub)discipline in/next to psychology (because of its popular brand name). The second trajectory (main focus of this manuscript) links to pointers described as part of the so-called third wave of PP, which will be argued as actually being the beginning of a new domain of inter- or transdisciplinary well-being studies in its own right. It has a broader scope than the state of the art in PP, but is more delineated than in planetary well-being studies. It is in particular suitable to understand the complex nature of bio-psycho-social-ecological well-being, and to promote health and wellness in times of enormous challenges and changes. A unique cohering focus for this post-disciplinary well-being research domain is proposed. In both trajectories, future research will have to increase cognizance of metatheoretical assumptions, develop more encompassing theories to bridge the conceptual fragmentation in the field, and implement methodological reforms, while keeping context and the interwovenness of the various levels of the scientific text in mind. Opportunities are indicated to contribute to the discourse on the identity and development of scientific knowledge in mainstream positive psychology and the evolving post-disciplinary domain of well-being studies.

Keywords: positive psychology, beyond "the third wave", post-disciplinarity, complex phenomena, metatheoretical assumptions, theory, methodological reform, harmony

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INTRODUCTION

The positive psychology (PP) landscape is broadening and changing in terms of assumptions, methods, and empirical focus. In this perspective manuscript, I will argue that the so-called "third wave of positive psychology" was actually the beginning of a new multi-, inter- or transdisciplinary domain of study focusing on well-being as multimodal with a focus on humans, but also beyond the individual and human social systems, and in particular suited to understand and promote health and well-being in complex situatedness. I use the construct "well-being" in this manuscript as an umbrella term for various facets of positive functioning and being denoting something "good"

taking situation and context into account. It will be indicated that there are, for purposes of this manuscript (at least) two main roads in well-being studies ahead, with some similar but also widely unique challenges and opportunities. The first is the accumulation of knowledge in the state-of-the-art PP as a scientific discipline in/next to psychology. The second is the development of a post-disciplinary trajectory for which the signs were noticed in the so-called third wave of PP ("post-disciplinary" refers in this manuscript to studies in which more than one discipline is involved, and includes multi-, inter- and transdisciplinary approaches; the latter three being increasingly integrative in focus and cooperation among contributors). It has yet to be established further to what extent this suggested post-disciplinary research domain dovetail, differ or overlap in focus and goals with some other trends studying well-being in broader contexts (e.g., the planetary health perspective, the science of effective well-doing, or the emerging science of virtues). It will be argued that future research in both trajectories will need to take the interwovenness of all the levels of the scientific text into account.

The changing face of PP can also be seen as a question about the identity and goal of PP as a scientific field, and how it will be changing further in research and practice. In the early days of PP, there was some speculation whether it reflects a paradigm shift in psychology or whether it is only a new movement in the field of psychology. With the flourishing of empirical research in PP, this more metatheoretical scientific question was not revisited until recently, while there was a rapid growth in empirical studies. Nowadays, it is still unclear whether PP is a separate domain of scientific study or whether it should be seen as a sub-discipline in (the disunity of) psychology or whether it should be integrated into all existing sub-divisions in psychology. All of these perspectives can be found in the PP literature. Findings on facets and dynamics of well-being are at present to be found within many branches of psychology itself, for example, in clinical, counseling, educational and organizational psychology, developmental psychology, community psychology, social psychology, personality psychology, and health psychology, and in future PP may even be integrated into psychology. Nevertheless, PP is not explicitly owned up in mainstream psychology (there is even tension between proponents of psychology vs. positive psychology about some issues such as practice and professionalization). At the moment there is to some extent, consensus that PP has over time established itself as a separate scientific (sub)discipline. The focus in PP was thus far on the psychological well-being of humans and human systems, and how context can influence that. However, not enough attention has been paid to how humans also contribute or detract from the well-being of non-human and ecological systems themselves, and how the coherence of all of these can be optimized. New research streams are also involved in well-being studies, with a broader goal and focus, and these may not fit well under the flag of PP.

It is time for a thoughtful reflection on the development and identity of PP and that of other well-being studies with emerging identities and scope to be further clarified as the post-disciplinary well-being trajectory proposed in this manuscript. Such reflection will require awareness and explication of metatheoretical assumptions about reality and what knowledge production entails, which is driving both focus and methods (Alexandrova, 2017; Hill and Hall, 2018). Today's complex problems require a holistic view of the many facets and layers of human and contextual well-being with many disciplines involved and a broader scope than the individual person. It is a question of whether the post-disciplinary scientific field focusing on well-being and positive health as described in the so-called third wave of PP, will branch out of PP into a new dominantly inter-, multi- and transdisciplinary domain with a new focus as suggested in this manuscript, or whether it will dissolve back into PP which is more about the proliferation of detailed and in-depth research on (fragments of) psychosocial well-being, or if both trajectories will develop side-by-side. Apart from the mono- vs. multidisciplinary nature of these scientific endeavors, it is also a question whether the goal will be well-being of the individual and human groups, or whether the well-being of the wider contextual systems themselves as resources for all life on earth is part of the envisioned future, and to what extent it will be.

THOUGHT DEVELOPMENTS IN POSITIVE PSYCHOLOGY AS SCIENCE

Science Development

There are various perspectives on the development of science of which only some will be highlighted here with reference to the development of PP and other well-being studies. Positive psychology as a scientific discipline developed similarly to many other scientific disciplines in the process of knowledge accumulation through continuous differentiation and integration of information as conceptualized and described by Staats (1999) for psychology as a discipline. However, apart from the rapid accumulation of knowledge in PP, some shifts took place on metatheoretical, theoretical and empirical levels akin to conceptualizations by Kuhn, a philosopher of science. Kuhn (1970, 1977) proposed the idea of a "disciplinary matrix" which refers to the normative and shared beliefs among most scientists in a discipline. Such beliefs include ontological and epistemological assumptions, values, and a typical focus and vocabulary in research. Kuhn distinguished between the so-called normal and revolutionary phases in scientific development, with major shifts in the latter phase. In the "normal phase" of science there is an accumulation and growth of knowledge. However, in the development of a discipline, researchers sometimes come across problems that they struggle to solve. After fruitless efforts, a new phase, the so-called "revolutionary phase" emerges in which major changes occur. New assumptions and perspectives are embraced, new foci and methods found, and new theories developed. This is what Kuhn called a "paradigm shift." Such shifts tend to take place on all levels of the "scientific text" as distinguished by Madsen (1988): on a philosophical (ontological and epistemological) level, a theoretical level, and on the empirical level. Apart from changes in components of the disciplinary matrix, the direction of research may also change. Although the paradigm shifts conceptualized by Kuhn (1970,

1977) can to some extent be noticed in the natural sciences, they are not as sharply delineated in the human and social sciences. Nevertheless, changes and shifts occur in the social and human sciences, but they typically develop more gradually, and previous ideas may co-exist with new perspectives (Madsen, 1988), as is the case in the various phases distinguished in the development of PP and the understanding of well-being.

Van den Besselaar (2012/2018) touched upon the issue of disciplinary and interdisciplinary research identities in his perspective on forms of change in knowledge systems. He contends that the cognitive identity of a discipline precedes the theories and methods used in that discipline, and that disciplines can be defined in terms of the questions that guide the research, instead of only the subject area. From this viewpoint, new questions can facilitate various patterns of knowledge development and change that can include splitting within the field (specialization – as what the case for PP might have been), growth in the original discipline, or decline in interest in the field, merging with other disciplines (integration), or the birth of a new field of study (as the case of the proposed new domain of post-disciplinary well-being studies may be), and more. He contends that interdisciplinarity is one of the ways in which research fields develop, but sees it as a temporary phase in the dynamics of knowledge development. Such interdisciplinary studies emerge at the boundary of an existing field in the context of multidisciplinary research activities. From here it can develop into a mature science on its own (a "new" discipline), or remain for some time as multidisciplinary or interdisciplinary, or after a while disappear. Such a multidisciplinary or interdisciplinary field of study may also grow into a *transdisciplinary* research domain which can eventually be seen as a mature field of study. However, the proposed post-disciplinary trajectory of well-being studies discerned in this manuscript is now seen as a new field of study being born, which needs further growth before reaching the status of a mature scientific domain.

Phases of Development in Positive Psychology

It is noteworthy that conceptualizations of (facets of) well-being can be found in psychology and physical health related literature and textbooks long before the formal recognition of PP as a field of study, with many of these later on integrated into PP. Examples of such ideas are those by Jahoda (mental health), Maslow (self-actualization), Rogers (the optimally functioning person), Allport (maturity), and Frankl (the will to meaning). Antonovsky (1987) explicitly defined health not only in terms of the absence of disease, but also in terms of the presence of positive (salutogenic) characteristics, and resilience in adverse situations was already described by Rutter (1987). Other important forerunners were Diener (1984) focusing on subjective well-being and satisfaction with life, Deci and Ryan (1985) formulating the self-determination theory, and Ryff (1989) postulating her model on psychological well-being. There are many more paving the way for what is now known as positive psychology, exploring what is best in people and how to promote it. A full review is beyond the scope of this manuscript. In this section I will only focus on a brief summary of developments in PP since its "formal" recognition in 1998, indicating some major shifts discernible in empirical focus, methods and metatheoretical assumptions relevant to the main argument of this manuscript, namely that the so-called third wave of PP may actually be a new domain of well-being research.

Various phases or waves had been noted in the exponential development of PP as science since its formal introduction by Seligman in his presidential address to the American Psychological Association in 1998, and the follow-up publication by Seligman and Csikszentmihalyi (2000) in the January issue of the *American Psychologist* devoted to the idea of a focus on the positives in human functioning. From the beginning (indicated retrospectively as the first wave of PP), this field attracted the attention of many researchers, practitioners and consumers around the world and a flourishing research domain developed, and is still continuing to do so. Wong (2011), Lomas and Ivtzan (2016) described what became known as the second wave of positive psychology taking both the positives and negatives of life into consideration. Wissing (2018, 2020), Wissing et al. (2018, 2021) highlighted the rise of a third wave of PP as manifested in multi and interdisciplinary approaches and shifts with regard to metatheoretical assumptions (worldviews), empirical foci and methods alongside and overlapping with the continuing so-called first and second waves. Similar observations and conceptualizations were also put forward by Lomas et al. (2021), explicitly focusing on broadening the scope and methodology of PP and elaborating on the idea of "waves." The distinguished phases or waves of scientific development can summarily be described as follows for substantiation of arguments and relevant references, see Wissing et al. (2018, 2021), Wissing (2020), Lomas et al. (2021):

In the **first phase of PP** (emerging more or less 1998/2000 – 2010) there was a drive for research on positive aspects of human functioning in contrast to the past state of the art in psychology that mainly focused on the negatives. Researchers differentiated and explored the nature and dynamics of many components of well-being (such as satisfaction with life, positive emotions, character strengths, meaning, mindfulness, and many more), and many measures were developed for various constructs. Indices of life satisfaction soon became the golden index for the global construct of well-being. Similarities and differences between constructs were explored and higher-order integrations were made (for example, in terms of the hedonic and eudaimonic perspectives - cf. Keyes, 2002; Deci and Ryan, 2008), theories were developed (e.g., Fredrickson's broaden and build model, 1998, 2001), and theories on well-being facets, preceding the formalization of PP, were integrated for example those by Deci and Ryan (1985), Ryff (1989, 1995), and Csikszentmihalyi (1997). Apart from empirical and theoretical work, research on the effects of positive interventions was conducted. The field of PP expanded rapidly (cf. Hart and Sasso, 2011) and Rusk and Waters (2013) showed its significant growth not only in size, but also in reach and impact. The above mentioned lines of first wave PP research are still branching out and form the bulk of present day PP research, but with some individual researchers also shifting in perspectives. However, in the early phase of PP, little attention was

given to the multimodal nature of well-being. Before and during this period similar streams of well-being research also took place with researchers working in silos and with no interaction or recognition of each other's outputs and perspectives (for example, apart from mainstream PP, similar research took place in the quality of life movement, the asset-based approach, and the positive youth development framework steered by the Search Institute, and in humanistic psychology). From the beginning there was a stand that PP should adhere to the highest principles of science: Seligman and Csikszentmihalyi (2000) stressed that "real scientific methods" should be used as in the natural sciences to unearth so-called objective truths (and avoid being seen as trivial), reflecting an (implicitly accepted) positivist philosophical approach. Mainly quantitative methodologies were used, hypotheses tested, and generalizations made, but without considering the context. Naturalist and individualist perspectives informed research. There was to a great extent ignorance concerning cultural contexts and the associated values and ethical imperatives, assuming that findings from individualist contexts will also be valid in non-individualist contexts, and that researchers are value-free. This is typical of what Henrich et al. (2010) described as WEIRD research (i.e., from Western, Educated, Industrialized, Rich and Democratic countries). In this process, no attention was paid to worldview (ontological and epistemological) assumptions which attracted critique (for example by Held, 2002, 2004; Lazarus, 2003; Christopher and Hickinbottom, 2008).

The above critiques were gradually accepted, and a **second wave of PP** emerged (more or less 2010-2015 while research typical of the first wave still continue). The second wave of PP is mainly characterized by the recognition that the positive and negative facets of life are intertwined, that well-being facets may simultaneously have positive and negative connotations, and that the interpretation of something as positive or negative depends on the cultural context and specific situatedness. This integrative view was initially proposed by Wong (2011), indicating it as PP 2.0, and then also elaborated on by Lomas and Ivtzan (2016) as "the second wave," with many other authors indicating similar understandings. The meaning and implications of the second wave of PP was illustrated in the handbook by Ivtzan et al. (2016) in a nuanced approach illuminating the dance of the positives and negatives in life and how the "darker" experiences can also sometimes lead to positive growth. The relevance of situatedness was strongly illustrated by McNulty and Fincham (2012) amongst others, and the importance of cultural context for understanding the nature of well-being became increasingly recognized by many (e.g., Uchida and Ogihara, 2012). In this phase, more holistic well-being theories were proposed (e.g., Lomas et al., 2015). Other disciplines, apart from PP/psychology, started to explore facets of positive functioning and wellness. Recognition of the multidimensional nature of well-being started, and qualitative and mixed methods approaches were embraced. In the second wave, an awareness of the role of worldviews begin to emerge, and there was a recognition that researchers are not value-free. Constructivist and interpretivist approaches came to the foreground, while mainstream PP of the first wave was continuing.

Another shift in foci, methods and metatheoretical assumptions occurred (more or less from 2015 and onward), while research and practice in line with the first and second waves of PP were still expanding. This shift was noted and named "**the third wave" or PP 3.0** by Wissing (2018), Wissing et al. (2018), and around the same time also independently identified and developed by Lomas et al. (2021). These author groups noted many similar characteristics of the third wave (e.g., the multidisciplinary nature thereof, and changes with regard to scope/focus and methodology), but also accentuating different facets (e.g., denotations of what is meant by scope/focus, and the degree to which metatheoretical perspectives are highlighted). The so-called third wave of PP has been recognized by others focusing on well-being in various contexts (e.g., Mayer and Vanderheiden, 2020). In general, the most outstanding features of the third wave as described were a recognition of the multimodalness of well-being in an ever-changing environment and the need to move to post-disciplinarity in research, practice and education because of widespread global challenges. Lomas et al. (2021, p. 4) described the emerging third wave of PP as "a general movement of broadening "beyond the individual," moving toward greater complexity. This includes complexity in terms of the: focus of enquiry (becoming more interested in super-individual processes and phenomena); disciplines (becoming more interdisciplinary); culture (becoming more multicultural and global); and methodologies (embracing other ways of knowing)." They highlighted the different manifestations of what is indicated as "broadening" in terms of examples of the expansion in scope and methodologies, indicating that these can also overlap. Expansion of scope included "approaches that are contextual, system informed, cultural and linguistic, and ethical," while expansion of methodology included "greater use of qualitative methods, implicit methods, and computational science" (p. 4).

The characteristics of the third wave were described by Wissing (2018, 2020), Wissing et al. (2018, 2021) in terms of focus, methods and worldviews (ontological, epistemological and axiological) also accentuating multi- and transdisciplinarity, interconnectedness, contextualization and complexity. They highlighted the characteristics of the third wave as will be described in the following section: In the third wave, "context" was conceptualized more broadly, and included apart from the cultural context, also physical situatedness, socio-political, economic and other contexts. Wissing et al. (2018, 2021) further noted that the third wave manifested a deeper exploration and understanding of the dynamics of positives and negatives in well-being experiences, for example, in cultural contexts (e.g., Miyamoto et al., 2017), in the context of illness and suffering (e.g., Delle Fave et al., 2017; Fowers et al., 2017), as well as in interventions aiming to reduce negative symptoms while also enhancing well-being (e.g., Geerling et al., 2020; Hendriks et al., 2020). On an individual level the link between biological and psychological processes in well-being was explored from an interconnectedness approach (e.g., Delle Fave, 2018), and on a social level issues such as justice, values, ethics of care and power relationships in understanding and promoting of well-being came into focus (e.g., Di Martino et al., 2017) – highlighting

the importance of wider social and political dynamics in health and well-being. On an ecological level, the quality of connectedness to the natural environment for sustainable well-being was accentuated (e.g., Helne and Hirvilammi, 2015), and the importance of spiritual connectedness was indicated (e.g., Villani et al., 2019). Many authors argued for taking into account the individual, group, society, eco-system, and spiritual levels of well-being, as well as the connections among levels (e.g., Galderisi et al., 2017; Harrell, 2018; Warren and Donaldson, 2018). These developments underscored the necessity of multi-, inter- and transdisciplinary research and practice and the use of a systems approach when engaging with complex well-being issues. However, applying this approach in complex contexts such as inequalities, migration of people, climate change, pandemics, and even in ordinary life need much further theory-to-praxis.

In the third wave epistemological assumptions made space for a variety of approaches. Mixed-methods approaches and action research became popular alongside traditional quantitative and qualitative methods, and renewed attention was paid to laypeople's perspectives. On a metatheoretical level, various worldviews co-existed, while relational ontological assumptions were widely assumed. Ethical aspects and values were considered crucial in understanding well-being (ethics is always about the quality of relationships and responsibilities). The implications of Aristotelian virtue ethics for theory and practice were foregrounded in conceptualizations by many well-being researchers (e.g., Fowers, 2016; Proctor, 2019; Berg, 2020; Intelisano et al., 2020). A cosmodern metatheoretical perspective (e.g., Nicolescu, 2015) assuming the interconnectedness of all things also promoted integration and cooperation among disciplines, and forward a transdisciplinary approach.

The shift to post-disciplinarity in the third phase of PP is a major one, and can be seen as more pronounced than the shift from the first to the second wave of PP. It potentially signifies the development of a new direction in well-being studies. This contention will be explicated and unpacked in the following sections.

CHALLENGES AND OPPORTUNITIES BEYOND THE "THIRD WAVE OF POSITIVE PSYCHOLOGY"

A Third and Next Wave of Positive Psychology or a Butterfly?

A crucial question is whether the third wave of PP or that what will develop further from it, is or will be, really only (positive) psychology in its scientific/disciplinary identity. Lomas (2021) considered the possibility of a "fourth wave" of PP that will include the well-being of non-humans, but it is a question whether this is still psychology or rather a broader domain of well-being studies in development. Many streams of research and disciplines are converging in a focus on well-being issues, for example, sociology, anthropology, economy, psychology, philosophy, religion-studies, biodiversity studies, sustainability studies and biological sciences (cf. Naeem et al., 2016; Alexandrova, 2017; Delle Fave et al., 2017; Rojas, 2018; Intelisano et al., 2020; Helne, 2021; Mead et al., 2021b). Developments toward transdisciplinarity had already been ongoing for some time apart from what is described in the "third wave of PP" (Gidley, 2010; Dielman, 2015; Nicolescu, 2015; Finkenthal, 2016), and what is happening in this phase is actually a similar pattern of multidisciplinary knowledge development. Therefore, the radical changes in the shift to the "third wave of PP" might have signaled the emergence of a new scientific domain with a broader scope. This shift reflects amongst others, the recognition of the multimodalness of wellness (psychological, social, spiritual, and biological), but initially with mainly a focus on the individual and how wider systems influence the person as such. However, given the increasingly urgent demands from complex human-social-ecological problems such as consequences of climate change (floods, droughts, famine, and more), displacement of peoples (e.g., because of ongoing wars or internal country politics or economic situations), pandemics (such as COVID-19) and inequities (e.g., in resources and opportunities) with all its human well-being and health, social, socio-political, economic, and natural ecological and biosphere concomitants, there is a call for attention also to the well-being of non-humans and ecological systems for the survival of all. A single discipline cannot meet these demands on its own, but with the integration of efforts, some progress may be made toward the solution of problems and promotion of well-being on many levels.

The description of the scope of the third wave in terms of also "beyond the individual" and focusing on "super-individual processes and phenomena" as an illustration of complexity by Lomas et al. (2021, p. 4), seems to be more in line with a wider well-being focus than what can logically be described as only part of PP. However, explaining what is meant by "going beyond the individual person as the primary focus and locus of inquiry," the authors refer to groups, organizations, and systems that "impact upon people's wellbeing (from politics to economics)" (Lomas et al., 2021, p. 4). The focus is thus only on human well-being and how context influences them. It does not include the behavior of humans respecting the well-being of other non-human systems for the sake of these themselves. No explicit distinction is made between a focus on the individual's psychological well-being (as part of PP) and a focus on the well-being of broader social and contextual systems themselves as would be needed in the context of complex human-social-ecological challenges. The latter also applies to some extent to the arguments brought forward by Wissing et al. (2018, 2021). However, these authors do indicate interconnectedness as a core focus, including the ecological systems. In this manuscript, I contend that whether the focus is on how systems influence the individual or humans as a collective, or on the well-being of wider systems themselves, or the interaction among systems, the notion of interconnectedness (and specifically the quality of the interconnections) is of core importance, and will, in particular, be the case in the new post-disciplinary trajectory of well-being studies. Evolutionary and bio-cultural studies have already shown

the centrality of interconnectedness for the well-being of humans and nature (Massimini and Delle Fave, 2000; Delle Fave, 2018).

Wissing et al. (2021) suggested that the transdisciplinary outgrowth characteristic of the so-called third wave with its recognition of diverse worldviews, methodologies, and focus on interconnectedness, can be compared to a butterfly leaving a cocoon - the cocoon of positive psychology being bounded by its disciplinary name. In this manuscript, it is postulated that this "butterfly" indeed signaled the development of a new domain of scientific endeavor, but that the identity (and name) of this domain needs to be further delineated and described. The butterfly metaphor can also be replaced with the idea of the new well-being domain branching out of PP, taking a new direction, while PP will continue its growth and expansion as a (sub)discipline. Such "branching out" is in line with the conceptualization by Van den Besselaar (2012/2018) of a new interdisciplinary scientific field being born on the boundaries of a discipline as one of the forms of knowledge development. This broader post-disciplinary trajectory of well-being studies proposed may also be seen as reflecting what Kuhn (1970, 1977) indicated as a change in direction, including new meta-assumptions, a coherence approach in methodology among multiple disciplines, and a new delineated focus, but the conceptualization by Van den Besselaar may be more fitting, if it is indeed a new discipline in development.

A scientific endeavor such as the hereby suggested post-disciplinary well-being studies domain that cuts across the conventional disciplinary boundaries can be seen as "convergent science" as conceptualized by Antó et al. (2021, p. 7 of 11). It consists of new ways of thinking about the process of research and the kind of strategies that are necessary for knowledge production, verification and application. Antó et al. (2021) contend that traditional universities will have to adapt in research, education, preparation for practice, and dissemination of information to include such convergent sciences. They indicate that such an approach is in particular suitable for complex issues and challenges involving more than the individual or human system (e.g., think COVID-pandemic: individuals and groups are involved from the cellular level to psychological, social, economic, political, and other human systems levels; zoological facets play a role – where did the virus originate, when can I walk the dog outside during lockdown; and ecological facets – the biosphere improve while humans were confined to their homes).

I thus conclude that there is a butterfly in the garden of well-being studies, but what does this garden look like, and can this butterfly be distinguished from others in the field? More butterfly spotters are invited to explore this question more in-depth than what is possible in the next sections as only a part of this manuscript.

Two Trajectories – Discerning the Butterfly in the Garden of Well-Being Studies

In this manuscript, I argue thus that there will be (as far as this manuscript is concerned) two main roads ahead in well-being studies: The state of the art of PP as in the first and second waves (continuing into the present and future), and a post-disciplinary trajectory of well-being studies, initially indicated as the third wave of PP. Whereas the identity of mainstream PP is relatively well established (cf. Pawelski, 2016a,b), the identity of the post-disciplinary trajectory is still unfolding, and it is a question of how it differs from or dovetail with other streams of well-being studies with a broader focus than PP. There are several possible directions for further development of the identified post-disciplinary trajectory and opportunities to learn from other transdisciplinary endeavors and approaches. One possible direction forward is to focus from an inter- or multidisciplinary perspective on the psychological well-being of humans in context and situatedness, with the aim to understand and promote individual or group well-being as influenced by social contextual factors (e.g., Kern et al., 2020). In such a case one discipline (positive) psychology plays a dominant role. However, if the focus is not only on individual mental health and well-being, other disciplines may be more prominent or equally important. Another direction may be focusing not only on human well-being as influenced by contexts, but also focusing on the health and well-being of all non-humans, contexts, and systems themselves as evolving and changing over time and how they all hang together in sustaining life on earth. Here, the focus will include how human behavior influences the relationship with others and with animals and the ecological context to ensure that there will be a sustainable future for all and the next generations. Demarcation of focus is however necessary to have a unique character distinguishable from already existing perspectives.

Holistic Perspectives

There already exist various holistic inter-/multidisciplinary approaches to health and well-being, such as the One Health approach, the Planetary Health perspective, and the EcoHealth view or Global Health perspective, and more (Lerner and Berg, 2017; Rabinowitz et al., 2018; Lueddeke, 2019; Antó et al., 2021), which are all explicitly focused on systems more comprehensive than the individual person. There is as yet, no agreement about the similarities and differences among these: sometimes conceptualized as similar, but also as overlapping in ways, or as uniquely different. To a great extent, these perspectives were a follow-up on the report by the Rockefeller Foundation-Lancet Commission on "Safeguarding Human Health in the Anthropocene Epoch" (cf. Whitmee et al., 2015). This report indicated the extent to which human activities contributed to the degradation of the earth's ecosystems and thereby threatening life on earth. The above-mentioned holistic approaches are also linked to the United Nations Sustainable Development Goals for 2030 (UN Resolution, 2015). It is not yet sure whether the new domain of well-being studies will dovetail with one of these holistic perspectives, or develop a unique focus, and whether different streams of wider well-being studies will co-develop or merge. The described third wave of PP, which is now proposed to be a new domain of well-being studies, has many characteristics similar to the above more holistic well-being perspectives, for example, a strong inter-/multidisciplinary approach and focus on broader systems than the individual person or only human systems.

To envision the character of, and further development of the post-disciplinary trajectory as identified in this study (what kind of butterfly?), the holistic health and well-being models need to be scrutinized in a bit more detail to establish to what degree the proposed "butterfly"-trajectory will fit in with them or alternatively, manifest a unique focus. In their analysis of the literature, Lerner and Berg (2017) found that the perspectives of One Health, Planetary Health and EcoHealth are sometimes used as synonyms with the same denotations, but also sometimes viewed as overlapping in some respects, and even also sometimes as sharply different from each other. The differences highlighted are as follows: The One Health movement accentuates the interrelatedness of human health, animal health, and ecosystems health, but focuses often more only on human and animal health (ignoring the health of the environment). EcoHealth strongly focuses on biodiversity, including all living creatures, and recognizes indigenous knowledge systems with a view to translate knowledge into action, but humans are less on the radar. Planetary Health has a primary "anthropocentric" view which values ecosystems mainly in terms of their impact on human health/well-being and the sustainability of life on earth. They concluded that the approaches have many similarities, and that the differences among these perspectives are reflected in the role attached to the different contributing disciplines (equal status, or one dominating in focus), and the core values expressed by the different approaches (e.g., health, biodiversity, the importance attached to humans, animals, and/or ecosystems). An overarching characteristic of all three approaches is that it is multi- or interdisciplinary in nature, based on the understanding that the problems to be solved cannot be handled by one discipline. They, however also caution that boundaries must be drawn for not taking a too wide perspective that can be seen as a "theory of everything" (Lerner and Berg, 2017, p. 6).

Rabinowitz et al. (2018) proposed a planetary perspective on health that incorporates all three of the above foci. They conceptualize three hierarchical organized pillars of humans, animals, and ecosystems, each consisting of layered systems from the minute to the most encompassing (for example, the human pillar systems are organized from the molecular level to global societies; the animal pillar from molecular to global fauna, and the ecological system from chemical/physical to the biosphere). In terms of this framework, the third wave of PP/emerging well-being studies mainly focused on the human pillar; sometimes only from the person-level to the global society (e.g., Lomas et al., 2021), but others also from the biological level to the cultural level (e.g., Massimini and Delle Fave, 2000; Delle Fave and Massimini, 2015; Delle Fave, 2018; Mead et al., 2021b). In the model proposed by Rabinowitz et al. (2018) all the system layers in a pillar influence each other hierarchically, but they are also influenced by the layers of systems in the other pillars. This framework can be applied to identify and manage health threats, but also facilitate models for well-being, healthy coexistence, and sustainability of all the implied interconnected systems. Rabinowitz et al. (2018) illustrated their conceptualization with a description of how it applies to a farming community, including humans, animals, and the local environment, and how this approach can eventually contribute to well-being of all and decrease the carbon footprint. An associated perspective is described by Lueddeke's (2019) view of "one planet, one health, and one future."

The focus on well-being is explicit in the perspective by Antó et al. (2021), describing how their "Planetary Well-being Initiative" is pursued in higher education. They define planetary wellbeing as "the highest attainable standard of wellbeing for human and non-human beings and their social and natural systems" and contend that "we can hope to flourish in harmony with other human and non-human beings, only through judicious attention to the political, legal, economic, cultural, and social institutions that shape the Earth's natural systems" (p. 2 of 11). They pointed out that we need new concepts, theories, and empirical investigations to facilitate well-being for humans, animals as well as for social and natural systems. Enabling this process needs collaboration among disciplines and recognizing the complexity of the issue. In their Planetary Well-being Initiative, Antó et al. (2021) pointed out the importance of education, and illustrated the academic character of this endeavor in terms of courses presented at tertiary institutions, theme-specific conferences, publications, and more. A scholarly knowledge-to-praxis approach is noted in attention to research, teaching, and practice.

On a substantive level of focus, it is a question to what extent this new domain of well-being studies can also include attention to the consequences of major challenges as posed by displacement of peoples, climate change, zoonotic disease outbreaks, severe weather implications, and more, and how they can find balances for a greater good. This new post-disciplinary domain of well-being studies will be more limited than the holistic models. However, can individuals in this "Anthropocene" era (referring to human behavior driving the degradation of the earth's systems) be seen as "well" if they do not also take the well-being of all non-human life, ecosystems, and biosphere in itself into account to ensure life on earth for next generations? This is not only about well-being, but also a matter of ethics. I thus foresee that the indicated post-disciplinary well-being studies domain will resonate with facets from the above holistic models, but that it will be more specific in focus and considerate of ethics-related and moral behavioral aspects.

More Specific Perspectives

There are also some more specific interdisciplinary approaches developed in the context of humanities and social sciences that may influence or resonate with thinking in the newly emerging domain of research on well-being. Some examples are the following: Firstly, the tripartite model by Layder (2021). He conceptualized (interdisciplinary) research as consisting of three interlocking facets: research needs a general framework reflecting the assumed global nature of social reality; a local frame or image of social reality as reflected in empirically data gathered; and a blending and processing of global and local frames via theory and methods to generate integrated explanatory accounts. This is similar to what I elsewhere in this text refer to as the "interwovenness of all the levels of the scientific text." Other models are the interdisciplinary "conceptual engineering" model of Prinzing (2021), suggesting a constant iterative process involving normative theorizing, empirical investigation, and

conceptual revision from a multidisciplinary perspective, and the GENIAL framework by Mead et al. (2021b). In the latter approach, a transdisciplinary biopsychosocial perspective is linked to ecological systems theory. These authors contend that well-being should be conceptualized broader than is the case in PP. They proposed that well-being is multifaceted, with interactions within and across multiple domains and levels. Mead and colleagues include healthy vagal functioning as part of individual well-being. They contend that connections to the self, the community, and the natural environment should be taken into account, as well as how these are influenced by external factors such as the socio-ecological context.

The recently "Emerging Science of Virtue" by Fowers and colleagues (Cokelet and Fowers, 2019; Fowers et al., 2020, 2021) is a very relevant approach to take into account in further building out of the suggested post-disciplinary well-being domain of study with its focus on values and virtuous behavior in wider contexts, and how these can foster human flourishing. These authors developed the STRIVE-4 model on virtues in intense cooperation between psychologists and philosophers. Virtues are viewed as the actualization of important values reflected in measurable traits expressed in behaviors that are fitting roles, situations, and the interaction between these. Virtues as actualized values help to attain valued ends and facilitate eudaimonic human flourishing. The model focuses in particular on habitual moral virtues such as generosity, loyalty, justice, fairness, honesty, kindness, and courage (epistemic virtues and performance virtues on the side). Each virtue is seen as consisting of virtue-related knowledge/cognition, concordant emotion/motivation, expressive of a more or less stable disposition, and reflected in behavior. They refer to "practical wisdom" (phronesis) as "the capacity to recognize the appropriate moral behavior or virtue for a given situation" (Fowers et al., 2020, p. 4). In terms of the suggested post-disciplinary domain of well-being studies, virtues will need to be also expressed in how people relate to the environment and behave in challenging circumstances. Another perspective linked to some of the above ideas is the "Science of Effective Well-Doing" described by Lieder et al. (2021) from the Max Planck Institute. They argue that the intentional pursuit of values and prosocial goals (i.e., well-doing) are of core importance for the sustainable flourishing of humanity. The new post-disciplinary field of well-being studies proposed in this manuscript resonates in many respects with ideas expressed in the above models, but will be shown to have a unique focus.

Learning From Other Interdisciplinary Approaches

Gervais (2021) indicated that (new) disciplines (such as the hereby proposed post-disciplinary domain of well-being studies) can benefit from taking note of developments, processes, and reforms in other disciplines to create a more optimal ecology for science. In this regard, all the holistic approaches indicated above can be of value, as well as the more delineated fields such as the emerging science of virtues. The suggested post-disciplinary domain of well-being studies can also learn from, or be modeled in line with patterns of knowledge development as described in other multidisciplinary perspectives such as that of the integral and evolving knowledge perspectives foreseen and described by Gidley (2010), Fazey et al. (2020). Fazey et al. (2020) analyzed what future transforming knowledge systems might look like and accentuated that knowledge production will need to be much more collaborative, egalitarian, open, value-sensitive, respecting values, and working with systems to generate wisdom for action. They indicated that it is not enough to generate knowledge which is often only abstract, rational and fragmented. It is necessary to also include different ways of knowing (including tacit/intuitive, experiential, and indigenous types), with the integration of knowledge and practice led by wisdom based on moral and ethical judgments about the ends pursued. They contended that their approach "reflects Aristotle's idea of phronesis, a form of practical wisdom and knowledge where action and knowledge are oriented toward concern for human flourishing and viewed as inseparable" (Fazey et al., 2020, p. 12).

There are numerous challenges and opportunities for future well-being researchers, to explore and understand the "kind of butterfly" that emerged, and to contemplate and build out the identity of PP and the post-disciplinary development of well-being studies. Together with clarifying the focus/scope of the emerging post-disciplinary trajectory of well-being studies as indicated above, it is also essential to understand and explicate how this aligns with methodologies used and worldview assumptions. The same applies to PP as a state-of-the-art trajectory. For example, whereas Lomas et al. (2021) highlighted the scope and methodological aspects of the changing nature of PP/well-being studies, and Wissing et al. (2018, 2021) also accentuated shifts with regard to worldviews, I argue in this manuscript in particular, that the interwovenness of all levels of the scientific text (cf. Madsen, 1988) needs to be taken into account. In this process, attention needs to be given to issues ranging from broad and more abstract matters such as those pertaining to the philosophy of science and the role of worldviews (e.g., what is the nature and structure of reality and scientific disciplines, and what is the optimal social ecology for progress in science), to linked issues related to disciplinary theory and methodology, and to more narrow situated and substantive empirical foci and practice, and various others. Both trajectories offer many similar, but also widely diverging challenges and opportunities for growth and reform in knowledge production and verification. Some of these will be highlighted below, keeping an eye on the interwovenness of the various components of the scientific text.

Worldviews – Integral Part of the Scientific Text

Both in the case of positive psychology and the post-disciplinary well-being trajectories, future researchers will need to reflect on, and take cognizance of the role of metatheoretical assumptions (worldviews) on their selected empirical foci, preferred methodologies, processes of theory-development and verification, as well as how these are intermingled and can be changing over time in the process of knowledge generation (cf. Hastings et al., 2020). Worldviews can be described as all-embracing philosophical beliefs about life and what values matter the most. Such beliefs are embedded

in social and cultural contexts (Onwuegbuzie and Frels, 2016; Slife et al., 2017). Worldviews include ontological, epistemological, and axiological beliefs. Ontology is concerned with beliefs about the nature of the real world and human beings in particular. Epistemology concerns beliefs about how knowledge is generated and validated. Axiology/ethics/values is concerned with what is supposed to be good and bad/desirable and undesirable. Alexandrova (2017), as well as Hill and Hall (2018), argued that philosophical assumptions influence disciplinary conceptualizations, the methods used, the preferred methods of confirmation, and the interpretations made. Mitchell and Alexandrova (2021) contended that philosophy and disciplinary studies on well-being can benefit both when pluralism in conceptualization (on the metatheoretical level) and on theoretical and empirical denotational levels are accepted. Worldviews play a role in scientific endeavors even if not consciously recognized. It is well-known that Western perspectives in psychology and positive psychology for a long time neglected the role of worldviews and assumed that others share the same views, and that findings can be generalized to all contexts and cultures (cf. Christopher and Hickinbottom, 2008; Henrich et al., 2010) which is of course not the case.

The situation is changing, but the role of worldviews in mainstream psychology is still to a great extent not being taken into account as indicated by Slife et al. (2017), or in positive psychology as indicated by Alexandrova (2017) and suggested by Prinzing (2021) in advocating for closer collaboration between philosophy and psychology. Layder (2021) pointed out the continuing neglect of ontological issues in social sciences in general, and in particular, the consequences of views about the social reality that deeply influence theory and methods. He contended that growth in science strategically requires the intertwinedness of worldviews, theory, and methodology. He argues that the situatedness of empirical data and the global properties of what social reality is seen to be, need flexibility in research design, and in the role of theory and theory-generation in social sciences. Multidimensional, variegated models of social reality are preferred to so-called flat ontologies (as in positivist, post-positivist, and post-modern approaches). However, there are various holistic interdisciplinary perspectives on well-being as indicated in the previous section. Each has its own metatheoretical assumptions, but all indicate the intertwinedness of (implicit or explicit) worldviews, theory, and methods. Future research will need to analyze the nature of implicit or explicit approaches and distinguish the manifestations and interactions thereof with theoretical and methodological processes, which is much more than only stating that worldviews need to be taken into account.

Theory and Methods Embedded in Meta-Assumptions

There is much room for further theory development and validation in PP and even more so for post-disciplinary well-being studies. There are some prominent theories/models in PP to which many studies refer, with some of them predating the official beginning of PP, and some focusing on measurement. Some of these are for example, Ryff's psychological well-being model Ryff (1989, 2018), the self-determination theory of Deci and Ryan (1985, 2000), Fredrickson's broaden-and-build model Fredrickson (1998, 2001), Keyes's model Keyes (2002, 2007) integrating hedonic and eudaimonic facets, and many more. However, there is no strong overarching theory that can explain well-being behavior or integrate the many specific facets of well-being that are now distinguished and explored under the flag of PP. On the other hand, there are many minor theories/models or only hypotheses on fragments of well-being as related to new constructs in PP. To what extent is there a cumulative growth in well-being knowledge via theory development and validation? Future researchers in PP and post-disciplinary studies can explore what the state of the art is for them as being conducted in psychology and other disciplines. For example, McPhetres et al. (2021) found in an analysis of articles in a flagship psychology journal that the word "theory" only appears in round about half of all manuscripts, and that only 15.33% of manuscripts indicated that it is about testing of theories. They concluded that the majority of studies are not theory-driven and can thus not contribute to cumulative growth in theories. However, should all research be theory-driven, or can it also be problem-driven or discovery-oriented and still be sound science? It is important to note that not all researchers agree that empirical studies should be theory driven. This is in particular the case with studies on subjective well-being and life satisfaction as espoused by Diener and colleagues (e.g., Diener, 1984; Diener et al., 2018) who maintained a bottom-up perspective that people need to speak for themselves and not measure themselves up to externally imposed standards of what a particular form of well-being is supposed to be.

Theory development and methodological issues are closely linked as also argued in the recent debates about the reproducibility and replicability of findings in psychology. There is a concern that many findings in psychology are not reproducible. Further alarming is that non-replicable findings seem to be more often cited than replicable ones (Serra-Garcia and Gneezy, 2021). In most instances, the non-replicability problem is ascribed to methodological issues and statistical shortcomings (cf. Aarts et al., 2015; Open Science Collaboration, 2015). For example, the Open Science Collaboration (2015) group replicated 100 experiments published in top psychology journals, and found that only one-third to one-half (depending on criteria used) of the findings could be replicated. The reasons for the low percentage of reproducible findings are mostly ascribed to methodological aspects, including methods of data collection, underpowered studies, HARKing (i.e., presenting results as if the *post hoc* hypotheses - made after the results were known - as if they were the original ones), selective or inappropriate statistical analyses, p-hacking (scientists select data or statistical analyses until results become significant after initial non-significance), insufficient description of conditions necessary to obtain findings, as well as other selective or biased reporting, and more (Munafò et al., 2017; Baumgaertner et al., 2018; Efendic and Van Zyl, 2019; Muthukrishna and Henrich, 2019; Oberauer and Lewandowsky, 2019; Layder, 2021). Most of the remedies advised in the past were with regard to methodological and statistical

aspects as well as a move to open, transparent science and preregistration of hypotheses and designs that may solve some of the statistical problems. Although there is strong advocacy for open science and preregistration to enhance the quality of research, not all agree that preregistration is a good idea (e.g., Szollosi et al., 2019).

However, methodological issues are closely linked to theoretical aspects. Several researchers question the idea that stricter methodological compliance rules, effect size calculations, exact p-values, other statistical approaches, or preregistered research on its own will contribute to the accumulation of knowledge and promote the growth of excellence in science, and that theory should be taken into account (e.g., Fiedler, 2017; De Boeck and Jeon, 2018; Oberauer and Lewandowsky, 2019; Szollosi et al., 2019; Layder, 2021; Scheel et al., 2021). The reforms in methodology and formalizing of hypothesis testing is valuable and should continue, but also led, according to Scheel et al. (2021), to the realization that hypotheses cannot be tested before there is an establishment of a proper and sound "derivation chain" (p. 746) between theory and the testing thereof. Oberauer and Lewandowsky (2019) suggested that there should be a distinction between theory-testing and discovery-oriented research. For theory-testing, there should, in particular, be a strong link between theory and the empirical tests thereof, whereas theoretical hypotheses play a lesser role in discovery-oriented research which is more about defining a search space and effects that could support the discovery. They suggested that a strong connection between theories and hypotheses can optimally be reached through the formalization of theories as computational models.

Muthukrishna and Henrich (2019) argued that a major component of the no reproducibility of findings is the absence of growth in theoretical frameworks that can generate hypotheses across domains (to be noted by the post-disciplinary well-being studies), and can integrate information from various disciplines. This is even lacking among the various sub-fields within psychology (and probably within PP itself also). Overarching theories (including formal modeling) may facilitate a deeper understanding of human behavior. Muthukrishna and Henrich (2019) illustrated their argument with an exposition of the explanatory power of their dual inheritance theory also known as a biocultural or gene-culture coevolution theory in which there is a genetic line (species inherit from their biological parents), and a cultural line (which is an inheritance from others in the particular society). Gervais (2021) applauded the suggested methodological reforms that are needed to take science forward, but also argued that good theory is necessary. In this regard, he indicated that there are strong multidisciplinary theories outside of mainstream psychology, such as cultural evolution theory, which may be valuable, and that modeling from the philosophy of science is necessary. He contended that large multidisciplinary research networks with more diversity included, will probably be faster in discovering the "truth."

The lack of cumulative growth in knowledge (vs. accumulation of many disconnected empirical studies on popular topics as developed in WEIRD contexts), in psychology and other social disciplines (which may also include mainstream PP and some post-disciplinary well-being studies), is also linked to the lack of clarity about metatheoretical assumptions and the implications thereof for theory and method. Layder (2021) indicated that the distinction between theory and method is false – they are deeply intertwined and should be seen as such for problem-driven research to be undertaken. He argued that taking into account ontological dimensions and epistemological meta-perspectives on the social universe, can promote methodological foundations of evidence-based research. Diversity in perspectives and approaches, taking the complexity of worldviews and human behavior in context into account, is essential for growth in knowledge according to De Boeck and Jeon (2018) as well as Gervais (2021) and others. Devezer et al. (2019) contended that reproducibility is important for scientific growth, but also showed in the evaluation of a mathematical model, that scientific discoveries may not always be reproducible although converging to the truth, just as that reproducible findings do not necessarily converge to the truth. They also pointed out the importance of epistemic diversity to facilitate the discovery of scientific truths.

Future researchers have the opportunity to explore and evaluate the reproducibility of the many findings in positive psychology as was done in the case of organizational psychology as a (sub-)discipline by Efendic and Van Zyl (2019). The challenges are, however, not only to determine what methodological reforms are taking place or are needed, but also to develop more overarching theories, and to unravel the complex interactions and contributions of theory, methods, and worldviews in the growth of knowledge in PP as well as in post-disciplinary well-being studies. Both trajectories can benefit significantly from developments in related sciences.

Empirical Contexts, Measures and Foci Informed by Theory and Worldviews

Context

Empirical data are of course, linked to theories and methods as influenced by metatheoretical assumptions and decisions – although often implicitly in existing studies. For future research, it is important for researchers in both mainstream positive psychology and post-disciplinary well-being studies, to reflect on the implications of the fact that collection of empirical data also have a very specific contextual situatedness (natural-ecological place and time historical life phase) with linked implicit social and cultural assumptions as indicated by Layder (2021). The situatedness of many well-being studies in Western contexts was often not recognized in the past, and generalizations were made as if the findings and interpretations are globally applicable (cf. first wave of PP). This had been pointed out clearly by Henrich et al. (2010) and others. The situation is changing with empirical studies being published from various continents and cultures, but still neglecting explicitly *multicultural* contexts as such, while multiculturalism and multilingualism can be a benefit to society (Wissing, 2021). There is a need for more empirical studies on well-being facets within multicultural contexts *per se*.

In mainstream PP, and in particular in the post-disciplinary well-being studies, the notion of *context* is increasingly being conceptualized more widely – as was already noted above in

the description of the so-called third wave of PP. Contextual situatedness will in the future need to be more explicit concerning specific physical environments, economic contexts, socio-political and socio-demographic variables, life phases and life domains, and others. The widening conceptualization of "context" thus includes physical situatedness (such as place) but also non-physical situatedness and the interplay between them. A specific context that may play an influential role in both trajectories of well-being studies is the emerging 4th Industrial Revolution with many technological developments. An example is the Shmapped application developed by McEwan et al. (2020) which can be used for data collection as well as an intervention tool. The 4th IR is, however far more than technology in its relevance to PP and well-being studies (cf. Mayer and Vanderheiden, 2020). The expeditious developments in technology facilitate new developments in well-being studies as part of mainstream PP, as well as in the case of multidisciplinary well-being studies. Non-physical situatedness such as the social level context of power relationships, justice, values, and ethics of care will increasingly play an important role when planning studies, collecting data, and interpreting of results (cf. Di Martino et al., 2017), as well as the context of spiritual beliefs (e.g., Villani et al., 2019). Although many authors suggested that individual, social, eco-system, and spiritual levels of well-being, as well as the connections among levels, need to be taken into account (e.g., Lomas et al., 2015; Galderisi et al., 2017; Harrell, 2018; Warren and Donaldson, 2018; Mead et al., 2021b), few empirical studies had been conducted in this regard. Multimodal conceptualizations of well-being and complex contextual situatedness will need multi-, inter and transdisciplinary approaches converging in joint fieldwork for data collection in times of major challenges. Therefore, assumptions about reality and applicable theories and methods will have to be sorted out and jointly developed.

An increasingly important focus in contemporary times is the simultaneous existence of the positives and negatives of life and the dynamics involved, as shown in several studies (e.g., Ivtzan et al., 2016; Delle Fave et al., 2017; Fowers et al., 2017; Geerling et al., 2020). Most studies thus far focused only on psychological aspects, with a few (such as Ryff, 2012; Delle Fave et al., 2017; Fowers et al., 2017) taking physical/biological as well as psychological aspects into consideration. Although the second wave of PP already called attention to the consideration of both the positives and negatives in the understanding of affective and other psychological individual experiences, transdisciplinary well-being studies accentuated also wider social and ecological positives and negatives that play a role in individual well-being, but also in the health and well-being of the broader systems themselves. For example, the understanding of well-being in challenging circumstances such as the COVID-19 pandemic needs a multi-, inter- or transdisciplinary approach to understand the complexity of biological, psychological, sociological, economic, eco-diversity, and spiritual dimensions, and to manage the trauma, depression and anxiety elicited, as well as the resilience and growth that can also be noted. Mead et al. (2021a) argued the need to transcend disciplinary boundaries in handling the complexities of well-being, particularly in difficult contexts. They contended that researchers need to develop transdisciplinary models of well-being taking into account the positives and negatives of life in the interconnectedness of the individual situated in their communities and ecological contexts, taking into account the role of specific contextual factors such as the role of inequalities and culture, but also individual biological and physiological facets such as the functioning of the vagal nerve. From here, theories can be developed for behavior change interventions to improve wellbeing sustainably. Hayes et al. (2020) illustrated that a new version functional analysis combined with the evidence on change processes, integrated under an evolutionary meta-model, has direct practical value for handling complexities arising from the COVID-19 challenge. Several empirical studies focused on well-being facets such as meaning, harmony, relational aspects and/or virtues during the time of COVID-19 that elicited negative experiences and circumstances (e.g., McGrath and Brown, 2020; Arslan and Yıldırım, 2021; Carreno et al., 2021; Fowers et al., 2021; Mead et al., 2021a; Wilkie et al., 2021). Taking both the positives and negatives of life into consideration also implies that both should be evaluated and targeted in evaluation, measurement, and interventions.

Measures

Many studies in non-western contexts still use measures developed in Western contexts. Such *measures* may be validated in the particular non-western context, but invariance across contexts is not determined, and without exploring whether the particular construct (or translated word denoting the specific phenomenon) has the same denotation in various contexts. Many measures of facets of well-being had been developed beyond that of "subjective well-being" (positive affect and satisfaction with life), which were in the past viewed as the golden index of wellness, and target now relative more eudaimonic conceptualizations vs. earlier approaches focusing on relatively more hedonic aspects. The focus is also shifting to pluralistic measures that include apart from hedonic and eudaimonic well-being facets, also social well-being, connectedness to community, culture, governance, and nature (Mead et al., 2021b) that take the multimodalness of well-being into account in multidisciplinary approaches. Many measures within Western and non-western contexts need further validation taking the variety of physical and non-physical contexts into consideration. Future research, however, also need to include multiple methods of data gathering and non-linear and richer ways to understand and evaluate the complexity of well-being in various contexts. In post-disciplinary well-being studies assessments of the positives and negatives in human experiences, the health and well-being of wider ecological contexts, and the quality of the relatedness among humans and context, may take on many new and more complex forms than only self-rating scales. For example, using latent semantic analysis based on natural language to quantify responses to open-ended questions (e.g., Kjell et al., 2019), or implementing a non-linear lens of complex adaptive systems theory or chaos theory (cf. Resnicow and Vaughan, 2006; Bussolari and Goodell, 2009) for insight into manifestations of well-being phenomena and the dynamics thereof. Non-linear modeling (such as dynamical systems modeling, agent-based

modeling, computational modeling, network modeling), or time series techniques (such as recurrence quantification analysis, phase space reconstruction, fractal and multifractal analysis), to understand complex behavioral issues (cf. Richardson et al., 2017; Pincus et al., 2018) may also play a role. However, a problem with measurement indices and quantifying analyses is that the real-life experiences of individuals that are supposed to be explored, are handled as aggregated points evaluated against an external standard that actually blur the line between a substantive psychological reality and a statistically presented reality/truth (Danziger, 1990).

Foci

There are many well-established constructs in the focus of PP, with extensive empirical studies on the nature, measurement and dynamics thereof, as well as many "new" constructs with related empirical explorations, and probably many more to come. For some of these, mini-theories do exist, but seldom with recognition and explication of meta-assumptions. In this section, I only want to highlight a cluster of well-being-related *foci* for which some empirical findings exist, but for which much more empirical research is needed for each of them as well as the possible underlying coherence among them and the possible integrative metatheoretical assumptions thereof. These substantive foci are *harmony, meaning, relationality and virtues*. Of course, each of them also has related phenomena and conceptualizations such as "mattering" that may link to meaning and relationality, "interconnectedness" that expresses relational aspects and balance, "harmony" that is also understood in terms of balance and peace (i.e., relational qualities), as well as "ethics and morality" which are associated with virtues and relational qualities. A brief explication of these well-being related foci and the possible links among them, will now follow:

Meaning (of, in, to life) has a long history of conceptualizations and empirical explorations in psychology (e.g., Frankl, 1963; Baumeister, 1991; Heine et al., 2006; Steger et al., 2009; Schnell, 2009; Wong, 2012; Delle Fave et al., 2013; Lambert et al., 2013; Martela and Steger, 2016; Baumeister et al., 2018; Baumeister and Landau, 2018; Wissing et al., 2020), and has also been contemplated on from a philosophical perspective (e.g., Morioka, 2015; Metz, 2020), but multidisciplinary work in this regard lags behind. However, Antonovsky (1987) already conceptualized and explored meaning (a component of the sense of coherence) in relation to physical health, and Ryff and colleagues (Ryff and Singer, 2000; Ryff et al., 2004) linked well-being related facets such as the experience of meaning in life and relational well-being to more healthy biological processes. There is a distinction between meaning components (e.g., coherence, purpose, and significance – Martela and Steger, 2016) and sources of meaning. Many studies link the experience of meaning in life to positive relational qualities on various levels (e.g., Lambert et al., 2013; Delle Fave and Soosai-Nathan, 2014; Wissing et al., 2019). In conceptual and empirical studies, the sources of meaning can be found to be organized and classified in various ways, but all of these include relatedness and connectedness. These connections can be interpersonal, with the society at large, or with nature and also with transcendent powers (cf. Delle Fave and Soosai-Nathan, 2014). Meaning is also linked to the notion of mattering. In Prilleltensky's (2020) conceptualization of mattering (referring to the sense of feeling valued, and adding value to others in various contexts), he stressed the significance of balance and fairness among priorities for what is important and meaningful on personal, interpersonal, and collective well-being levels. Cooperation among perspectives from philosophy, psychology and politics is needed, and more empirical studies are needed to explore the dynamics of meaning and the outcomes. Although meaning is associated with a sense of coherence (e.g., Antonovsky, 1987; Steger et al., 2009; Martela and Steger, 2016), the collective (cohering) dimension of meaning is often neglected (Baumeister and Landau, 2018), especially in empirical studies. Keyes (1998) does conceptualize coherence as an important component of social well-being. Baumeister and Landau (2018) indicated a paucity of empirical studies on the behavioral consequences of the experience of meaning.

There is an abundance of evidence that *positive relationships and interconnectedness* as phenomena of inquiry are linked to many other facets of well-being on individual and social levels (Gable and Reis, 2010; Lambert et al., 2013; Delle Fave et al., 2016; Harrell, 2018; Warren and Donaldson, 2018; White and Jha, 2018; Algoe, 2019; Marujo et al., 2019). Often conceptualizations and empirical findings highlighted links between positive relatedness and meaning in life (e.g., Lambert et al., 2013; Delle Fave and Soosai-Nathan, 2014). Taking conceptual and empirical evidence from the natural and social sciences into account, Delle Fave and Soosai-Nathan (2014) indicated from an interdisciplinary perspective the critical role of the quality of interconnectedness on proximal, distal, and symbolic levels in shaping living systems as well as communities. They concluded that interconnectedness is at the heart of what is meaningful and that the possibility should be explored to investigate meaning from a unified interdisciplinary perspective. In their meaning and relational well-being model (M&RW), Wissing et al. (2019) offered a similar notion: meaning is made on and between various levels of reality and showed how this is empirically manifested in an African cultural context. Helne and Hirvilammi (2015), Helne (2021) proposed a strong relational conceptualization of nature-inclusive well-being and advocate for restraint in the use of the earth's resources and a less materialistic life orientation in view of the repercussions of the rampant consumerist way of life mainly by those in well-resourced contexts. Haybron (2011) stressed the importance of the relationship between humans and nature for well-being of the former and argued that the beauty of nature has a harmonizing influence on humans, facilitating self-regulation and temperance. This idea is also contained in the arguments of Buergelt et al. (2017), indicating that humans urgently need to (re)establish a harmonious relationship with nature. Several of the studies as mentioned above explicitly frame their conceptualizations and empirical studies in the assumptions of a strong relational ontology (e.g., Helne and Hirvilammi, 2015; Marujo et al., 2019; Wissing et al., 2019; Helne, 2021).

Virtues and moral behavior are also linked to what is valuable for people and how these aspects play out in interpersonal relationships, as well as in wider contexts of

interconnectedness. Positive relational qualities are not only linked to the experience of meaning in life, but also to harmony on individual, social and spiritual levels (Nwoye, 2018; Ohajunwa and Mji, 2018; Wang et al., 2018; Li and Düring, 2020; Wissing et al., 2020). Theoretical and empirical studies mostly explored interpersonal harmony together with intrapersonal and contextual harmony – probably because these studies are mostly linked to integrative philosophical perspectives such as Taoism, Buddhism, Confucianism, or African ontological perspectives linking people, nature and spiritual forces (e.g., Igbokwe and Ndom, 2008; Sundararajan, 2008, 2013; Nyamnjoh, 2015; Huang, 2016; Nwoye, 2018; Wang et al., 2018). From the above, it is easy to comprehend that relational qualities and harmony are also linked with *virtues*, values, peace and moral behavior, often as part of interdisciplinary studies (e.g., Fowers and Anderson, 2018; White, 2018; Fowers et al., 2020; McGrath and Brown, 2020; Fowers, 2021; McGrath, 2021; Delle Fave et al., in press). In their interdisciplinary work (psychology and philosophy), Cokelet and Fowers (2019) take a psychological realism stand and see virtues, with practical wisdom as the core feature, as measurable and that the particular environmental context will determine how these are behaviorally enacted. Virtues, morality, and ethical behavior are linked to what is considered good in all human life, but they are even of more critical importance in times of complex challenges such as those associated with climate change and the situatedness of humans in times of pandemics. Ethical behavior in research, practice, and life is always about relational qualities – with others, nature, and what is seen as important on a spiritual level. It needs to be further explored how ethical, moral and virtuous behavior hang together with harmony as a quality of well-being. Moral behavior in specific contexts may potentially give rise to disruption of harmony in specific situations. How will these processes play out to be handled in a balanced manner? Some clues may be found in the processes of self-regulation and temperance, as suggested by Haybron (2011), Van Tongeren et al. (2018) and reviewed by Worthington and van Zyl (2021), and the virtues perspective by Cokelet and Fowers (2019), Fowers et al. (2020).

Harmony as a phenomenon received much attention from philosophy particularly in East Asian (e.g., Li, 2016; Wang et al., 2018; Li and Düring, 2020) and African (e.g., Igbokwe and Ndom, 2008; Mkhize, 2008; Metz, 2016) contexts, but empirical studies lagged behind, especially in Western contexts. Only in recent times harmony and associated constructs and processes such as balance, peace, serenity, harmonization and more, came into focus in scientific psychological studies on well-being referring to qualities on intrapersonal, interpersonal, social, ecological and spiritual levels. Literature reviews (e.g., Wallace and Shapiro, 2006; Lomas, 2021; Delle Fave et al., in press), the conceptualization of models (e.g., Di Fabio and Tsuda, 2018; Gruman et al., 2018; Sirgy, 2019), and empirical studies (e.g., Chuang, 2005; Sirgy and Wu, 2009; Delle Fave et al., 2011, 2016; Lam et al., 2012; Kjell et al., 2016; Schutte et al., 2021) attest to the link between harmony and many facets of well-being, with some placing harmony and balance at the core of functioning well. For example, in a multi-country study, Delle Fave et al. (2016) found that inner-harmony and relational connectedness are core components of what laypeople see as happiness. In an overview integrating philosophical, conceptual, and empirical findings on harmony as explored in psychology, Delle Fave et al. (in press) concluded that harmony might share features with several virtues, aspects of meaning and meaning-making, and the quality of relatedness/interconnectedness. Based on a literature review of mental health, Wallace and Shapiro (2006) concluded that mental balance could be seen as the core of well-being. Similarly, Lomas (2021) concluded from a narrative literature review that balance and harmony are at the heart of well-being manifested in any or all dimensions or facets of life. Sirgy (2019) described a comprehensive hierarchical model of positive mental health guided by the idea of positive balance. He defined positive mental health as a positive balance referring to "a preponderance of a desirable state over an undesirable state specified uniquely at each level of analysis" (Sirgy, 2019, p. 2 of 10), with levels of analysis being indicated as physiological, emotional, cognitive, meta-cognitive, developmental, and social-ecological. Conceptualizations of harmony and harmonization as central to well-being and sustainability of life on earth is explicitly indicated by various researchers, for example, Di Fabio and Tsuda (2018) proposed harmony and harmonization processes at the individual, group, social, and national levels as vital for sustainable development and even suggested that this may form a new research area in psychology. Jordan and Kristjánsson (2017) proposed "harmony with nature" as a specific virtue, building on Aristotle's virtue ethics, and seeing the world in terms of relationships, connections, and context. Harmony and harmonization as ceaselessly changing processes evolving over time are thus strongly linked to notions of meaning, relationality, and virtues (Kwan et al., 1997; Lambert et al., 2013; Jordan and Kristjánsson, 2017; Di Fabio and Tsuda, 2018; Wissing et al., 2020; Delle Fave et al., in press) and its manifestations proposed on and among multiple dimensions from intra- and interpersonal to social, ecological and spiritual levels. Various measures and evaluation strategies were developed to evaluate (facets of) harmony and balance based on different theories and metatheoretical assumptions, for example by Kwan et al. (1997), Lee et al. (2013), Bell and Mo (2014), Igbokwe et al. (2015), Kjell et al. (2016, 2019), but a comprehensive index of situation and context-relevant harmony and harmonization processes on and among all levels is still lacking.

Based on the above analysis of the constructs referring to meaning, relationality, virtues and harmony, and the highlighted overlaps among them it is suggested that they may hang together in a cohering nomological network, still to be explored on an empirical level. Apart from the overlapping denotations of these constructs, the possible wider cohering function of harmonization stands out because of the explicit references made in perspectives on harmony to the quality of relatedness also with non-humans and with nature so relevant in these challenging times of climate change and pandemics. Future research in disciplinary and, in particular, post-disciplinary trajectories outlined above, can explore the empirical links and dynamics among harmony, meaning, positive relatedness and virtues in various contexts. The aim will be to investigate and conceptualize some possible deeper underlying structures and

processes that link these phenomena/concepts on individual person, social/collective and contextual levels.

COHERING HARMONY AS FOCUS FOR POST-DISCIPLINARY WELL-BEING STUDIES?

The content of this section should be read together with the above exposition of the so-called third wave of PP and notions about the butterfly in the garden of well-being studies referring to the characteristics of what is proposed as a new domain of well-being studies. In this section the structure and possible unifying focus for this domain will be considered. Delle Fave et al. (in press) suggested that harmony as a phenomenon may be a core dimension of human functioning, but that much more conceptualization and empirical studies are needed from interdisciplinary perspectives to develop a unified view. From the analysis in the preceding sections, it seems that the proposed new domain of post-disciplinary well-being studies can be structured around a focus on the quality of interconnectedness of human and non-human systems and the complexity of dynamics among them. Therefore, it may be that harmony (as the quality of in-between-ness) can be postulated as a core focus for such an inter- or transdisciplinary domain of well-being studies. However, from the analysis in the previous section of the constructs referring to meaning, relationality/interconnectedness, virtues and harmony and the associations and overlaps in denotations among them, it seems that there may be a broader overarching (or underlying) cohering phenomenon at play which may be more than an overlap of meanings (in linguistic sense) on the level of individual experiences, and which may open up a space for a focus in multi-, inter-, or transdisciplinary well-being studies regarding cohering processes on and among individual, social, and ecological levels. For the time-being, this hypothesized broader network phenomenon/construct is called "cohering harmony" (in which ethical behavior is required for a greater good). It is proposed as a possible unique focus for well-being studies cutting across disciplines. Cohering harmony is more complex than what was traditionally seen as harmony defined in terms of intra- or interpersonal well-being experiences for the good of the individual or human systems alone – the well-being of non-humans and natural systems themselves are also at stake in the presently proposed cohering process where survival of all life on earth is viewed as important. Further conceptualization and empirical studies are of course, indicated for clarification and elaboration, and for the time-being, the terms "harmony" and "cohering harmony" may be used as similar. For the present purposes cohering harmony and harmonization as well-being phenomenon and process is defined as an in-between quality and dynamic of relatedness that evolve and change over time and contexts, as meanings are made in ceaselessly changing relationships within and among people, and between people and non-humans and ecological contexts as expressed in virtuous behaviors and balancing of interests toward the good of humans, non-humans, and nature.

The *focus* of the emerging post-disciplinary domain of well-being studies (COHAR = cohering harmony), born on the boundary of PP as (sub)discipline and initially named "the third wave of PP," is conceptualized in terms of main research questions rather than content of traditional academic subject areas as is described by Van den Besselaar (2012/2018) being the case for inter- or transdisciplinary studies. The main questions guiding research in this post-disciplinary domain of well-being studies (COHAR) may be regarding the complexities of balancing and harmonizing the interest of human and non-human systems toward healthy sustainable functioning and the greatest good for all, and how cohering processes may be optimized over time and during changing conditions toward well-being, while taking contextual, cultural, political, social, economic and individual situatedness ethically into account. This may include, for example, how cohering harmony processes will be applicable, manifest or be promoted in the context of differential effects of the climate crises and climate mitigation efforts on people in different socioeconomic contexts and situatedness (such as inequity, extreme poverty, violence, rural vs. urban living, and more – cf. Thomas et al., 2019). The details of a specific research project will be determined in conversations among researchers from different disciplines in equal status (or rotating leadership depending on the specific research) guided by research questions. Depending on the specific study, several disciplines from across the academic spectrum, may be part of such an endeavor in varying combinations. But of course, working in multi- inter- or transdisciplinary studies require mutual trust as such endeavors have their own challenges in terms of worldviews, conceptualization, terminology, methods used, and interpretations (cf. Fowers, 2021). The focus on cohering processes in and among various systems as proposed for the new domain of well-being studies, link to notions expressed by Rabinowitz et al. (2018) in which hierarchical and lateral links are considered in and among human and non-human systems, and the perspective of Mead et al. (2021b) arguing in their transdisciplinary biopsychosocial model linked to ecological systems theory, that connections to the self, community and natural environment needs to be taken into account, and that such studies are more than what can be called PP alone. Conceptualizations in this post-disciplinary domain of well-being studies also link to notions expressed in the science of virtues (Fowers et al., 2020, 2021; McGrath and Brown, 2020) and ideas of effective well-doing by Lieder et al. (2021), and dovetails with perspectives on nature-inclusive well-being for sustainability (e.g., Kjell, 2011; Helne and Hirvilammi, 2015; Horton and Horton, 2019; Cianconi et al., 2021; Helne, 2021).

Taking the above conceptualization of focus to the ground: Harmony and balance had been shown in empirical studies as important phenomena on intrapersonal, interpersonal, and social levels, but also as an essential quality of the link between humans and natural contexts, and within ecological contexts themselves that also need to be healthy and well. To reach (cohering) harmony as a desired quality of interconnectedness, virtues as expressed in behaviors, play an important role. In this perspective, well-being will mean that human beings will act virtuously and caringly, not only to themselves and each other,

but also toward the earth, for example as shown in efforts to stop the degradation of the environment and biosphere, restrain in use of natural resources just for their own benefit, and to compassionately also care for animals and the environment while also enjoying fulfilling and warm interpersonal relationships and a deeply respectful and wondering attitude toward nature, letting the biodiversity flourish. This attitude toward the environment is already known as environmental ethics. Such an approach that includes moral behavior takes hand with research on character strengths as conceptualized in PP literature (cf. Peterson and Seligman, 2004; Niemiec and Pearce, 2021). In the post-disciplinary field of well-being studies as conceptualized in this manuscript, aspects such as interconnectedness/relatedness, virtues/morality/ethics, and meaning of, in, and to life, are all deeply interwoven in the concept of cohering harmony and harmonization on a broader level than only the individual person and in social systems. Cohering harmony, balance, and harmonization on intrapersonal, interpersonal, social, and ecological levels as well as on the in-between quality among all systems and levels are relevant.

With regard to *epistemological and methodological approaches,* the proposed post-disciplinary domain of well-being studies as described above, may resonate with ideas from the future transforming knowledge productions processes as highlighted by Fazey et al. (2020). They indicated that knowledge production is viewed as collaborative, open, egalitarian and led by values, taking various systems into account while generating wisdom to integrate knowledge and practice based on moral and ethical judgments about the ends pursued. Such endeavors may include academics from various disciplines, but also other stakeholders as well as laypeople. A plurality of methodologies may be used in research designs and the collection of empirical data. It will aim to develop theories for an explanation that can be verified in further research, and seek to integrate knowledge and practice with, and toward wisdom, while knowing that knowledge development is an ongoing and changing process itself.

Post-disciplinary well-being studies may be conducted from a plurality of *metatheoretical perspectives,* including a relational, interconnectedness and virtue ethics perspective. Cohering harmony as a unified focus for post-disciplinary well-being studies presupposes a strong relationality worldview assuming the interconnectedness of all systems on earth and the requirement for morally responsible behavior not only toward humans and human systems, but also to non-humans and broader ecological systems on earth for the sustainability of life and for future generations. Such a post-disciplinary approach in well-being studies may compel researchers to take a fresh look at their disciplinary assumptions, reconsider familiar concepts and methods in order to cohere and develop a deep integration in the joint research, and invest themselves fully and equally in projects from the beginning to the end.

CONCLUSION

This manuscript argues that the so-called "third wave of positive psychology" was actually the beginning of a new scientific domain of well-being studies with a multi- or interdisciplinary nature, wider focus, and inclination to answer the call for action in complex situations and changing times. As such, this post-disciplinary trajectory of well-being studies is more than PP as a (sub)discipline as initially described by Wissing et al. (2018), Lomas et al. (2021). However, the jury is not out on this matter as yet. It can be argued that the goal and scope is the determining element: If multidisciplinary studies are focused only on *psychological* human experiences and behaviors as influenced by contexts and wider systems, it might be conceptualized as part of PP (but why not psychology?). If the multidisciplinary studies, with a more equal status among the contributing disciplines, focus also on the well-being of wider systems themselves and the interconnectedness of all of these, it may be a misnomer to call it PP. It is rather a matter of a new inter- or transdisciplinary domain of scientific well-being studies that dovetail with more holistic perspectives such as One Health, or Planetary well-being, but with a more limited scope and links to other social and humanity perspectives as the emerging science of virtues indicated above. The strong post-disciplinary nature of well-being studies, and consideration of the well-being of many systems to ensure sustainability, and linking values, theories, methodology and empirical studies, indicates that it is beyond PP as (sub)discipline, and that a broader perspective is opening up on well-being. It is therefore foreseen that there will be (for now) at least two trajectories of well-being studies: mainstream PP with an in-depth focus on (fragmented) well-being facets and processes, and a post-disciplinary scientific domain with a delineated wider focus and more capability to address complex challenges of health and well-being in an integrated manner. In-depth studies in mainstream PP will continue and also feed into post-disciplinary well-being studies, with the latter increasing in importance. It may also be that PP as a (sub)discipline of psychology become increasingly integrated into psychology as discipline, enriching psychology with a balanced consideration of positive and negative features of life and events. Thoughtful reflection is invited on the identity, goals and road ahead for each of these trajectories.

There are many similar but also diverging challenges and opportunities for future research in both trajectories. An overriding challenge indicated for both streams of research is to take all levels of the scientific text into account, and in particular the interwovenness among them. The mainstream PP had neglected worldviews and consequences for a long time (but it is changing now – cf. Clifton et al., 2019). In contrast, the post-disciplinary trajectory was more explicitly mindful of ontological and epistemological assumptions and the role of values from its emergence. Both trajectories need more comprehensive and explanatory theories linked with worldviews and situatedness of phenomena. There are many more minor theories linked to specific constructs in mainstream PP, but no overarching or strongly integrative theories. More integrative biocultural and evolutionary theories are often proposed in the post-disciplinary stream, and an Aristotelian virtue ethics meta-perspective is taken. Both trajectories need to take the situatedness of empirical information into account and renew methodologies for more trustworthy findings. A specific substantive focus highlighted for

further research is the exploration of the underlying coherence and dynamics of harmony, meaning, relatedness, and virtues on individual, collective and wider system levels – the latter is a new perspective to be explored further.

In this manuscript, a cohering core for the post-disciplinary well-being domain is highlighted, referring to its possible structure across disciplines, focus, methodologies and metatheoretical perspectives. It is suggested that "cohering harmony" and harmonizing or balancing processes can be (or already is) the central focus of this proposed post-disciplinary domain of well-being studies. This post-disciplinary well-being research domain cuts across the conventional disciplinary boundaries and can be seen as a "convergent science" as conceptualized by Antó et al. (2021, p. 7 of 11). Further conceptualization and empirical studies including multiple disciplines can articulate the processes and actions to facilitate such cohering harmony, while taking into account metatheoretical assumptions, theoretical and methodological aspects, and the specific local empirical situatedness of observation and data collection.

The identified post-disciplinary trajectory can serve as an anchor for studies on virtuous behavior and orientations focusing on cohering harmony and the harmonization of interconnectedness conduits within and between individuals and other people, non-humans and ecological systems, and can provide hypotheses inviting further research. Just as the emerging science of virtues cannot be subsumed by PP despite some links to it (Fowers et al., 2020), the post-disciplinary well-being trajectory (delineated in this manuscript) focusing on the quality of interconnectedness, cohering harmony and balance in and among various life systems cannot be subsumed in PP, despite its links to PP in its emergence. Developments within mainstream PP and other disciplines will, however, continue and feed into this new domain of well-being studies. The intentional pursuit of harmony and balance in all relational components/conduits of interconnectedness as the goal and virtuous implementation of relevant values may serve humans and well-being on the earth good in the long run. Future researchers are invited to take this perspective further. How the state of the art PP trajectory and the post-disciplinary trajectory of well-being studies will develop, time will tell. This development will be further steered by the assumptions, foci and efforts of the next generation of well-being researchers and a transformation in thinking about well-being, and how to understand and promote it in context and on a broader ecological systems level, especially in times of enormous challenges and changes taking the interests of all stakeholders into account.

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.

AUTHOR CONTRIBUTIONS

The author confirms being the sole contributor of this work and has approved it for publication.

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PERMA+4: A Framework for Work-Related Wellbeing, Performance and Positive Organizational Psychology 2.0

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A growing body of empirical evidence suggests that positive emotions, engagement, relationships, meaning, and accomplishments (PERMA) may be a robust framework for the measurement, management and development of wellbeing. While the original PERMA framework made great headway in the past decade, its empirical and theoretical limitations were recently identified and critiqued. In response, Seligman clarified the value of PERMA as a framework for and not a theory of wellbeing and called for further research to expand the construct. To expand the framework into organizational contexts, recent meta-analyses and systematic literature reviews showed that physical health, mindset, physical work environments and economic security could be seen as essential contextually relevant building blocks for work-related wellbeing and are therefore prime candidates to expand the PERMA framework for use within organizational contexts. Through expanding the original PERMA framework with these four factors, a new holistic approach to work-related wellbeing and work performance was born: the PERMA+4. As such, the purpose of this brief perspective paper is to provide a conceptual overview of PERMA+4 as holistic framework for work-related wellbeing and work performance which extends beyond the predominant componential thinking of the discipline. Specifically, we aim to do so by providing: (1) a brief historical overview of the development of PERMA as a theory for wellbeing, (2) a conceptual overview of PERMA+4 as a holistic framework for work-related wellbeing and work performance, (3) empirical evidence supporting the usefulness of PERMA+4, and (4) charting a course for the second wave of positive organizational psychological research.

Keywords: PERMA+4, wellbeing, work-related wellbeing, positive organizational psychology, future perspectives, work performance

INTRODUCTION

Positive psychology has emerged as one of the most rapid-growing sub-disciplines in psychology (Martín-del-Río et al., 2021). During its first decade as a stand-alone science, positive psychological research has grown to account for 4% of all research conducted and published in psychology (Rusk and Waters, 2013). In their bibliometric analysis, Rusk and Waters (2013) found that positive psychological research spanned the full range of psychological sub-disciplines ranging from sport- to clinical psychology. However, most publications (18.74%) seemed to be related to positive psychology *at work* (categorized as "management psychology" −10.88% and "business" −7.68%; Rusk and Waters, 2013). The popularity of positive psychology at work has since increased exponentially within the literature, with around 5,880 manuscripts (totaling 66,635 citations; Martín-del-Río et al., 2021). This groundswell of interest into understanding, measuring, managing and developing positive aspects of work is aptly labeled "Positive Organizational Psychology" (POP; Donaldson and Ko, 2010).

POP has been defined "as the scientific study of positive subjective experiences and traits in the workplace and positive organizations, and its application to improve the effectiveness and quality of life in organizations" (Donaldson and Ko, 2010, p. 177) and draws from the developments in positive organizational behavior (Luthans, 2002) and positive organizational scholarship (Cameron et al., 2003). POP aims to apply the scientific method to investigate the positive states, − traits and – behaviors associated with work-related wellbeing and work performance, which, in turn, spawned a myriad of new theories (e.g., Appreciative Inquiry), constructs [e.g., Psychological Capital (PsyCap)], measuring instruments (e.g., Team flow index) and approaches to organizational interventions (e.g., Positive Psychological Coaching; van Zyl et al., 2020; Richter et al., 2021). These new (positive) approaches towards work-related wellbeing, and work performance has shown to be better predictors of individual and organizational performance than the Big Five personality dimensions, cognitive abilities, emotional intelligence, the situational judgment test, interviews, and in-basket tests (c.f. Moscoso and Salgado, 2021).

Despite these advances and findings, the POP's approach toward measuring, managing and developing work-related wellbeing and work performance has faced a significant amount of criticism (Wong and Roy, 2017; van Zyl and Rothmann, 2019; Goodman et al., 2020). First, critics argue that POP constructs suffer from the "jangle fallacy," where old psychological constructs are merely redressed in new "jackets" to see novel/innovative but are fundamentally still the same (Brown et al., 2014; Compton and Hoffman, 2019; Yakushko, 2019). For example, Duckworth's (2016) "Grit" is seen as indistinguishable from conscientiousness and/or mere perseverance (van der Vaart et al., 2021). Second, positive psychological assessment measures produce inconsistent factorial structures, varying levels of internal consistency, are culturally biased and produce questionable levels of predictive validity (van Zyl and Ten Klooster, 2022). For example, the Mental Health Continuum Short Form and the Grit Scale has been shown to produce no less than 10 different factorial structures, with varying levels of internal consistencies across cultures (van Zyl and Ten Klooster, 2022). Third, positive organizational interventions do not produce significant nor sustainable changes in wellbeing and where significant changes are shown, they are small or marginal at best (Wong and Roy, 2017). For example, two recent systematic literature reviews of brief positive psychological interventions, Ivandic et al. (2017) and Roll et al. (2019) found limited evidence of the effectiveness to reduce negative work-related experiences. Fourth, POP relies too heavily on "contextual factors" to argue or justify non-replicable results (Parks and Schueller, 2014; Friedman and Brown, 2018). For example, in various job crafting interventions, no positive effects on outcome factors could be found. In each study the authors argue that contextual factors (such as the implementation of a new system, organizational restructuring or the environment) played a role in explaining why the intervention was ineffective (c.f. Demerouti et al., 2019; Hulshof et al., 2020). Critics argue that this is due to poorly defined grand theories and a lack of an overarching metaparadigm/metatheory, where unexpected results (that deviate from hypotheses) are defended rather than explored and theories updated (Friedman and Brown, 2018; Hughes, 2018).

Finally, critics argue that POP lacks a unifying metatheory and a series of grand theories or frameworks that explain the development of holistic wellbeing (Wong and Roy, 2017; Friedman and Brown, 2018; Joseph, 2021). Without a unifying metatheory, positive organizational researchers will be confined to componential thinking whereby the focus is on understanding a specific state-, trait- or behavior outside of its context and in isolation of other factors. Metatheories focus on broad and paradigmatic issues related to general theory development in a new discipline (e.g., the purpose of theories and what types of theories are needed, proposing and criticizing criteria for theory development and evaluation) and are comprised of a series of increasingly restrictive grand theories, middle-range theories, and theoretical models (Wallis, 2010). In their seminal work, Seligman and Csikszentmihalyi (2000, p. 5) attempted to provide a meta-theoretical framework for positive psychology by arguing that such is "a science of positive, subjective experience, positive individual traits and positive institutions [aimed at] improving quality of life and to prevent the pathologies that arise when life is barren or meaningless." However, their manuscript failed to outline the purpose of positive theories, which types of theories are needed, and the criteria used to evaluate "positive" theories. It also failed to provide the methods or processes required to generate knowledge. Therefore, their initial conceptualization does not meet the criteria for a metatheory or metaparadigm but could instead be seen as a Grand Theory of general psychology.

On the other hand, grand theories are highly abstract where the focus is more on the formal organization and arrangement of the concept, rather than explaining or understanding social reality (Skinner, 1990). Grand theories are too abstract to state the nature or direction of the relationships between factors in empirical terms or to specify actions or processes for practice. With the exception of Self-Determination Theory (Ryan and Deci, 2000), and the elements borrowed from Existentialism

(Wong, 2012), humanistic psychology (Joseph, 2021) and others, grand theoretical approaches that provide an interpretative framework for the formal organization of a phenomenon in positive psychology is lacking. Although various approaches such as Strengths-Theory (Peterson and Seligman, 2004), the Broaden-and-Build theory on positive emotions (Fredrickson, 2001), and the PERMA model for human flourishing (Seligman, 2011) are positioned as "grand theories," they lack the capacity to explain the organization of complex phenomena and are too narrow and specific in focus.

For example, Seligman's (2011) PERMA approach towards wellbeing "is not a formal theory, but rather a listing of the phenomena that have been shown to [only] be related to wellbeing" (Wong and Roy, 2017, p. 142). Seligman (2011, p. 13) argued that wellbeing is a function of Positive Emotions, Engagement, Relationships, Meaning and Accomplishments and that PERMA should be considered "the gold standard for [understanding] wellbeing." Within organizational contexts, Slavin et al. (2012) argued that the PERMA model should be seen as a functional model for facilitating institutional leadership and to create positive organizational culture. Yet no theoretical argument underpinning these factors as components, rather than mere correlates of wellbeing, was provided (van Zyl, 2013; Wong and Roy, 2017). Further, the PERMA approach negates other factors known to be essential to work-related wellbeing such as the impact of the work or physical environment (Lyubomirsky et al., 2005), positive physical health (Seeman, 1989), growth mindsets (Dweck and Yeager, 2019) and economic prosperity (Biswas-Diener and Patterson, 2011; Ng et al., 2021). Similarly, Goodman et al. (2017) found that PERMA does not attribute any unique variance in wellbeing when compared to other types of wellbeing indicators. Therefore, PERMA is too narrow in scope and does not provide a clear set of propositions about how or why these concepts relate nor does it provide theoretical justification for its position within the broader nomological network of POP (Goodman et al., 2017; Kashdan, 2017). PERMA may therefore be redundant or arbitrary as a measure of both general- (Kashdan, 2017) and work-related wellbeing (Donaldson, 2019). As such, PERMA does not meet the criteria of a grand theory, nor a midrange theory of wellbeing. But rather be seen as a base model for understanding the elements or "building blocks" leading to work-related wellbeing and work performance (Seligman, 2008).

Although it is beyond the scope of this brief paper to reflect upon each of the criticisms, we believe that the final critique is the most important and that addressing such would, by virtue, affect the other challenges. Therefore, a more holistic approach towards work-related wellbeing and work performance is needed by expanding upon the routes to or elements of the construct. Such an approach would provide the discipline with a means to develop and grow, and provide practitioners with a holistic framework on which to assess and develop wellbeing at work. As such, the purpose of this brief perspective paper is to provide a holistic theoretical framework for work-related wellbeing and work performance which extends beyond the predominant componential thinking of the discipline. We do this through providing: (1) a brief historical overview of the development of PERMA as a theory for wellbeing, (2) a conceptual overview of PERMA+4 as a holistic framework for work-related wellbeing and work performance, (3) empirical evidence supporting the usefulness of PERMA+4, and (4) charting a course for the second wave of positive organizational psychological research.

BUILDING BLOCKS OF WELLBEING

Wellbeing and positive functioning are considered essential elements for developing sustainable work performance (Donaldson and Ko, 2010). Wellbeing is seen a state in which an employee "realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and can contribute to his or her community" (World Health Organization, 2004, p. 2). Although various competing approaches to work-related wellbeing exist within the literature, all share the same fundamental principle: to help people fit in and function well at work (Rothmann, 2013). While the "fitting in" component can be controlled for during the recruitment and selection process (by ensuring a good person-job, person-team, and person-organization fit), the "functioning well" component is more important to ensure sustainable work performance (Donaldson et al., 2021; Donaldson and Donaldson, 2021a). Functioning well or "Positive functioning" at work refers to a combination of an employee's positive emotional experiences at work (hedonic wellbeing) and the factors needed to perform optimally in one's work role (eudemonic wellbeing; Rothmann, 2013). In other words, positive functioning occurs when individuals are able to effectively manage the daily fluctuations in positive- and negative emotions at work (i.e., affect balance) and having the opportunity to live up to their potential, having a sense of meaning/purpose at work, harboring feelings of control over one's work-life and the execution of ones duties and being able to build and maintain positive work-related relationships (van Zyl and Rothmann, 2014). This, in turn, leads employees to perform better at work related tasks and leads to extra-role performances (e.g., organizational citizenship behaviors; Albrecht, 2012; Sulea et al., 2012; Davila and Finkelstein, 2013; Warr and Nielsen, 2018). Therefore, positive functioning is an integral part of overall work-related wellbeing and is strongly associated with work performance (Donaldson, 2019; Donaldson et al., 2019). It is therefore not surprising that many POP interventions aim to enhance employees' work-related wellbeing as a means to increase their work performance (Roll et al., 2019; Donaldson and Chen, 2021). However, there is still no consensus on the exact elements or "building blocks" of wellbeing that should be targeted to sustainably enhance work performance (Seligman, 2008; Donaldson and Chen, 2021).

One approach that could provide a roadmap for sustainable performance through wellbeing is PERMA (Seligman, 2011). The PERMA model was positioned as an extension of Seligman's (2002) original theory of authentic happiness. Seligman (2002) argued that happiness is the result of an integration between

two philosophical conditions: hedonism (pursuing pleasure and avoiding pain) and eudaimonia (living in accordance with one's own daimon). Drawing from these two traditions, Seligman (2002) defined happiness as a positive psychological state characterized by three building blocks: pleasure ("pursuing positive- and avoiding negative emotions"), meaning ("experiences where one is connected to something larger than the self"), and engagement ("experiences where one is absorbed or fully cognitively/physically/emotionally emerged in one's hobbies/work/life"). In the original empirical investigation of authentic happiness theory, Peterson and Seligman (2004, p. 40) concluded that "these orientations are distinguishable, that they are not incompatible and thus able to be pursued simultaneously, and that each is associated with life satisfaction." This implies that these three building blocks are independent (yet related) that they can be pursued independently of one another (Peterson and Seligman, 2004) and that these can actively be developed through interventions (Seligman, 2011). However, pursuing these three factors alone is not enough to ensure sustainable changes in wellbeing (Seligman, 2011). As such, Seligman (2011) argued that for authentic happiness to lead to overall wellbeing, it requires two additional components: building and maintaining positive relationships and through accomplishments. This extension of authentic happiness theory, by including positive relationships and accomplishments, led to Seligman's (2011) new theory called "PERMA."

So what, according to Seligman (2011), is PERMA? Seligman (2011) argued that PERMA is not as a theory *of* wellbeing but should rather be considered as framework *for* wellbeing (Seligman, 2008). In other words, PERMA does not describe what wellbeing is, but rather provides a framework for the routes or building blocks to consider when one wants to develop wellbeing. In effect, Seligman (2011) stated that wellbeing can actively be develop through pursuing five measurable elements, which he called PERMA:

1. **Positive emotions**. Experiencing happiness, joy, love, gratitude, etc. in the here and now
2. **Engagement**. Being highly absorption, emersed or experiencing flow while engaged in activities of one's life
3. **Relationships**. Having the ability to establish and maintain positive, mutually beneficial relationships with others characterized by experiences of love and appreciation
4. **Meaning**. The experience of being connected to something larger than the self or serving a bigger purpose.
5. **Accomplishment**. Experiencing a sense of mastery over a particular domain of interest or achieving important or challenging life/work goals.

Individually, these elements were found to be highly predictive of wellbeing and within work-related contexts showed strong associations with work performance (c.f. Donaldson and Donaldson, 2021a). However, as mentioned before, the PERMA model is not without critiques, some of which have already been discussed (c.f. Donaldson et al., 2020 for a more extensive exposition on the topic). Seligman (2008) strongly disagreed with the criticisms and affirmed PERMA as a framework of elements required *for* wellbeing instead of a theory of what wellbeing is. He argued that these elements are not exhaustive but acknowledged that additional evidence-based building blocks might improve the framework. Albeit not being exhaustive, PERMA is exclusive and specific criteria should be considered when considering the expansion of the construct (Seligman, 2008). Seligman (2008) then set six specific criteria researchers should consider before introducing new components:

1. New elements should show to directly and positively relate to wellbeing,
2. Individuals should pursue each new element for its own sake, and not in service or pursuit of another,
3. PERMA should be seen as an exclusive, yet not exhaustive framework that is open and flexible for new developments,
4. New elements should lead to specific developmental interventions aimed at enhancing wellbeing,
5. The list of factors should at all times be parsimonious, and
6. Each new element should be independently defined and measured in relation to others.

Anecdotally, with these six criteria, Seligman (2008) addressed a number of the criteria underpinning the creation of robust theories: clarifying the purpose of the theory (through highlighting that it is an approach to rather than of wellbeing), highlighting what additional types of approaches/elements are needed for its expansion, setting specific criteria for theory development and evaluation and inviting further theorizing (Wallis, 2010). Thus, providing a solid basis for further theory building.

A HOLISTIC APPROACH TO WELLBEING AT WORK: THE PERMA+4 FRAMEWORK

In his conclusion, Seligman (2008) encouraged the scientific community to search for additional building blocks which may enhance or strengthen the PERMA framework. With more than two decade's worth of empirical research underpinning the relationship between the individual elements of PERMA and other forms of wellbeing, this approach could act as a foundational base from which to build a more holistic framework work-related wellbeing and sustainable work performance (Seligman, 2008; Kern et al., 2014; Kern et al., 2015a,b; Bulter and Kern, 2016). As such, based on Seligman's (2008) fourth criteria, Donaldson (2019) and Donaldson et al. (2020) conducted an extensive systematic literature review, meta-analysis, and a range of qualitative assessments in order to determine if and how the framework could be extended into work-related contexts. Their main aim was to determine which additional elements seemed likely to contribute to work-related wellbeing and sustainable work performance over and above the original five elements (Donaldson et al., 2020). They found that four additional building blocks could explain additional variance in work-related wellbeing and work performance and could thus be considered for inclusion into the PERMA framework. Donaldson (2019), Donaldson and Donaldson (2021a,b), and

Donaldson et al. (2020) found empirical evidence supporting the addition of these four elements:

1. **Physical Health**. Operationalized as a combination of high levels of biological, functional, and psychological health assets.
2. **Mindset**. Adopting a growth mindset characterized by an optimistic, future-oriented view of life, where challenges or setbacks are seen as opportunities to grow. This may also be a function of psychological capital, perseverance or grit.
3. **Work Environment**. The quality of the physical work environment (which includes spatiotemporal elements, such as access to natural light, fresh air, physical safety and a positive psychological climate) aligned to the preferences of the individual
4. **Economic Security**. Perceptions of financial security and stability required to satisfy individual needs.

Physical Health

One of the main criticisms of work-related wellbeing interventions is that they negate the importance of physical health as part of the developmental process (Biddle et al., 2021). This is somewhat surprising because a substantial amount of literature (ranging from medical sciences to anthropology) has shown that physical health is one of the most essential components of wellbeing and mental health (Biddle et al., 2021). Seligman (2008) argued that positive physical health is an essential element that buffers against the onset of psychological disorders and is integral to psychological wellbeing. Positive physical health is conceptualized as state of optimal physiological functioning, which is more than just the absence of disease or infirmity (World Health Organization, 2004, p. 10). In essence, positive physical health aims to promote individuals' positive health assets: (1) biological assets, (2) functional assets and (3) subjective or psychological health assets. *Biological assets* refer to the positive ends of one's physiological or anatomical functioning such as physical fitness, health body-mass index, heart-rate variability, pulse, blood pressure (Seeman, 1989). Donaldson and Donaldson (2021a,b) also postulate that biological assets may include mindful reflection on one's own personal health history or health habits.

In contrast, *functional assets* refer to how well individuals can function in the execution of their physical duties in life or at work (Seligman, 2008). This may include self-reported reflections on physical activity or fitness at work (Donaldson and Donaldson, 2021a,b). The final asset pertains to "subjective" or psychological health assets, which is fundamentally a function of how one feels. Here the focus is on aspects that enhance perceptions of physical health, such as a sense of dedication, vigor, absorption, or vitality when engaged in physical activity (van Berkel et al., 2013; Seligman, 2008). Similarly, it pertains to the absence of subjectively perceived health complaints (such as aches and pains), a sense of durability or confidence about one's body, a feeling of control over health-related matters, optimism about longevity and future health, and high levels of overall life satisfaction (Jackson, 2007; Seligman, 2008; Ng et al., 2021). Physical health can also be developed at work and has been shown to effectively supplement the effects of more traditional work-related wellbeing programs (Biddle et al., 2021). The main point though is that within an individual's range of possible physical health levels, those that learn to function at the high end of their range are more likely to feel and function well.

Mindset

Those who hold the belief that their talents can be developed through hard work and deliberate practice (i.e., holding a growth mindset) usually report higher levels of wellbeing and performance than those who view their talents to be innate or fixed (i.e., holding a fixed mindset; Dweck and Yeager, 2019). Holding a growth mindset is characterized by the belief that one's intellectual abilities and talents are malleable and can be developed over time (Tang et al., 2019). Individuals with a growth mindset tend to choose more challenging tasks that help stretch their current capabilities to facilitate personal growth and development (van Zyl et al., 2021). These individuals tend to see failures as opportunities to grow and are more likely to dissect mistakes in order to avoid similar situations in the future (Tang et al., 2019). In contrast, those with a fixed mindset attribute failures and successes to external factors and are more likely to shy away from challenges or fail to live up to their potential (Dweck, 2008). At work, those with a growth mindset tend to invest in their personal development (Caniëls et al., 2018), actively seek feedback on their performance to improve and show a mastery orientation to goal attainment (van Zyl et al., 2021). Further, those who hold a growth mindset at work should also show positive beliefs that their work will provide them with opportunities to grow, that they can meaningfully contribute to the goals of the organization and that work will provide meaningful challenges to test and stretch their capabilities (Donaldson et al., 2020; Donaldson and Donaldson, 2021a,b; van Zyl et al., 2021). It is, therefore not surprising that growth mindset interventions at work have shown to have a significant effect on positive individual (e.g., mental health; wellbeing; and engagement) and organizational outcomes (e.g., increased performance; Han and Stieha, 2020).

In more context-specific terms, PsyCap could be seen as another indicator or element of building a positive mindset at work (Luthans and Youssef-Morgan, 2017; Luthans and Broad, 2019; Donaldson et al., 2021; Youssef-Morgan et al., 2021). Psychological capital refers to the development-orientated mindset individuals adopt that is characterized by "(1) having confidence to take on and put in the necessary effort to succeed at challenging tasks (self-efficacy), (2) making a positive attribution about succeeding now and in the future (optimism), (3) persevering toward goals and when necessary, redirecting paths to goals in order to succeed (hope), and (4) when beset by problems and adversity, sustaining and bouncing back and even beyond to attain success (resilience)" (Luthans et al., 2015, p. 2). More recently, Youssef-Morgan et al. (2021) argued that work-related gratitude should be seen as an integral (additional) component of PsyCap. They argued that work-related gratitude is an "the intentional choice to engage in positive appraisals and feelings of thankfulness and appreciation toward the characteristics, situations, and people currently present in one's

work context. Specifically, this definition synthesizes the conative (intentional choice), cognitive (positive appraisals), affective (feelings), and social (people) aspects of gratitude. Further, it takes into consideration that gratitude is a situational and context-specific state, rather than just a general disposition" which complements and supports PsyCap theory (Youssef-Morgan et al., 2021, p. 3). These factors are considered personal or psychological resources that synchronously interact to produce a development-based mindset overtime through intentionality, goal pursuit and self-discipline (Luthans and Youssef-Morgan, 2017). Hope, self-efficacy, work gratitude, and optimism are proactive in nature, and resilience re-active (Luthans et al., 2015). This implies that PsyCap not only buffers against negative experiences associated with goal pursuits (i.e., resilience), but also facilitates goal attainment through framing failures/opportunities as positive stepping stones or growth opportunities (Donaldson et al., 2021).

PsyCap has shown to be an integral component for facilitating individual and organizational performance and to enhance wellbeing (Donaldson et al., 2020). Donaldson et al. (2020) also argued that PsyCap is not a static trait, but also a state which could actively be developed through human resource development practices and interventions. Salanova and Ortega-Maldonado (2019) demonstrated that interventions aimed at creating a positive mindset through PsyCap are effective, sustainable, durable, cross-culturally impactful and integral for enhancing work-related wellbeing. Given that PsyCap is state-like and malleable, as well as future-focused and associated with wellbeing and work performance, it seems to be an important factor to consider in the expansion of PERMA.

Work Environment

The physical work environment of employees can significantly impact both their physical health and wellbeing (Boegheim et al., 2021; Bergefurt et al., 2022). Given that individuals spend more than a third of their lives at work or engaged in work-related activities, Sander et al. (2019) argued that the physical working environment may be one of the biggest contributors to wellbeing and performance at work. The physical work environment consists of all objects, stimuli and subjective evaluations of organizational climate/culture that employees encounter through the execution of their work roles at work (Bergefurt et al., 2022). The work environment is therefore seen as a complex psychophysical system which is a function of bot the objective physical stimuli at work (e.g., building design, air quality, and natural lighting) but also elements subjectively experienced by employees (e.g., perceptions of physical safety or connectedness to others; Sander et al., 2019).

Sander et al. (2019) argued that wellbeing and performance at work are influenced by their cognitive, affective, and relational responses to the whole office environment. Cognitive reactions refer to the extent towards which the physical work environment affords individuals the opportunity to concentrate on their relevant tasks (i.e., Focus; Sander et al., 2019). Focus is considered the most fundamental element of performance and can directly be influenced by the physical environment. When there is considerable effort required to focus due to environmental distractions (such as noise, heating or poor ventilation) cognitive resources are depleted thus increasing stress and strain (Veitch, 2018). Affective reactions incorporate mood and emotions and pertain to non-cognitive responses to the physical design of the work environment (i.e., Sense of Beauty; Sander et al., 2019). This, in turn, may have a restorative function on employees' energies (Nasar, 1997). When individuals perceive a sense of beauty at work (whether it be due to the design of the office or access to nature), they are more likely to experience positive affect. White (1996) argued that perceptions of beauty at work are essential to foster positive at work. Further, from the psychological strengths perspective, "appreciation of beauty" has also been shown to increase wellbeing and esthetically pleasing organizations fosters a sense of trust in the company (Peterson and Seligman, 2004; Proyer et al., 2016). Finally, relational reactions refer to the effect of the physical environment on creating or fostering a connection between people (Sander et al., 2019). For example, if individuals are located in different buildings (or floors) in the same organization, yet working in the same team, they are less likely to engage with each other physically (Sander et al., 2019; Bergefurt et al., 2022). In essence, the physical work environment directly affects with whom and how often people connect or interact at work, and it may influence the relationships element of PERMA+4 as well. Therefore, relational reactions are a function of the connectedness the work environment fosters (Boegheim et al., 2021; Bergefurt et al., 2022). These three factors have shown to directly and significantly impact overall experiences of wellbeing (both positively and negatively; Boegheim et al., 2021; Bergefurt et al., 2022). Workplace design interventions can therefore play a significant role in not only enhancing productivity but also facilitate wellbeing (Sander et al., 2019; Boegheim et al., 2021; Bergefurt et al., 2022).

Economic Security

Recent research using advanced machine learning approaches, which maximize prediction by thoroughly exploring nonlinear effects and higher-order interactions, has found that one's control over financial matters is one of the strongest predictors of wellbeing (Margolis et al., 2021). The ninth building block in the PERMA+4 framework is economic or financial security (also referred to as financial wellbeing in alternative literature). Economic security refers to the impact one's level of income, savings, and spending has on wellbeing (Zemtsov and Osipova, 2016; Donaldson and Donaldson, 2021a,b). Salignac et al. (2020) argued that making sound financial decisions and exerting control over financial matters are pertinent to overall wellbeing. If one is not able to meet basic physiological needs (such as purchasing food for dinner) or unable to attend to financial obligations (e.g., paying debts, school fees, or medical bills), it may lead to increases in stress, depression and anxiety (Salignac et al., 2020). Those with extreme debt who cannot manage these obligations are more likely to report suicide attempts than those without debt (Naranjo et al., 2021; Rojas, 2021). In contrast, if there is relative certainty about one's financial future, individuals are able to more effectively plan and make bigger life decisions (such as having children or

purchasing a house; Rojas, 2021). This, in turn, also creates surety and stability (Rojas, 2021). Although economic security cannot actively be developed, planning, managing, and controlling spending behavior can. Studies have shown that interventions aimed at training basic financial literacy and financial planning directly impact happiness, health and wellbeing (Lowe et al., 2018).

Despite these factors' relative importance to work-related wellbeing and work performance, these four factors should be tested against Seligman's (2008) criteria before they can be considered for inclusion. Through this brief conceptual overview of the additional four components, we highlighted that each component is positively and directly associated with wellbeing, that each element is pursued for the sake of itself and not a function of another, that interventions are already available targeting each element, that the addition of these elements do not distract from the parsimonious nature of PERMA and that each element is independently measured and defined (c.f. **Table 1**). As such, these four elements can confidently be incorporated into the PERMA framework as a means to expand such into organizational contexts. Given that all Seligman's (2008) criteria are met, these four factors can be included into the expansion of PERMA: thus giving birth to the PERMA+4 (c.f. **Figure 1**).

EMPIRICAL FINDINGS SUPPORTING PERMA+4

The PERMA+4 framework has also been subjected to some empirical investigation. First, Donaldson (2019) and Donaldson and Donaldson (2021b) developed and evaluated the Positive Functioning at Work (PFW) Scale, which aimed to measure the nine building blocks of the PERMA+4 model. The PFW is a 29 item self-report measure that aims to measure the nine building blocks of wellbeing (c.f. **Table 2**). The results showed that both a nine first-order factorial model, as well as a hierarchical second-order model (comprised of nine first-order factors), fitted the data well and exhibited convergent, discriminant, criterion, predictive, and incremental forms of validity with other forms of wellbeing (Satisfaction with Life: Diener et al., 1985; PsyCap: Luthans et al., 2007) and performance measures (Positive Work Role Performance: Griffin et al., 2007), as well as measurement invariance across job function (Donaldson and Donaldson, 2021a,b).

Second, the PFW Scale has been found to predict essential work outcomes, such as turnover intentions, job-related affective wellbeing, plus individual, team, and organizational adaptivity, proactivity, and organizational proficiency (Donaldson and Donaldson, 2021a), as well as academic success (Weiss et al., 2021). Therefore, it is a comprehensive measurement tool that can help determine the needs of students, workers, leaders, and organizations and can be used to guide the design and evaluate POP interventions (Donaldson and Chen, 2021).

Third, to examine if common research biases might have inflated estimates of the PERMA and PERMA+4 in their relationship to wellbeing, three rigorous multi-trait multi-method (MTMM) analyses with 220 knowledgeable co-worker pairs ($N = 440$) were recently carried out. Initially, Donaldson et al. (2020) found that the original 5 PERMA building blocks (positive emotions, engagement, relationships, meaning, and accomplishment) and the four additional potential building blocks of PERMA+4 (physical health, mindset, environment, and economic security) significantly predicted life satisfaction above and beyond self-report and mono-method bias. Next, Donaldson et al. (2021) extended this line of MTMM research and found strong support for the validity of the relationship between overall PERMA+4 and work role performance, including adaptivity, proactivity, and proficiency after correcting for self-report and mono-methods bias. A third analysis was conducted to understand one of the nine PERMA+4 building blocks in depth, namely positive mindset as measured by psychological capital – Hope, Efficacy, Resilience, and Optimism (HERO; Donaldson et al., 2021). Positive Mindset (PsyCap) was also found to be a strong predictor of work role performance above and beyond self-report and mono-method bias (Donaldson et al., 2021). Donaldson et al., 2020 also found that this building block of positive mindset (HERO) predicted work role performance for 3,860 employees across 15 nations. These rigorous MTMM analyses combined with the other primary and large meta-analytic studies presented in this paper strongly suggest the PERMA+4 framework could be a promising way to organize future research and guide the design and evaluation of future interventions in POP 2.0.

FUTURE PERSPECTIVES: PERMA+4 AND POP 2.0

Research in POP has shown exponential growth over the past 5 years (Martín-del-Río et al., 2021). This exponential growth may indicate that the discipline is on the horizon of a new wave of research, innovation and ideas, which may fundamentally

TABLE 1 | New building blocks and Seligman's criteria.

	Seligman's Criteria	Physical Health	Mindset	Work Environment	Economic Security
1	Positively and directly related to wellbeing	Yes	Yes	Yes	Yes
2	Pursing elements for its own sake	Yes	Yes	Yes	Yes
3	Interventions available aimed at new element's development	Yes	Yes	Yes	Indirectly
4	Adds to Parsimony	Yes	Yes	Yes	Yes
5	Element is independently measured and defined	Yes	Yes	Yes	Yes

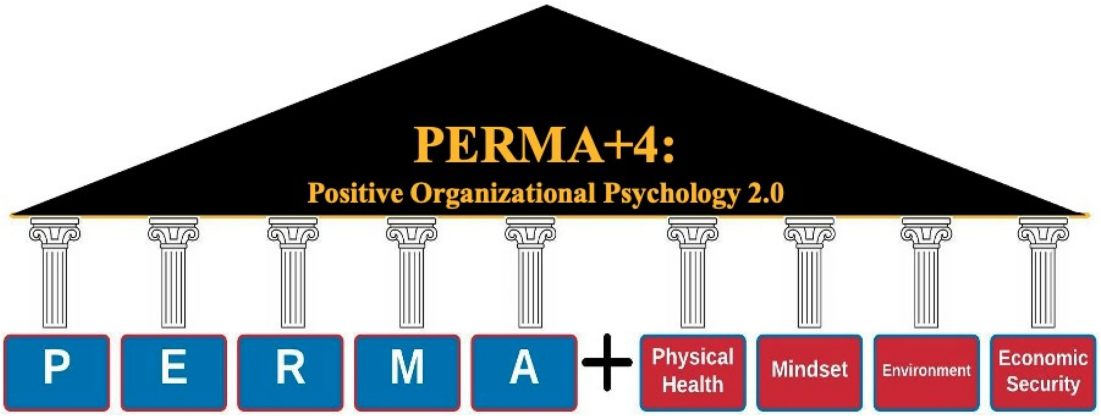

FIGURE 1 | The PERMA+4 framework.

alter its discourse. Two recent studies have further solidified the evidence showing the strong association between wellbeing and performance at work, the targets of the PERMA+4 building blocks. First, Moscoso and Salgado (2021) meta-analyzed the relationship between well-being and work performance with a database of 34 independent samples ($n = 5352$) using supervisory performance ratings and 38 independent samples ($n = 12086$) using self-reported of job performance. The findings revealed a substantial correlation across all the wellbeing measures used (overall subjective, affective, and cognitive wellbeing) with supervisory performance ratings and self-reported performance. Next, Lester et al. (2021) examined the prediction of affective wellbeing to work performance in a sample of 908,096 US Army soldiers (with over ¼ of a million ethnic minorities and over 150,000 women). It was found that wellbeing measures predicted awards for outstanding performance over a four-year follow-up period, in which 114,443 soldiers (12.60%) received an award. Furthermore, each wellbeing variable predicted future awards for both women and men, for enlisted soldiers as well as officers, for several ethnicities, for varying levels of education, and controlling for several other potential explanatory variables. These new studies provide additional compelling evidence supporting the link between work-related wellbeing and work performance.

Another important line of work likely to improve and expand during POP 2.0 is generally known as positive approaches to diversity, equity, and inclusion (DEI; see Rao and Donaldson, 2015; Warren et al., 2019). Donaldson et al. (2021) recently systematically reviewed and analyzed the findings from 25 meta-analyses, 42 review papers, and hundreds of high-quality randomized controlled trials of Positive Psychology Interventions (PPIs) designed to generate wellbeing. In addition, to identifying and analyzing the most exemplary PPIs with an eye toward improving the design of the next-generation of PPIs (Donaldson and Chen, 2021), they found most PPIs have been primarily studied in western, educated, industrial, rich, democratic (WEIRD) countries. One conclusion they reached is more rigorous research on PPIs serving diverse populations and in non-WEIRD contexts is needed to ensure equitable access to effective interventions that generate wellbeing for all. Warren et al. (2019) have suggested a framework to guide these future DEI efforts, and Donaldson and Chen (2021) have provided examples of what new PPIs focused on DEI topics, such as cultural humility at work and a positive approach to preventing sexual harassment in the workplace, could look like in POP 2.0.

We expect to see a new wave of research in the coming years that will include topics like social and organizational network analysis of positive leadership and relational energy in the workplace and more advances in artificial intelligence-driven positive organizational interventions, human-robot collaboration, passive neurological assessments of positive states/traits and behaviors and the like (e.g., see Margolis et al., 2021). This new wave of research will be categorized by rapid innovation, mass adoption of artificial intelligence systems, machine learning, social media analytics, big data analyses, and the like that we will learn from immensely during POP 2.0. These rapid changes will also require more sophisticated models, approaches, and measures which could stand the test of time; yet are flexible to adapt to new innovations and discourses in technology and the discipline. We therefore propose that the PERMA+4 could be used as one of the first models to drive innovation in the wellbeing and sustainable work performance space for POP 2.0.

While evidence into the effectiveness of the PERMA+4 approach has shown promise as a means to predict wellbeing and work performance, research is still in its infancy. To further introduce such into the nomological network of POP 2.0, more research is required into its antecedents/outcomes, how it is measured/approached, and how PERMA+4 can be developed.

PERMA+4: Outcomes and Antecedents

PERMA+4 is positioned as a framework describing the routes towards work-related wellbeing and performance at work. In essence, it implies that PERMA+4 could be used as a process model or framework that could translate important antecedents into wellbeing and performance. Therefore, it is imperative for future research to systematically contrast and compare different

TABLE 2 | Measuring PERMA+4: the positive functioning at work scale.

Dimension	Sub-Dimension	Items	Label
Positive Emotions	Future-Oriented and Affective	1. I feel joy in a typical workday	P1
		2. Overall, I feel enthusiastic about my work	P2
		3. I love my job	P3
Engagement	Absorption	4. I typically become absorbed while I am working on something that challenges my abilities	E1
		5. I lose track of time while doing something I enjoy at work	E2
		6. When I am working on something I enjoy, I forget everything else around me	E3
Relationships	Giving	7. I can receive support from coworkers if I need it	R1
	Perceived	8. I feel appreciated by my coworkers	R2
	Shared Compassion	9. I trust my colleagues	R3
	Psychosocial	10. My colleagues bring out my best self	R4
Meaning	Transcendent	11. My work is meaningful	M1
	Meaning	12. I understand what makes my job meaningful	M2
	Greater Good Motivations	13. The work I do serves a greater purpose	M3
Accomplishment	Goals	14. I set goals that help me achieve my career aspirations	A1
		15. I typically accomplish what I set out to do in my job	A2
	Prove (Performance Goal) Orientation	16. I am generally satisfied with my performance at work	A3
Physical Health	Biological	17. I typically feel physically healthy	H1
		18. I am rarely sick	H2
	Functional	19. I can typically overcome sources of physical distress (e.g., insomnia, injuries, and vision issues)	H3
	Psychological	20. I feel in control of my physical health	H4
Mindset	Growth Mindset	21. I believe I can improve my job skills through hard work	MI1
	Prospection	22. I believe my job will allow me to develop in the future	MI2
		23. I have a bright future at my current work organization	MI3
Environment	Physical	24. My physical work environment (e.g., office space) allows me to focus on my work	EN1
		25. There is plenty of natural light in my workplace	EN2
		26. I can conveniently access nature in my work environment (e.g., parks, oceans, and mountains)	EN3
Economic Security	Income	27. I am comfortable with my current income	ES1
	Medical Spending	28. I could lose several months of pay due to serious illness, and still have my economic security	ES2
	Financial Savings	29. In the event of a financial emergency, I have adequate savings	ES3

Response set ranged from 1 (Strongly Disagree) to 7 (Strongly Agree).

input factors (such as work role fit, psychological safety/availability, and job crafting) to determine the most important antecedents for the PERMA+4 building blocks (Donaldson and Chen, 2021). Through identifying the most important antecedents, researchers and practitioners could build more robust and concrete interventions. Further, a major point of contention within the wellbeing literature is the role of signature or "psychological strengths" in the development of wellbeing (van Zyl et al., 2021). Theory argues that strengths-presence and strengths-knowledge are integral for wellbeing; however, only active strength use has shown to be an essential wellbeing and performance metric. Given that strengths are central to the developing metatheory of positive psychology, it is essential to understand and investigate its role in enhancing work-related wellbeing and performance, and what the role of PERMA+4 is to translate strengths-presence, – knowledge and use into sustainable mental health. Future research should position PERMA+4 as a process factor, and not an active or targeted antecedent of wellbeing. Therefore, focus should be on "what factors are needed to activate PERMA+4 as a means to enhance work-related wellbeing and work performance." Further, the specific individual, group or team, and organizational related outcomes of PERMA+4 (above and beyond wellbeing or mental health) should be investigated. This would not only provide the literature with more support for its effectiveness but provide a solid business case for its active incorporation into HRD practices in industry. Here, focus should be on linking the PERMA+4 to objective strategic growth indicators or to the financial performance of organizations.

The Measurement of PERMA+4

Effective measurement is a central component to the advancement of a discipline and the development of theory. The PFW Scale is a relatively newly developed psychometric instrument aimed at measuring the building blocks of wellbeing. However, despite the robust approach employed in its development, there are still many questions and concerns that need further exploration. First, the instrument was developed within a strictly western context and its cross-cultural equivalence is therefore required. Therefore, the PFW Scale should be subjected to more robust validation processes, with more diverse samples, from different cultural groups and nationalities to determine its viability as a measure. Second, the length of the current instrument increases the possibility for common method bias, acquaintance bias, and measurement error (Peytchev and Peytcheva, 2017). Lengthy self-report questionnaires are known to produce to cause

response fatigue, which negatively impacts on the quality of the data (Peytchev and Peytcheva, 2017; Andreadis and Kartsounidou, 2020). Further, the length of a questionnaire also impacts the response rate, dropouts and overall response quality (Andreadis and Kartsounidou, 2020). Therefore, future psychometric evaluations of the P-F Work Scale should be directed toward significantly shortening the scale.

Third, another area to consider in the measurement of PERMA+4, is to assess work-related wellbeing and performance from a physiological and behavioral perspective. In their position paper, Cipresso and Immekus (2017) argued that psychological researchers should move away from self-report measures and include more objective indicators for their assessments of (positive) psychological states, traits and behaviors. Drawing from advancements in measurement methodology, we believe future developments in the assessment of PERMA+4 could complement self-report measures with biosensors. This will allow, for example, for the uninterrupted measurement of the PERMA+4 components during an intervention without interruption. By incorporating superficial electromyography assessments into the measurement, approaches would allow researchers to passively assess wellbeing indicators such as positive emotions and engagement through facial muscle activation. Other psychophysiological responses associated with wellbeing could also be assessed through wearable technologies. Here, smart watches, for example, could be used to measure cardiovascular activity, respiration, respiratory inductance plethysmography (through thoracic strips), blood oxygen saturation, and the like could be used as indicators for positive emotions, engagement, and physical health. Neuro imaging could also be used to assesses experiences of accomplishments and the neurophysiological responses associated with building positive relationships (Cipresso and Immekus, 2017). Psychophysiological responses associated with experiences of PERMA+4 could also be captured through measuring hormones (such as cortisol levels; Vázquez et al., 2009; Lazzarino et al., 2013).

From an (objective) behavioral assessment perspective, it is important to investigate if what people self-report on PERMA+4 and how they behave are aligned. Technology could close the gap between what people think they feel or perceive and what they actually perceive (Cipresso and Immekus, 2017). We suggest that future researchers invest in developing activity-related behavioral assessment measures whereby wellbeing could objectively be assessed through the language people use, the physical expression, voice tones, postures, gestures, body movement, and the like. These aspects are already used as indicators for mental illness assessments and could easily be adapted to measure mental health. Sport psychology and health psychology interventions already employ motion sensors, accelerometers, and gyroscopes in modern cellphones as indicators of physical and mental health (Cipresso and Immekus, 2017). We see scope for expanding their use into organizational contexts through assessing PERMA+4.

Fourth, we suggest that latent profile analysis be used in conjunction with computer-adaptive assessments, in order to determine and diagnose the "type" of profiles people exhibit in their pursuits to enhance their wellbeing. This would aid in creating more tailored intervention strategies which are more aligned to the needs, wants and strengths of participants. Further, by using computer-adaptive assessments, more accurate profiling can be done with a lot fewer items. Finally, future research should further investigate the construct validity of the PERMA+4 model and the associated PFW Scale. Donaldson (2019) and Donaldson et al. (2020) have already demonstrated that the PFW Scale is related to other scales such as psychological capital (Luthans et al., 2007) and life satisfaction (Diener et al., 1985). Future investigations should aim to relate the scale to other work-related wellbeing measures (e.g., Flourishing at work Scale; Rothmann et al., 2019) and work performance (e.g., Individual Work Performance Scale; Koopmans et al., 2013) to ensure that it does, indeed, behave how the theory states it should. In summation, the measurement of PERMA+4 should take central stage in future research.

Developing PERMA+4

The PERMA+4 model is positioned as a roadmap for factors leading to work-related wellbeing and sustainable work performance. Although research has shown that the individual factors of the approach are strongly related to wellbeing and work performance, evidence as to the practical usefulness thereof is still lacking. Multi-component positive psychological interventions are therefore needed (built around each component of the PERMA+4 model) in order to determine if these routes toward wellbeing and work performance are, indeed, relevant in practice. It is therefore important to investigate how interventions could improve each of the building blocks in PERMA+4 and which are more efficient in enhancing wellbeing and work performance at the employee, leadership, group or teams, and organizational levels (see Donaldson and Chen, 2021). Further, technologically driven intervention strategies should also take center stage in future research.

Given the rapid rise and adoption of artificial intelligence (AI) in psychology, we expect to see a rise in AI-driven positive psychological interventions within organizations ranging from AI-Coaching to AI-driven chat bots aimed at enhancing wellbeing (Greer et al., 2019; Worthington and van Zyl, 2021). Fully automated conversation agents (or "chat bots") could automate the diagnosis of current challenges and generate appropriate self-help interventions tailored to the needs of the individuals (Greer et al., 2019). These chat bots do not require active input from a therapist, coach, or practitioner, enhancing its perceived accessibility and usefulness. Therefore, allowing for intervention content to be generated and used when it is needed and eliminates the delay between the experience of a problem and a potential solution (Greer et al., 2019). The use of chat bots is still rare within organizational contexts but will become increasingly important over the next two decades (Laranjo et al., 2018). Further, virtual reality or augmented-related interventions could be used to facilitate the development of positive states, traits, and behaviors through an immersive environment which is tailored to the needs/circumstances/context of the client (Baños et al., 2014, 2021). Video games could also be used as a safe and cost-effective means to develop

wellbeing and enhance performance (Kelly, 2020; Baños et al., 2021). Kelly (2020) argued that video games are naturally designed to enhance the core capabilities known to enhance wellbeing, such as creativity, pleasure, engagement, meaning, social skills, emotional regulation, attention, environmental mastery, accomplishments (through skill progression) and also affords individuals the opportunities to live out their strengths in a safe environment.

CONCLUSION

The evidence accumulated by POP over the past two decades strongly supports the link between wellbeing and performance at work and that such could effectively be developed through POP interventions. PERMA+4 might be used as one framework to guide future efforts to build the evidence-base for the science of POP. It could also be used as a framework to guide educational efforts, consulting and coaching protocols, and next-generation POPIs, in what we might imagine could go down in history as the second phase of research and practice known as POP 2.0.

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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REVIEW
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Toward a Unified Framework for Positive Psychology Interventions: Evidence-Based Processes of Change in Coaching, Prevention, and Training

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Since 2000, research within positive psychology has exploded, as reflected in dozens of meta-analyses of different interventions and targeted processes, including strength spotting, positive affect, meaning in life, mindfulness, gratitude, hope, and passion. Frequently, researchers treat positive psychology processes of change as distinct from each other and unrelated to processes in clinical psychology. This paper presents a comprehensive framework for positive psychology processes that crosses theoretical orientation, links coherently to clinical psychology and its more dominantly "negative" processes, and supports practitioners in their efforts to personalize positive psychological interventions. We argue that a multi-dimensional and multi-level extended evolutionary approach can organize effective processes of change in psychosocial interventions, by focusing interventions on context-appropriate variation, selection, and retention of processes, arranged in terms of key biopsychosocial dimensions across psychological, biophysiological, and sociocultural levels of analysis. We review widely studied positive psychology constructs and programs and show how this evolutionary approach can readily accommodate them and provide a common language and framework for improving human and community flourishing. We conclude that Interventions should start with the person, not the protocol.

Keywords: positive psychology, process-based coaching, training, therapy, extended evolutionary meta-model, mediation

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In 2000, Seligman and Csikszentmihalyi argued that psychology had become excessively focused on negative traits, pathology, and repairing psychological damage, and had neglected the study of individual and community flourishing. Since that time, the field of Positive Psychology has thrived, with thousands of studies on virtues, strengths, positive emotions, and positive communities and workplaces. We see this explosion of studies in reviews and meta-analyses on signature strengths and virtues (Schutte and Malouff, 2019), helping behavior (Lefevor et al., 2017), creativity (Acar et al., 2020), resilience (Liu et al., 2020), positive affect and broaden and build theory (Fredrickson, 2013), forgiveness (Wade et al., 2014), flow (Harris et al., 2021), gratitude (Boggiss et al., 2020), self-compassion (Wilson et al., 2019), passion (Pollack et al., 2020), mindfulness (Fjorback et al., 2011), hope (Griggs, 2017), optimism (Rozanski et al., 2019), meaning in life (Manco and Hamby, 2021), volunteering (Milbourn et al., 2018), positive forms of motivation (Ntoumanis et al., 2021), value affirmation (Howell, 2017), school-based positive interventions (Tejada-Gallardo et al., 2020),

workplace positive interventions (Donaldson et al., 2019), and other forms of positive intervention (Carr et al., 2020). This research has led to a broadening of the definition of positive psychology itself, with theorists arguing that positive psychology needs to include both positive and negative constructs and needs to consider a wider number of methodologies and levels (e.g., group, culture, etc.; Lomas et al., 2021).

The proliferation of effective positive psychology interventions is exciting, but the very growth and breadth of the field makes it hard to learn and to synthesize in a way that casts a clear light on next steps. Looking back, we see clear progress, but the best pathway forward is far less clear. How do we make positive psychology interventions stronger and more effective for more people?

A common-sense approach might lead the field to follow in the footsteps of clinical psychology and pit a variety of new interventions against old interventions, and see which one "wins", i.e., is more effective. However, this model has failed to improve interventions in clinical psychology (Johnsen and Friborg, 2015; Ljótsson et al., 2017; Jones et al., 2019) and there are few reasons to believe its impact on positive psychology would be any different. Standing still also seems unwise, because despite decades of effort designed to promote well-being, there is no clear evidence that well-being is increasing in the world (Easterlin and Angelescu, 2009; Richter et al., 2019; Marquez and Long, 2021). A alternative approach is needed.

We argue that the field of positive psychology needs to make two major shifts to continue its progress. The first is a shift from evaluating complex intervention packages to evaluating specific intervention elements that target processes of change (Hayes et al., 2020a). We need to know why positive psychology interventions work in a more granular way that can help us refine and target our interventions. Second, we need to stop assuming that the same intervention will have the same effect on all people. We need to tailor interventions for particular people in particular contexts (Hayes et al., 2019). The present paper will provide a framework for understanding and implementing process-based, personalized positive psychology interventions in a way that builds on the best of the existing knowledge base in our field.

FROM EVIDENCE-BASED PACKAGES TO PROCESSES

In the early stages of a field, it makes sense to test complex intervention packages against waitlist and active controls. We use this "package" approach because, initially, we do not know if the interventions will produce meaningful effect sizes and it seems better to be comprehensive to maximize the chance that interventions will produce meaningful change. After two decades of research, however, we now know positive psychology interventions produce meaningful effect sizes, often in the "medium" range (Donaldson et al., 2019; Schutte and Malouff, 2019; Boggiss et al., 2020; Carr et al., 2020; Liu et al., 2020; Manco and Hamby, 2021; Ntoumanis et al., 2021). The question now is, will continuing to evaluate complex packages make us better at promoting well-being?

The answer is likely "no." The package approach does not allow us to identify what elements in the package are active, which is not only inefficient, it also slows conceptual progress. A complex package may, overall, produce benefits, whilst also having many unnecessary elements. For example, Fordyce's (1977) happiness program has many distinct elements, such as improving organization, increasing creativity, helping people to value happiness, and developing a healthy personality or character. We have little evidence that all these elements are equally valuable or necessary. This is not a criticism of the Fordyce program—rather, it is an acknowledgment of the limit of our approach to evaluating it. Assessing the effect of entire packages does not let us assess the importance of the components within it, nor the process of change they engage. As a practical result, we may feel pressured to administer the entire package or, if time or resources do not permit, choose elements from the package that we intuitively think might work best. This is not a good way to make either scientific or practical progress.

The package approach makes it difficult to refine and compare interventions, because we don't know what is being compared in a deeper or more functional sense. Perhaps packages with different names are really altering similar processes (Wolitzky-Taylor et al., 2012) or two similarly named programs (say, two "mindfulness" interventions) are targeting unique processes. When we don't know what we are comparing, it is unlikely that comparisons will be useful. When we don't test the conceptual basis of interventions with precision, new approaches will be less able to build on the empirical results of the past.

This appears to be part of why comparing packages in clinical psychology (Arch et al., 2012; Forman et al., 2012) has led to no clear winner (Cuijpers et al., 2020). As a result, some have argued that all interventions work, regardless of the components (Budd and Hughes, 2009), but this leaves the field rudderless, and fails to acknowledge that interventions can work for completely different reasons.

A distinct advantage that positive psychology has over traditional research in clinical psychology is that it has escaped the focus on syndromes and hypothesized latent disease entities. This is a huge step forward in empowering more precise and personalized targeting of changes that matter, but taking advantage of that opportunity requires a research program that is equally well-focused. We can meet this opportunity by shifting from the study of evidence-based packages to evidence-based processes of change and the intervention elements that move them (Hayes and Hofmann, 2018; Hofmann et al., 2021).

We define processes of change as theory-based, dynamic, progressive, contextually bound, modifiable, and multilevel change mechanisms that occur in predictable, empirically established sequences oriented toward desirable outcomes (Hofmann and Hayes, 2019). Let's break this definition into its parts.

Theory Based

Processes are based on clear, testable scientific theories of positive influence. For example, Self-determination theory provides clear,

testable theories that increasing autonomous motivation in the workplace will lead to increased productivity (Manganelli et al., 2018).

Dynamic

Processes can be bidirectional, interactive, and non-linear. For example, challenges to one's life may become too great to assimilate, and then change may involve sudden disturbance and increased variability that leads to dramatic transformation (Hayes et al., 2007). Trauma can lead to initial distress and destabilizing followed by post-traumatic growth, such as an increased appreciation of life, more meaningful relationships, and increased sense of personal strength and meaning (Tedeschi and Calhoun, 2004).

Progressive

Therapeutic change processes may need to be ordered in particular ways to produce optimal effects. For example, increasing self-esteem may be a useful precursor to increasing self-compassion (Donald et al., 2017), if a person who feels they are worthy of compassion is more willing to treat themselves kindly.

Contextually Bound and Modifiable

We need processes that are going to be useful to the practitioner and thus must start with the contextual factors practitioners can actually change. Contextual knowledge is doubly useful because we also need to deploy processes that are sensitive to context features of the client's life (Ciarrochi et al., 2016). For example, skillful practitioners can increase the extent that people think in broader and more useful ways in a difficult situation (Kazantzis et al., 2018). This evidence makes reappraisal a potentially strong focus of change, and potentially more useful than something that is difficult to modify, like personality or temperament. However, this process needs to be considered in context, as reappraisal may not be useful for all people in all situations. For example, youth may be less able to use reappraisal strategies than adults (Brockman et al., 2017). Similarly, the precise nature of the contextualized skill needs to be known. For example, we know that reappraisal is most helpful when it fosters cognitive flexibility (Arch et al., 2012).

Multilevel

Processes are nested within others. Consider, for example, the construct of hope, or one's sense of agency and efficacy in identifying pathways for achieving one's goals (Snyder et al., 1991). We can examine hope on the physiological, psychological, or social level. At the physiological level, hope may be associated with higher heart rate variability (Schwarz et al., 2003; Oh and Chae, 2018). At the psychological level, self-reported hope is associated with individual well-being and achievement (Ciarrochi et al., 2007, 2015). Finally, groups can be more or less hopeful, and group level hope may increase the hope of individuals within the group (Parker et al., 2015). Thus, a hope intervention (Snyder et al., 2002) may focus on biological, psychological, and social functioning.

FROM GENERIC TO PERSONALIZED INTERVENTIONS

The second issue with the proliferation of positive psychology packages is practical. What intervention do we use for a particular individual in a particular context? For example, if we find that a loving-kindness intervention increases well-being in a group of people, should we assume that this intervention will work for each individual client? Metaphorically, do we treat an evidence-based positive psychology package as a pill that injects positivity into each client's life (Farias and Wiholm, 2015).

Because researchers have tested almost all positive psychology interventions using classical group comparison statistics, our current knowledge base carries the assumption that the average effect at the group level applies to the individual development over time of persons in the group, at least probabilistically. It has been accepted in the physical sciences for 90 years (Birkhoff, 1931) that such an assumption is legitimate only if the modeled events are "ergodic" (Molenaar, 2004). For example, we might assume that the effect of loving-kindness on a group of participants applies to each individual in the group over time, at least probabilistically. If the loving kindness intervention raises happiness by 1 point (on a 10-point scale) over the control group, we might assume that most individuals will experience a 1 point increase while some experience a 3-point increase, and others may experience a 2-point decrease. It turns out that between person variation cannot be used to predict or model within person variation unless the phenomena being modeled are ergodic but that assumption is violated in psychological areas (Hayes et al., 2019) because ergodicity requires both that the phenomenon studied is stationary and that the same dynamic model applies to all persons. A violation of ergodicity means far more that the well-worn knowledge averages do not apply to individuals—-rather it means that group effects cannot be used to model individual change even probabilistically.

A solution to this problem is to examine psychological phenomena using experience sampling and similar high temporal density approaches, and to analyze relationships within individuals over time. These idiographic relationships can then be aggregated nomothetically, but only if such nomothetic generalizations increase the precision of idiographic findings, or what we have termed an "idionomic" approach (Hayes and Hofmann, 2021).

Idionomic research and analysis is particularly well-suited to examining processes of change which, by definition, are not stationary and thus cannot be properly modeled using classical statistical approaches without violating their underlying assumptions. When applied to processes of change, idionomic research avoids the ergodic error and allows more personalized modeling of intervention impact. We believe that shifting from a package-based approach to a process-based approach will increase the effectiveness of positive psychology interventions.

At this stage of development we can start with what we have learned from the package approach: What are the processes that are likely to be generally effective in groups of people. Examples might be promoting hope, meaning, positive activities, kindness,

self-compassion, and identification of strengths. We know all these processes form the core of effective interventions. As a practitioner, our next step is to create a *personalized intervention*: What processes are most important to a particular client, at this time given this goal in this context. We need to create a case conceptualization based on idiographic and idionomic data (Hayes et al., 2020b). We can then target these biopsychosocial processes of change with specific elements or components.

We earlier mentioned that one of the greatest strengths of the positive psychology field is that it discouraged giving people a diagnosis of a syndrome or disorder, using something like the Diagnostic and Statistical Manual of Mental Disorders (DSM). The traditional DSM approach to diagnosis is neither valid nor particularly useful to practitioners (Hayes et al., 2020b). For example, using DSM, we might conclude that two people have the same "disorder," if they have 7 of 10 symptoms of generalized anxiety. The problem with this approach is the two clinically anxious people may be anxious in entirely different ways and require radically different treatments. The first person might have experienced a traumatic attack; the second person the loss of a job. Would we assume that they should receive the same intervention? Nobody practicing personalized psychology would make this assumption.

A strength-based approach is less likely to fall into the same error, but it can occur. Imagine two people want to engage in more physical activity. The first-person experiences substantial positive affect, but struggles to stay organized and committed to long-term goals. The second person is extraordinarily organized, but experiences little motivation or positive affect. These two people may need very different interventions. Perhaps the former would respond better to behavioral activation and goal setting, while the latter may need more focus on value clarification and motivation.

This is the strength of a process-based approach. There is no reason to give individuals the same packaged intervention. We don't have to think of someone who struggles to engage in activity as having a deficiency or disorder. Instead, we can identify what drives activity for that individual, leaving behind the demonstrably false assumption that the same processes drive activity in all individuals.

A UNIFIED FRAMEWORK

The Extended-Evolutionary Meta Model

Perhaps the biggest step in creating a unified positive psychology is agreeing on terms. This is a challenge, because there are hundreds of theories and measures in positive psychology, each often using their own terms. Consider the list of terms in positive psychology that link to positive thinking: Hope, optimism, primal beliefs, positive reappraisal, confidence, self-concept, self-esteem, self-efficacy, learned helplessness, reframing, positive problem orientation, automatic negative thoughts, and so on and on. This problem is not specific to positive psychology, it haunts all of psychology. Researchers call it the "jingle-jangle" fallacy: terms often sound different but are the same, or sound the same but are different (Marsh et al., 2003).

One way to proceed would be to work within one broad, theoretical framework and seek to integrate all terms within that framework. However, if we were to choose the terms of one theory, say Seligman's PERMA theory of well-being (Seligman, 2011), then we risk seeming to be irrelevant to self-determination theory (Ryan and Deci, 2017) or broaden-and-build theory (Garland and Fredrickson, 2013). In addition, any set of terms located within a current theory risk being irrelevant as new theories arise, as new terms are needed, or as old theories fall away. For example, should we integrate the new area of "Primal World Beliefs" (Clifton and Yaden, 2021) into one of the older theories, or does it need a new theoretical framework with new terms?

A field cannot progress without shared terms and assumptions (Alexandrova, 2017). We propose to use a meta-theory as an organizing framework, the Extended Evolutionary Meta-Model, or EEMM (Hayes et al., 2020a,b). Evolution is the foundation of all life sciences, and perhaps for this reason, few major psychological theorists argue that their views are hostile to an evolutionary account. Take PERMA, SDT, and broaden and build theories as an example: each of the well-known developers of these views have written about the importance of evolutionary theory to their thinking (Cohn and Fredrickson, 2006; Seligman et al., 2006; Seligman, 2011; Ryan and Deci, 2017).

We can apply modern evolutionary science principles not just to genes, but also to epigenetics, behavioral learning and symbolic thought (Jablonka and Lamb, 2006). Evolution applies to the individual and groups; it applies across disciplines and cultures. It is well-suited to serving as the foundation for promoting positive behavioral and cultural change (Wilson et al., 2017). Importantly, modern multidimensional and multi-level evolutionary principles can be used in a prosocial way that avoids any whiff of eugenics or social Darwinism (Wilson et al., 2017). Evolutionary principles can be readily linked to context and purpose and are used for the purpose of promoting equality, reconciliation, peace, prosocial behavior, and meaningful living (Wilson et al., 2017).

The core driving force behind evolutionary change are the principles of variation, selection, and retention, in a specific context (Wilson et al., 2017; Hayes et al., 2020b). Without variation, behavior change is impossible. Indeed, some positive psychology interventions focus specifically on inducing healthy variation. For example, a positive psychologist might induce people to experience positive affect (Lyubomirsky et al., 2005; Boehm and Lyubomirsky, 2008), so they are more likely to be exploratory, socialize, and build skills and resources (Fredrickson, 2001). Similarly, mindfulness is expected to broaden awareness and increase variability (Garland and Fredrickson, 2013). Psychopathology is often characterized by rigidity over flexibility (Hayes et al., 1996), and approaches like Acceptance and Commitment Therapy deliberately seek to increase values-based behavioral activation and exploration, even in the presence of distress (Hayes and Ciarrochi, 2015; Hayes, 2019).

We can think of *selection* as the goal of the intervention or desired behavior. It is what works for the client in a particular context. The client may want to achieve a goal, develop meaning,

connection, joy, curiosity, health, or live in a valued way. Practitioners evaluate every intervention in terms of how it serves the client's needs and values, both short term and long term. For example, we can think of the needs addressed by self-determination theory as selection criteria for processes of change (Hayes, 2019). A self-determination practitioner might ask, does this process support the clients need for autonomy, competence, and/or connection?

Retention relates to how we maintain adaptive behavior. Many positive psychology interventions promote retention through maintenance, follow up, homework, practice, broadening psychological patterns, or habit formation (Kazantzis et al., 2018).

We set variation, selection, and retention inside a particular context, because no process of change is useful without considering the context. Sharing emotions may be adaptive at home, but harmful in some work environments. Context includes the client's current situation, history, environment, repertoire, and goals. Positive psychologists often discuss context in terms of stimulus control, social support, culture, and so on, but also discuss context in terms of the environments and social groups that people select and/or shape. Action and context are intertwined, and a modern evolutionary approach recognizes that people are not passive responders to the environment, but actively select, change, and create the niches in which life unfolds. For example, job crafting interventions encourage people to redesign the workplace to be more need satisfying (Tims et al., 2013). Mate selection assistance or relationship enhancing skills help people create more supportive social niches in which to develop their lives (Siette et al., 2017; Hielscher et al., 2021; Veronese et al., 2021).

We can cast every intervention and every process of change in terms of variation, selection, and retention, in context. For example, imagine you are working in an educational context, with a specific student who is procrastinating and consistently does not feel smart enough to achieve their academic goals (low and rigid self-concept), and does not have a clear sense of why they are attending the university in the first place (low, or unclear motivation) and feels incompetent, with no sense of academic self-efficacy. The student does not complete work on time and is in danger of dropping out and something must change to prevent dropout – that is the outcome being targeted – but the hypothesized processes of change in this case might be rigid and low self-concept, unclear academic motivation, and a lack of a sense of behavioral competence and self-efficacy.

The practitioner might induce healthy variation in low self-concept by encouraging the client to engage in something new, such as a mindfulness intervention designed to help notice and let go of negative self-talk and thus counteract the low self-concept. Let's say we implement the intervention, but after a week or two, the student has made no noticeable improvements in self-concept or procrastination. Since this variation focused intervention did not in fact lead to healthy variation in self-concept, it is not surprising that procrastination did not change. Suppose the practitioner now shifts more toward low or unclear motivation and low sense of competence and self-efficacy.

She now encourages the student to engage in mental contrasting (Clark et al., 2021), which involves asking the student to consider and elaborate on the most positive outcome they associate with achieving their goal, and also to elaborate on important obstacles to the goal. A week later, we discover that mental contrasting has increased academic motivation and self-efficacy and reduced procrastination. The very success of this intervention suggests that, for this person, motivation and self-efficacy are key processes of change and mental contrasting is a key intervention. The practitioner might then work with the student to make mental contrasting a habit (retention) and to monitor issues of motivation and self-efficacy going forward. This simple example illustrates how variation, selection, and retention can be used to personalize an intervention. With another client, or in another context, perhaps mindfulness would have worked, but not mental contrasting.

The same simple principles of variation, selection and retention can apply to more complex problems. For example, imagine that a client just got promoted, and now struggles with work-life balance. They feel constant time pressure to finish everything on time, but they want to do everything perfectly so nobody could ever criticize them. As a result, they are sacrificing quality time with their children and partner. Although this problem is common, it is unlikely to have a common solution. Everyone's context and demands are likely to vary in important ways. The skillful practitioner will thus seek to identify what the problem is and what the client needs. To keep things simple, here we will assume the client is overly perfectionistic at work and has overcommitted to workplace values vs. home values. We might seek to put several processes into play, such as acceptance of distress at doing something imperfectly, clarification of work/life values, increased mindfulness, and presence at home, and improved commitment to sleep and exercise to manage physiological stress. Each of these interventions might introduce something new into the client's life and would be selected and retained if it altered targeted processes of change and resulted in improved work-life balance.

Organizing Evidence-Based Processes

The processes of variation, selection, retention, and context can be applied on multiple levels and multiple dimensions, and each of these dimensions can be targeted for variation, selection, and retention, in a particular context. **Figure 1** presents an overview of the model.

The extended-evolutionary meta model proposes six psychological dimensions: Affect, cognition, attention, self, motivation, and overt behavior. We identified these dimensions based on a comprehensive review of processes of change in clinical interventions (Hayes et al., 2020a). The processes could readily be sorted into these categories or their combination. We did not assume any hard and fast distinctions – rather we found the dimensions to be useful. Besides the psychological level, processes of change can occur at the sociocultural level of analysis or the biophysiological level. In addition, processes can be empirically shown to be adaptive or maladaptive.

In what follows, we discuss the process of change that researchers have proposed in positive psychology. We identified

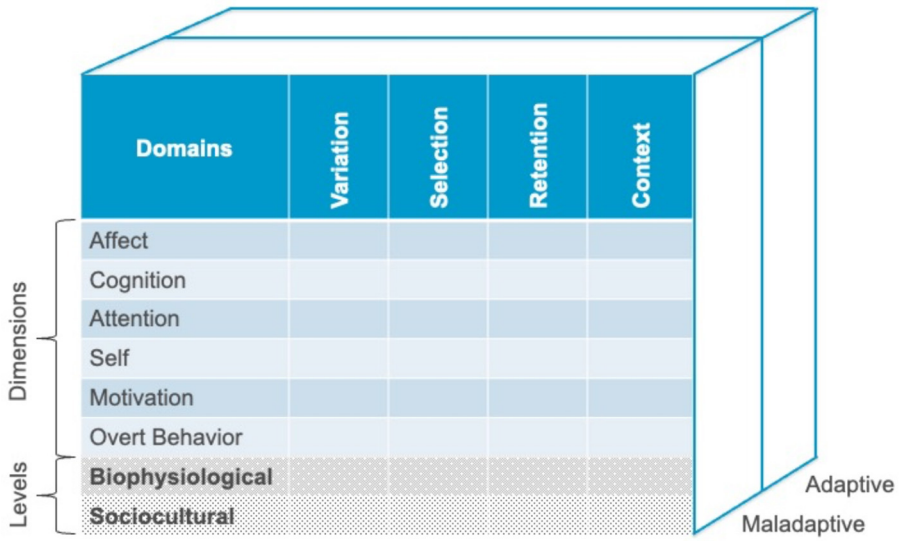

FIGURE 1 | A conceptual space for the examination of adaptive and maladaptive change processes, based on modern multi-dimensional, multi-level evolution science. Copyright Steven C. Hayes, Stefan G. Hofmann, and Joseph Ciarrochi. Used by permission.

these processes from literature in several ways: First, we used the positive psychology expertise of Ciarrochi and Oades (first and third author). Second, we identified process *via* a recent bibliographic analysis of positive psychology (Hendriks et al., 2019). Finally, we reviewed the construct topics of every article published between 2016 and 2021 in the Journal of Positive Psychology. We sought to include every major process, in some form, in the positive process column of **Table 1**. The negative processes come from prior clinical reviews (Ciarrochi et al., 2021). **Appendix A** contains a table of major positive processes and linking research articles.

We roughly sorted processes in terms of the EEMM (**Table 1**). These processes cross-multiple dimensions, so this classification can be viewed as a starting point for discussion. For example, wisdom, post-traumatic growth, spirituality, and mindfulness are likely to cross multiple dimensions (Reker et al., 1987; Wong, 1998; Linley and Joseph, 2004).

We will focus our discussion on the positive processes here, as researchers have reviewed negative processes in the clinical literature (Hayes et al., 2020a). Most of the positive processes in **Table 1** have evidence supporting their value (see **Appendix A**), though all of them need additional evidence, especially for determining whether the process is useful in predicting change at an individual level. Said in another way, the contextual nature of the EEMM emphasizes that all "positive" or "negative" processes of change need to be placed in scare quotes in terms of their impact for a particular individual, which is more based on the idiographic network of relations than overall nomothetic expectations (e.g., cross-sectional correlations).

The reader may notice that terms that often suggest one process, e.g., mindfulness, or self-compassion, often consist of multiple rows in the EEMM. For example, mindfulness can be linked to positive and negative cognition, affect, attention, and sense of self. Thus, different programs that utilize mindfulness interventions may alter processes of change in a variety of dimensions that may produce substantially different outcomes. Strength spotting too consists of multiple components, such as building one's sense of self (*courage is your strength*) and developing motivation (*your love of learning is a strength*) and the same caution applies. The EEMM is more of a reminder of dimensions and domains that can be addressed than it is an ontological periodic table.

Table 1 provides a broad overview of the field, cast in terms of the EEMM and targeted processes of change. Clinical psychology has largely focused on processes in the left-hand column and has emphasized undermining of maladaptive processes that lead to mental health problems. Positive psychology has largely focused on processes in the right column and promotive adaptive processes that lead to flourishing. Naturally, both fields target both kinds of process, so the difference is primarily emphasis. One thing appears certain: We cannot reduce "positive" and "negative" to a single dimension (Diener and Emmons, 1984; Monni et al., 2020). Studying mental health problems will not lead you to understand flourishing, and vice versa (McGaffin et al., 2015). In a given day, people can engage in high amounts of maladaptive and adaptive behavior (Ciarrochi et al., 2021), and experience high levels of both positive and negative affect (Crawford and Henry, 2004). Or they can engage in little behavior with adaptive significance or experience little affect of any sort. Adaptive and maladaptive processes are separable.

"Separable" does not mean unrelated. Instead of thinking of positive and negative processes as part of a single continuum, we can see them as part of a complex dynamic network that changes over time (Hayes et al., 2019). For example, imagine you have a client named person X who is dissatisfied with their job and

TABLE 1 | Evidence-based processes classified by dimension.

Dimension	Undermining negative processes	Promoting positive processes
Affect	Reducing negative affect *Mindfulness*: Non-reactivity to negative emotion acceptance of negative feelings	Increasing positive affect, happiness, feelings of curiosity or awe. *Nonattachment:* Letting go of pride and need to hold on to positive feelings, when doing so is beneficial Emotional intelligence: emotion identification and management Promoting contentment, tranquility Resilience and coping (focused on emotion rebound from challenge) Love
Cognition	*Mindfulness:* non reactivity to thoughts; disengage or defuse from unhelpful thoughts. Reappraise or reframe negative thinking. Challenge dysfunctional thinking. Disrupt excessive worry or rumination. *Mental contrasting*: identify barriers to achievement	Seeking accurate information, effective problem solving; Developing positive or helpful self-talk, reappraisal, optimism, attitudes, hope. *Job crafting*: Redesigning job; problem solving Solution focused interventions Positive imagery. Recalling positive memories; imagining positive futures *Mental contrasting*: Identify benefits of goal achievement Well-being literacy Wisdom Creativity (divergent thinking), open mindedness
Attention	*Mindfulness:* Awareness of negative feelings, acting with awareness of negative consequences of behavior Reduce focus on task irrelevant thoughts. Reducing attentional bias to negative information	*Mindfulness*: awareness of positive consequences of behavior. Savoring: Embracing present moment, Focusing on things I'm grateful for. Focusing on the positive. Flow: full attentional absorption in task Noticing nature
Self	Undermining negative self-concepts, low self-esteem, low self-efficacy., Undermining fixed mindset. *Self-compassion*: seeing oneself as suffering and deserving compassion	*Identifying strengths:* focused on skills and capabilities Growth mindset; positive self-esteem and self-efficacy. Promoting a transcendent sense of self. Best possible self-interventions *Self-compassion*: Seeing self through the eyes of a friend Spirituality Post-traumatic growth, authenticity
Motivation	Undermining amotivation, and unhelpful aversive motivation (e.g., escape from guilt, pressure)	*Identifying strengths*: focused on what love and value. Promoting positive forms of motivation, e.g., supporting autonomy, connectedness, and competence needs. Value clarification, and/or promoting recognition of passions and preferences *Job crafting:* Improving fit between own needs and job Promoting people to value humility, patience, courage, gratitude, responsibility, and other aspects of character Personal strivings (identifying motivation for)
Overt behavior	Undermining unhelpful behavior and habits. Promoting perseverance (persistence in behavior in presence of negative affect or pain).	Promoting positive behavior and habits. Promoting patience (persistence in absence of immediate reward). Increasing pleasurable or fun activities. Goal setting and planning skills Courageous behavior *Job crafting:* Altering work environment and behavior Promoting leisure activity and/or physical activity
Social level/dimension not specified	Reducing loneliness, conflict, social skill deficits	Promoting social connection Civic engagement Promoting prosocial behavior Relationship with animals Help seeking Couple resilience

is far from flourishing. How might a positive psychology coach intervene using the EEMM system?

We might start with a case conceptualization, as in **Figure 2** (Hofmann et al., 2021). Practitioners can draw this out simply by hand on a piece of paper, perhaps after the first session. The conceptualization is not set in stone, but rather speculative and revised as the practitioner works with the client. Black arrows indicate processes that are positively linked (increase in one hypothesized to lead to increase in another). Clear arrows are negative relationships.

Let's say Person X seeks coaching from you for sleep disturbance. You might be tempted to teach them sleep hygiene or help them get to bed earlier, but if the **Figure 2** case conceptualization is correct, this is unlikely to work, because sleep problems are a consequence, rather than a cause of problems in their life. Person X has a poor understanding of their emotions and is unaware when they are feeling irritable and anxious. As a result, they are sometimes reactive and impatient with co-workers. This, in turn, causes the co-workers to respond badly to them. Person X responds with unhelpful thinking and

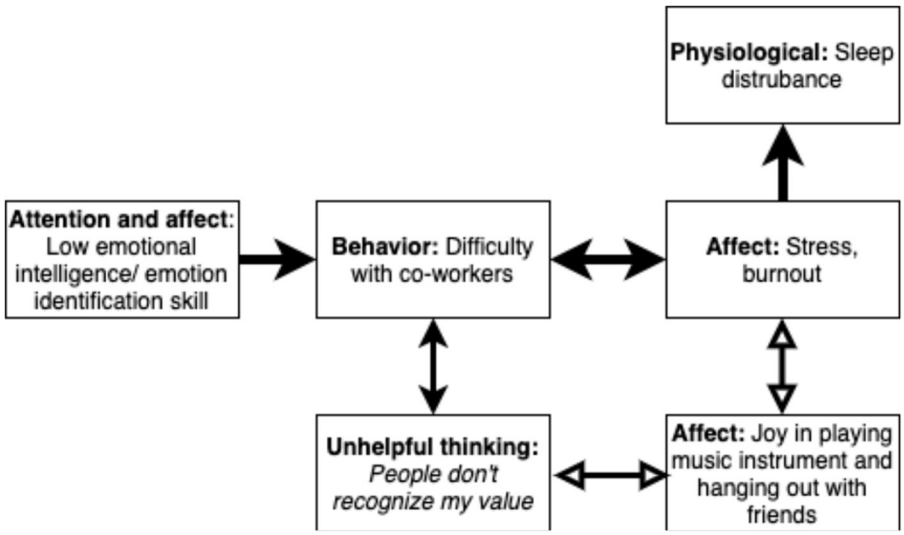

FIGURE 2 | Positive and negative processes as distinct and interacting. Note: Clear arrows indicate negative relationships. Width of line indicates strength of relationship.

burnout. One thing in the network offsets the burnout: Playing guitar with friends. On days when person X does this, they experience less burnout and unhelpful thinking. Note the bi-directional link. This means that on days when person x is under stress, they are less likely to play a musical instrument. This captures one of the great ironies in positive psychology: People may be least likely to do something positive for themselves when they are in most need of it (Ciarrochi et al., 2002; Sheppard et al., 2018).

Using this network as a guide, the practitioner may intervene in multiple ways. They may help the person identify their feelings and recognize when they are feeling irritable and impatient. This may reduce difficulties with co-workers which, in turn, may reduce negative thinking and burnout and increase positive activity. They may work with unhelpful thinking, increase the extent the person engages in pleasurable activities, or teach them more optimal ways to manage difficult co-workers.

So far, this shows a conceptual and idiographic analysis that can help personalize interventions. There can also be data-driven analysis, based on experience sampling measures (e.g., Ciarrochi et al., 2021) and network analyses (Gates et al., 2014; e.g., see Sanford, 2021). There appears to be no conceptual barrier to implementing a process-focused network approach to case conceptualization and treatment (Hayes et al., 2019; Hofmann et al., 2021).

What positive psychology processes might go into this network? **Table 2** presents some of the most common positive psychology constructs, categorized by the EEMM. Notice how each construct is linked to processes and set at a particular level or multiple levels (L in the table). Note also that some constructs include multiple dimensions. There may be controversy about what processes are associated with a construct, but the EEMM classification system at least allows us to argue and discuss perceived differences using the same language. This is a first, critical step to improvement.

Table 2 represents hypothesized processes. These processes must remain hypothesized until future intervention research confirms that the interventions change the process variables. We also need longitudinal analysis to examine if interventions have unexpected benefits on processes. For example, meaning in life interventions may initially motivate people to engage in new behavior. Over time, this may indirectly increase their self-confidence and optimism. This kind of hypothesis highlights the need for intensive, time series data.

Table 2 presents interventions that focus on one construct. There are comprehensive positive psychology packages that are intended to cover most of the major constructs in positive psychology. The EEMM can clarify similarities and differences between these packages too. We illustrate this in **Table 3**.

Although the three packages in **Table 3** are all designed to promote well-being, they are clearly different. The package based on Seligman's well-being theory is much more focused on promoting positive affect than the other two packages. Fordyce's program increases positive affect, but also includes components focused on behavior and character. Both programs focus heavily on individual level processes. In contrast, Social and Emotional Learning programs focus more on the social level and are less focused on producing positive affect and more focused on self-regulation. This emphasis makes sense, as educators often implement SEL programs inside a school context, in order to reduce bullying, help students to stay focused and learn, and promote positive relationships between students and teachers.

It is worth noting that whilst these three programs are all designed to be comprehensive, they have many unique components. We might be tempted to combine what is unique in each program into a "meta" program. However, such a program

TABLE 2 | Positive psychology constructs and associated processes in positive psychology.

Positive psychology construct with example interventions	**L**	**Af**	**C**	**A**	**S**	**M**	**B**
Optimism and hope. Think of time when lost something, and a door closed and another opened (Seligman et al., 2006)	I	x	x				
Strengths. Identify what you are good at, identify skills, abilities, passions; find ways to apply strengths to everyday life (Schutte and Malouff, 2019)	I				x	x	x
Meaning in life. Clarifying values, find meaning in adversity (Steger et al., 2008; Manco and Hamby, 2021)	I					x	
Positive affect/broaden-and-build. Inducing positive affect to enhance exploration, socializing, skill development (Howell, 2017)	I&S	x					x
Goal setting. Make goals specific and measurable. Engage in mental contrasting (think of benefits; think of barriers) and if-then contingency planning (Clark et al., 2021)	I		x				x
Growth mindset. Promote idea that growth is possible, and undermine idea that you are fixed (Mueller and Dweck, 1998; Schleider and Weisz, 2018)	I				x		
Creativity. Increase fluency, flexibility, originality, and elaboration (Alves-Oliveira et al., 2021)	I		x	x			
Humor. Remember three funny things that happened during the day (Wellenzohn et al., 2018)	I	x	x				
Patience, conscientiousness, grit, and persistence. Teach people to persist in behavior, in presence of a motivation, or difficult feelings (Roberts et al., 2017). Combine persistence and passion (Credé, 2018).	I	x					x
Positive self-talk. Teach people to use helpful language to encourage and direct themselves (Hutchinson et al., 2008; Blanchfield et al., 2014)**.**	I	x	x				x
Multi-dimensional, mindfulness. Teach people experiential acceptance, non-reactivity to thoughts, focus on present moment, acting with awareness, observing (Fjorback et al., 2011)	I	x	x	x			x
Self-determination theory: Support the need for autonomy, competence, and connectedness (Ryan and Deci, 2017).	I/S				x	x	
Self-efficacy, self-esteem, and self-concept. Help people to believe they are effective, skillful, worthy of love, and not broken (Niveau and New, 2021)	I				x		
Savoring. Focus on particular experiences, maximize happiness, and physical sensory, emotional, and social experience (Smith and Hanni, 2019)	I	x		x			
Use of breath. Slow breathing to induce calm and focus (Zaccaro et al., 2018).	P	x		x			
Biofeedback focus on body responses, engage in strategies to reduce stress (Lehrer et al., 2020).	P	x		x			
Gratitude. Identify reasons for gratitude. Saying thank you to others (Boggiss et al., 2020).	I/ S	x	x	x			x
Kindness. Perform acts of kindness. Prosocial spending (Curry et al., 2018).	S	x					x
Empathy. Increase effective communication broaden perception, bridge gap between self and other (Levett-Jones et al., 2019).	S	x	x		x		
Prosociallity. Build cooperation, strong teamwork (Mesurado et al., 2019).	S						x
Job crafting. Reimagine workplace, identify values in workplace, modify workplace context) (Tims et al., 2013)	I&S		x			x	x
Positive parenting. Improve parenting knowledge, motivation, affect, and behavior. (Sanders, 2012)	I&S	x	x			x	x

L, Level; P, physiological level; I, individual; S, Social; Dimensions: Af, affect; C, cognition; A, attention; S, self; M, Motivation; B, overt behavior.

may become too large, and some components might be irrelevant to some people. We speculate that the best way forward would be to identify what a particular individuals needs, in a specific context, and then provide them with the essential components of the interventions that target those needs. Start with the person, not the protocol. For example, if someone is physically inactive

TABLE 3 | Hypothesized processes in three multi-component, positive psychology interventions.

Components	L	Af	C	A	S	M	B
Seligman-based, PERMA intervention (Gander et al., 2016)							
Pleasure: Remember three things you have experienced today that were related to fun, amusement, joy, pleasure.	I	x					
Engagement: Remember three things you have experienced today where your attention was particularly focused, and you were not aware of your surroundings.	I			x			
Positive relationships. Remember three things you have experienced today that were positive experiences with other people.	S	x					
Meaning: Remember three things you have experienced today that were personally significant and meaningful	I	x				x	
Accomplishment: Remember three things you have experienced today where you were successful or where you had the impression that you did something really well.	I	x	x		x	x	
Fordyce' happiness program (Fordyce, 1977; Narmashiri et al., 2014; Mirbolouk and Salari, 2021)							
Spend more time socializing	S						x
Develop an outgoing, social personality	S				x		x
Become more active	I						x
Lower expectations and aspirations, be realistic	I		x				
Develop positive, optimistic thinking	I	x	x				
Get better organized and plan things out	I		x				x
Eliminate negative problems (especially stop worrying), decrease concerns	I	x	x				
Become more present oriented	I			x			
Value happiness, think about enhancing happiness	I	x				x	
Increasing creativity	I		x				
Considering yourself, authenticity, be yourself	I				x	x	
Developing healthy personality/character	I				x		
Being productive at work/meaningful work	I					x	x
Social and emotional learning programs (Taylor et al., 2017; Lawson et al., 2019)							
Self-awareness -Identifying emotions, having an accurate self-perception, recognizing strengths Self-confidence, self-efficacy, recognizing values	I	x	x	x	x	x	
Responsible decision-making: Identifying problems, analyzing situations, solving problems, self-evaluation, self-reflection, ethical responsibility.	I/S		x		x		x
Relationship skills: Communication, social engagement, relationship building, teamwork, establishing and maintaining healthy relation-ships	S					x	x
Social awareness: Perspective-taking, empathy, appreciating diversity, respect for others.	S		x			x	x
Self-management: Regulating emotions and behavior.	I	x					x

L, Level; which refers to physiological (P), I, individual (I); and/or S, Social level (S); Dimensions: Af, affect; C, cognition; A, attention; S, self; M, Motivation; B, overt behavior.

and has unrealistic ideas about physical fitness, then this could become the target of the specific intervention for them. If another person is struggling to understand people's motives at work, then the focus of the intervention might involve perspective taking.

The EEMM suggests that successful implementation of the processes in **Tables 2**, **3** requires a consideration of variation, selection, and retention, in context. It also requires a consideration of the ordering of processes. For example, let's say we want to help someone improve performance in the workplace (context). Assume this person feels stuck and is, at present, unwilling to do anything new. We might start with strength building, to get them doing and thinking in new ways (variation). Once the person believes they have the strength to improve, we might move on to goal setting, encouraging them to try new things at work (variation) and see what improves performance (selection). Perhaps they might try bringing kindness to the workplace or use slow breathing to manage stress and be more present to colleagues, or improve organizational skills, or practice empathy. We would have them monitor what worked and didn't work (selection) and seek to reinforce and make into a habit (retention) what was improving performance.

Building and Extending on Past Approaches

All models, including the present, have evolved from earlier forms. The EEMM links to the past in four important ways. First, our approach builds from and extends approaches focused on enhancing treatment effectiveness by tailoring treatment to the unique individual and their particular situation (Norcross and Wampold, 2018). Researchers have

labeled this approaches as *treatment adaptation, responsiveness, individualizing, personalizing, and tailoring*, and, like the present approach, seek to attune research on processes of change to the details of a specific individual in a specific context.

Second, the EEMM shares the goals of Measurement-based Care (Scott and Lewis, 2015; Lewis et al., 2019), which involves enhancing usual care through systematic evaluation of client data during the intervention process. Ideally, we need to measure important processes that promote change, and these measures should guide action, for example, by warning a practitioner if an intervention is failing to hit its mark. We add to this approach by suggesting that the processes and outcome measures feed into an interactive network, such that processes don't merely affect the outcome in a unidirectional and linear way, but also affect other processes and are influenced by the outcome.

Third, our process model has consilience with many ideas in implementation science. For example, Presseau et al. (2019) suggest that interventions should have a detailed specification of behaviors targeted for change and an alignment between intervention components and outcomes. They argue that we can specify behavior in terms of the Action, Actor, Context, Target, and Time. Our model adds to this approach by suggesting that we can use actions to promote variation, selection, and/or retention, across six dimensions and multiple levels.

Fourth, our approach creates a context for the examination and comparison of specific process-based interventions such as Barlow's universal protocol for transdiagnostic treatment (Barlow et al., 2017; Leonardo et al., 2021) or specific process-based models such as the psychological flexibility model in Acceptance and Commitment Therapy (Hayes et al., 1999). The EEMM is a "meta-model" of evidence-based processes of change that allows specific models and methods to be examined for their completeness while providing a common language and well-accepted framework in the form of evolutionary science for different theorists to communicate what is essential about their approach. Thus, we can examine ACT (Hayes, 2019) as a process-based intervention and the EEMM can be used to see if specific kinds of concepts or methods are needed to expand a traditional ACT approach. Similarly, we can examine the Unified protocol (Barlow et al., 2017) as a set of interventions and if specific areas of the EEMM are not well-covered, efforts can be made to expand the protocol coherently.

We might use the EEMM to examine processes targeted and methods deployed in a positive psychology or other protocol, but the EEMM does not, by itself, suggest a specific protocol or process. It is not possible to compare, say, the PERMA or broaden and build approach to the EEMM, but it is possible to use the EEMM to further develop PERMA or broaden and build as process-based coaching approaches. It is not possible to test the difference between process-based therapy and, say, ACT, but it is possible to compare "off the shelf ACT" and ACT as a form of process-based therapy, and, if outcomes are indeed improved by process-based dynamic tailoring, to see if the improvement is because of larger or broader movement of psychological flexibility processes or other processes that may be suggested by the EEMM.

FUTURE DIRECTIONS

Positive psychology has revolutionized the way we approach interventions. It has shifted the focus from fixing problems to promoting thriving, and led to a proliferation of new, positive interventions. Positive psychologists were right to point out that positive functioning is not merely the absence of negative functioning, and vice versa. Indeed, the two often co-occur in the same minute,– anxiety and joy, success and failure, socially skilled and unskilled behavior. These are not necessarily opposites.

This article proposed several steps the field can take to keep making rapid progress. First, instead of focusing on complex packages, the field needs to shift toward evidence-based processes that are often nested within the package. This focus will help us identify the most powerful ingredients in different interventions and combine ingredients in a way that is most effective. If the goal is to build a treatment package that works for many people, models like ORBIT (Czajkowski et al., 2015) could be used to systematically evaluate treatment components, combine them into a proof of concept package, and then conduct pilot and feasibility testing. However, even with packages designed this way, individual assessment is needed as we cannot assume the package will work the same way for each person. Thus, what is needed are models based on idionomic findings that allow the tailoring of intervention kernels within an overall approach that can maximize gains for particular people. The "packages" of the future will not be one-size-fits-all collections, but coherent, flexible models linked to sets of modifiable elements.

Second, we need to consider how negative and positive processes interact to influence individual outcomes. Whilst positive and negative cannot be reduced to a single continuum, we can think of them as interacting processes in a dynamic network (Hayes et al., 2019). For example, positive emotion may help people to manage and recover from stress (Ong et al., 2006). Treating oneself with kindness and compassion may protect people from the harmful effects of low self-esteem (Marshall et al., 2015).

Third, we need to personalize positive psychology. We have made great progress in understanding the ingredients that are likely to promote positive change, but now we need to ask which of these ingredients is most relevant to a particular person in a particular context. For example, whilst promoting positive thinking seems like a universally "good" process, we must recognize the contexts when it is potentially unhelpful, as when focusing on the positive reinforces experiential avoidance (Foody et al., 2013), encourages self-focus and loneliness (Mauss et al., 2012), promotes harmful attachments (Sahdra et al., 2016), or incorrectly focuses blame for a lack of positivity on the person rather than a toxic situation (Ciarrochi et al., 2016).

The practitioner can use the Extended-Evolutionary Meta Model, described here, to target the potential active processes of change identified in both clinical and positive psychology research. A personalized approach would start with case conceptualization, which involves identifying the core processes that are likely to apply to a particular client (Hayes et al., 2020a). Perhaps one client needs more focus on building hope, whereas another needs to develop social skills. The practitioner could then

implement a process-based intervention, based on that tentative conceptualization. During the intervention, the practitioner would receive feedback from the client about what is working and not working and would adapt the case conceptualization and intervention accordingly. In this way, the practitioner would implement different, evidence-based processes (variation), select those that are benefiting the client, and then, through practice and habit formation, help the client to retain the skills. The full details of this approach are beyond this paper, but the interested reader can follow up with Hofmann et al. (2021).

Finally, we need to evaluate the utility of the EEMM. We would argue that the model can be shown to be useful if it: (1) addresses the current literature in a way that fits with its assumptions and purposes, (2) builds on existing and well-supported concepts that have precision, scope and depth without arbitrarily leaving aside issues that should be addressed, (3) addresses what is known without distortions or narrow adjustments to deal with anomalies, and (4) leads to new and testable insights. This very paper is an exercise in supporting the first three points. It appears that the EEMM was able to be used to sort the evidence-based processes in positive psychology, without excluding any major theoretical position or approach. In addition, it showed how the positive psychology processes links to clinical psychology processes, demonstrating substantial scope and depth, while challenging the unwarranted notion that clinical psychology and positive psychology are incompatible or cannot be merged. Future research is needed to explore many new research questions, including the possibility that idiographic and process-based tailored interventions may improve outcomes over and above well-established and relatively comprehensive intervention protocols, such as Barlow's Unified Protocol (Barlow et al., 2017). Early research on that question has already yielded suggestive evidence in support of a process-based approach (Fisher et al., 2019).

CONCLUSIONS

There is clear evidence that positive psychology interventions are effective. More people need these interventions. Substantial numbers of people who are failing to flourish and may be classified as "languishing" (Keyes, 2006; Keyes and Westerhof, 2012; Nelson and Padilla-Walker, 2013). About 20–25 percent of people struggle with mental health problems (Baumeister and Härter, 2007), 25 percent of youth experience a traumatic event (Perkonigg et al., 2000), and 50 percent of people experience some form of workplace bullying (Chatziioannidis et al., 2018; Ng and Chan, 2021). Many people who are languishing fail to receive help (Ciarrochi et al., 2002; Cusack et al., 2006; Sheppard et al., 2018).

We believe a process-based approach to positive psychology can help. It may not only lead to more effective interventions, but it may also lead to more people being able to provide help. People don't have to complete postgraduate study in clinical psychology or psychiatry to deploy evidence-based kernels that fit human needs. They don't have to complete specialized training by a guru or have elaborate professional guilds to be able to use evidence-based process. Nobody owns these evidence-based processes, the way people may own packages and training programs targeting hypothetical diseases. We believe many of the evidence-based processes in **Tables 2**, **3** could be taught to and utilized by everyday helpers: Bartenders, business leaders, hairdressers, coaches, personal trainers, clergy, educators, criminal justice personnel, managers, and youth mentors. With the right technical aids, people engaged in human empowerment could track processes of change and tailor intervention kernels to the process needs of people.

The key would be to focus training on specific intervention kernels linked to specific processes that could be adequately taught to a specific helper in a specific context. For example, youth mentors can learn the most relevant processes for supporting young people to stay engaged in school when emotions arise that might lead to avoidance or withdrawal. They do not need to learn to do more advanced clinical techniques such as exposure therapy. They only need to recognize what they can do, and what is beyond their expertise and needs to be referred to the proper support services.

There will be challenges to training up a broad group of psychological helpers who take a process-based focus. There have been negative effects observed in therapy and mindfulness-based training (Cuijpers et al., 2018; Britton, 2019; Curran et al., 2019). Helpers will need to be taught a core set of skills that will reduce the risk of client alliance ruptures and minimize helper behavior such as rigidity, over control, and delving into areas like past abuse and trauma without adequate knowledge. All of these behaviors may make the client feel disempowered and devalued (Curran et al., 2019). Helpers will probably need technological aides to do the high temporal density assessment required to understand the process-based needs of individuals. Even with these training challenges, however, ending the era of top-down, one-size-fits all protocols and taking a process-based approach will help positive psychology step forward to assume its rightful role in human development world-wide. The problems we suffer as a human community are too great for a handful of specialists to solve alone. The time has come for a more democratic and broadly focused positive psychology that better meets the needs of those we serve.

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REVIEW
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"A New Hope" for Positive Psychology: A Dynamic Systems Reconceptualization of Hope Theory

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In this review of the central tenets of hope theory, we examine the meta-theoretical, theoretical, and methodological foundations of the literature base. Our analysis moves from a broad examination of the research landscape in hope theory across disciplines, to a deeper investigation of the empirical literature in university students. This review highlights the significant impact of this body of research in advancing our understanding of aspects of thriving characterized by hope. However, we also evidence several limitations that may impede the advancement of the next wave of growth in this field. To address these limitations, we argue for an interdisciplinary approach to expanding the meta-theoretical, theoretical, and methodological horizons, enabling a more dynamic systems approach to the study of hope. Drawing on the intersection of positive psychology with systems thinking, we describe a methodological approach that enables a deeper examination of the processes and interactions through which hope emerges, using an analysis of the lived experience of young people. It is proposed that this research agenda will bring to life an alternate story about the resourcefulness of our youth through their own voice, enabling us to leverage this in the design of more effective strategies to facilitate hope in the future. This research agenda provides a roadmap that will provide alternative methodologies that address the current limitations in the field of hope research and, importantly, can provide fuel to spur on the acceleration of the next wave of research and practice in the field of positive psychology more broadly.

Keywords: systems dynamics, interdisciplinary, hope theory, methodology, meta-theoretical

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INTRODUCTION

"A long time ago in a galaxy far, far away". . .. With this phrase, George Lucas launched what was to become one of the most successful cinematic epic sagas in recent history. In a thought-provoking choice, Lucas began the series in the middle of a story, launching with the fourth episode, Star Wars: A New Hope, for technical and storytelling reasons. The story launches straight into the action while hinting at untold history. In a parallel universe, Rick Snyder launched a theory of hope that has helped drive the significant growth and impact of the field of positive psychology, but there is a sense that there was more to this story. As hope theory enters its third decade of research, the first trilogy if you like, many storylines have been explored, with the opportunity now for some deeper character development. In this critically appraised topic (CAT) review, we explore the roots of the hope theory story by examining the meta-theoretical, theoretical, and methodological assumptions

that underpin the research. As the story develops, we argue that drawing on multi-disciplinary approaches, such as complex dynamic systems, will help tell some of the "untold history" and thus deepen understanding of the interactions that facilitate aspects of thriving characterized by hope.

Early positive psychology researchers set the tone for significant growth and development of the field, influenced by the desire to provide a systematic and rigorous approach to the scientific study of what enables thriving, or optimal development, across various life domains. As a result, much of the meta-theoretical and methodological development of research and practice has been grounded in a dualist positivist epistemology and realist ontological view of the world as "knowable" (Gergen, 1990). This paradigm sees reality as objectively observable, fixed, and generalizable; as such, it transcends context (Ward et al., 2015). However, the unintended consequence of this has led to one of the most persistent criticisms of the field, namely, that there is a dominant focus on the individual that lacks an appreciation of contextual and dynamic influences on thriving (Kern et al., 2020).

This limitation is epitomized in Snyder et al.'s (1991) hope theory. While Snyder's conceptualization of hope articulated an iterative and dynamic process between agency (goal-directed energy) and pathway thinking (planning to meet goals), the methods through which it was operationalized and measured produced a more linear and acontextual construct in the empirical literature. We argue that the dynamic tenets of hope theory that have been left on the "editing floor" with this technical limitation provide valuable insights into the mechanisms that enable the core capabilities to develop. Moreover, the theory is framed in an individualistic cultural perspective and thus may lack applicability to more collectivist cultures. For example, in a conjoint perspective of agency, goals, and actions are defined interpersonally rather than individually and often reflect individuals' interdependence and position within social situations (Bernardo, 2010). This is not represented in the current liberal individualist conceptualization of hope theory.

This manuscript reviews the evolution of research on Snyder's hope theory and the substantial body of evidence linking hope with adaptive functioning. The review reveals several unanswered questions around the mechanisms that facilitate these links that have not been resolved through current methodological approaches. With a meta-analysis demonstrating only small effect sizes, particularly across different contexts (Weis and Speridakos, 2011), the effectiveness of the translation of this body of research to practice can also be questioned. These limitations suggest the need for a deepened understanding of how hope emerges; one that recognizes and addresses the inherent complexities in the emergence of hope and is grounded in the lived experience of different sociocultural contexts.

Scholars have recently recognized the need to expand positive psychology toward more complex understandings of the factors and contexts influencing wellbeing. For example, Kern et al.'s (2020) proposal of systems informed positive psychology (SIPP) and Lomas et al.'s (2020) illumination of the dynamics that can broaden the field toward complexity. In this manuscript, we take up this call for a broadened perspective to one area of positive psychology—hope theory—and in doing so, provide "a new hope" for how these aspirations can be translated into research practice.

Our Research Agenda

The research agenda we propose aims to address some of these limitations by taking an integrated multi-disciplinary perspective, expanding the current meta-theoretical, theoretical, and methodological approaches that have underpinned the hope research to date. The model we propose expands Snyder's conceptualization to incorporate an additional interpersonal factor (*WePower*) and intrapersonal factor (*WhyPower*), in addition to existing elements of hope theory, motivation to succeed (*WillPower*), and planning to meet goals (*WayPower*). The interplay between these factors is a crucial focus of this research agenda, enabling a more dynamic systems model of hope to be developed. In the expanded model we propose, hope is conceptualized as an emergent property that cannot be fully understood by breaking the construct down into its constituent parts; instead, it is an energy system derived from the dynamic interplay between the parts.

A systems approach argues that more profound knowledge and meaningful understanding come from constructing whole pictures and examining the interrelatedness of factors rather than examining factors in isolation (Flood, 2010). Therefore, drawing from the intersection of positive psychology with complex systems dynamics, we describe a methodological approach that enables a deeper examination of the processes and interactions that facilitate hope to emerge through an analysis of the lived experience of young people. This mixed-methods approach addresses the call for more qualitative research in exploring optimal functioning, proposed by Hefferon et al. (2017), without compromising the systematic rigor aspirations of the founding scholars of positive psychology.

It is proposed that this research agenda will bring to life an as yet untold story about the resourcefulness of our youth through their own voice, enabling us to leverage this in the design of more effective strategies to facilitate hope in the future. Our purpose is to offer a roadmap that will provide alternative methodologies to address the current limitations in hope research and offer insights that can enhance research and practice in positive psychology more broadly.

HOPE RISING: AN ANALYSIS OF THE DEVELOPMENT OF HOPE THEORY

Hope has captured the attention of philosophers, poets, artists, and scholars throughout the ages. In the late 20th Century, numerous social scientists turned their attention to operationalizing hope, with more than 26 theories or definitions generated (Lopez et al., 2003). There is consistency in the core themes underpinning these different theories, namely, that hope is a human strength that enables individuals to draw on resources in their environment to support pathways toward healthy development and achievement. The vast majority of these theories operationally defined hope as a unidimensional

construct grounded in a positive expectation that goals can be met (see Callina et al., 2018 for a review of the history of conceptualizations of hope). However, Snyder et al.'s (1991) two-factor model of hope has dominated the psychological literature over the last 30 years and is one of the key theories underpinning the development of positive psychology.

Snyder et al.'s (1991) theory defines hope as a dynamic motivational experience that is interactively derived from two distinct types of cognitive tools in the context of goal achievement–namely, pathways and agency thinking. His theory proposes that hope results from an individuals' perceived ability to develop numerous and flexible pathways toward their goals, allowing them to identify barriers and strategies to overcome these as they move toward goal achievement (WayPower). It is further fueled by the individuals' sense of agency in their goal pursuit, defined as goal-directed energy or determination to succeed (WillPower) (Snyder et al., 1991). These two factors are theorized to be positively related yet distinct (Snyder, 1989). That is, one can have a strong sense of agency without necessarily demonstrating successful pathways planning toward their goals. However, the additive, reciprocal relationship between the two factors results in a cumulative positive experience of hope that provides the dynamic motivation to *act*—a key differentiator of hope theory from other related constructs such as optimism and self-efficacy (Snyder, 2002). The theory has expanded from its original proposition of hope as a trait, or disposition consistent across time and situations, to now include evidence of hope as a state or momentary experience (Snyder et al., 1996), as well as being specific to certain life domains (Robinson and Rose, 2010).

The last 30 years have seen significant growth in the research on hope theory, demonstrating the applicability and relevance of the theory that has built its own "epic story." A comprehensive search of the literature that examined the central tenets and correlates of hope theory was conducted across multiple databases, including Ovid (PsycInfo), Web of Science, PubMed, EbscoHost (ERIC and ERC), and Scopus. To explore evidence of the growth and reach of this theory across disciplines and applications, we mapped this literature over time (see **Figure 1**) and across disciplines (see **Figure 2**). It should be noted that given the focus on the methodological and meta-theoretical foundations of this manuscript, the review was limited to peer-reviewed journal articles and doctoral theses. It does not represent the significant number of chapters and books that have also been published, nor the articles that have utilized hope theory as a theoretical argument to explain their findings, both of which further evidence the significant impact and application of this theory.

Apart from a slight decline in publications over the 2020/2021 years, which could be explained by the significant impact of the global pandemic on research, there has been a consistent growth pattern in the development of the evidence base for hope theory. Snyder's theory has also attracted researchers across a broad range of disciplines and applications, which has seen an expansion beyond psychology to a range of applications such as education, sport, psychotherapy, organizational science, and medicine (see **Figure 2**).

Placing the development of this theory in a sociohistorical context is essential in elucidating some of the dominant ways of knowing or epistemology that underpin the evidence base. Psychological researchers, particularly in the context of building an evidence base to argue for the merits of a new field such as positive psychology, have been grounded in a specific sociohistorical narrative of what constitutes new knowledge (Shotter, 1993). In this context, it is unsurprising that positivist approaches have dominated the assumptions that underpin hope theory development and subsequent research methodologies. They arose in the sociohistorical context of Seligman's call to arms for a "rigorous" approach to building knowledge of what makes life worth living, driven by the presiding narrative in psychological research at the time that "rigorous" equated to knowledge derived in quantitative terms.

Hope theory was also developed within the context of the rise of motivational literature and cognitive revolution occurring during this period. Snyder (2002) himself comments on the significant influence of Karl Menninger. The latter actively encouraged the prioritization of cognitive processes, with emotions being conceptualized as a secondary affective response to cognitive appraisals of agency and pathways planning. What resulted was a theory of hope as a way of thinking, with emotional responses proposed to be a consequence of the experience of hope rather than a fundamental contributor to driving goal-related performance (Snyder et al., 1999).

The language that Snyder used to communicate the theoretical tenets of this theory indicates a dynamic process, such that adaptive behaviors and characteristics are both the cause and consequence of hope (Snyder, 2002). However, when driven by a process of knowledge acquisition that necessitates the development of measurement scales through factor analysis, the consequence was an operationalization of hope as individual factors rather than an interconnected construct. The resulting literature thus predominantly focuses on the contributory roles of these two factors—both independently and as a combined factor—than on the dynamics between them. Further, the contributions of emotional responses or other types of causal attributions that enable hope to emerge have also been overlooked. While Snyder incorporates the feedback and feedforward loops of emotions and cognitions in his theoretical model, this is not operationalized in his measure of hope. The more reductionistic nature of the methodologies to date also makes it harder to interpret the potential multi-directionality of these relationships and the mechanisms through which hope emerges.

The Landscape of Hope in University Students

The shortcomings and limitations discussed above are well evidenced in a review of the literature in the university student population. A review of over 60 empirical studies on young people in higher education has highlighted the dominance of positivist epistemological approaches underpinning much of the research. There is no doubt that these methodologies have made a significant contribution to the knowledge that

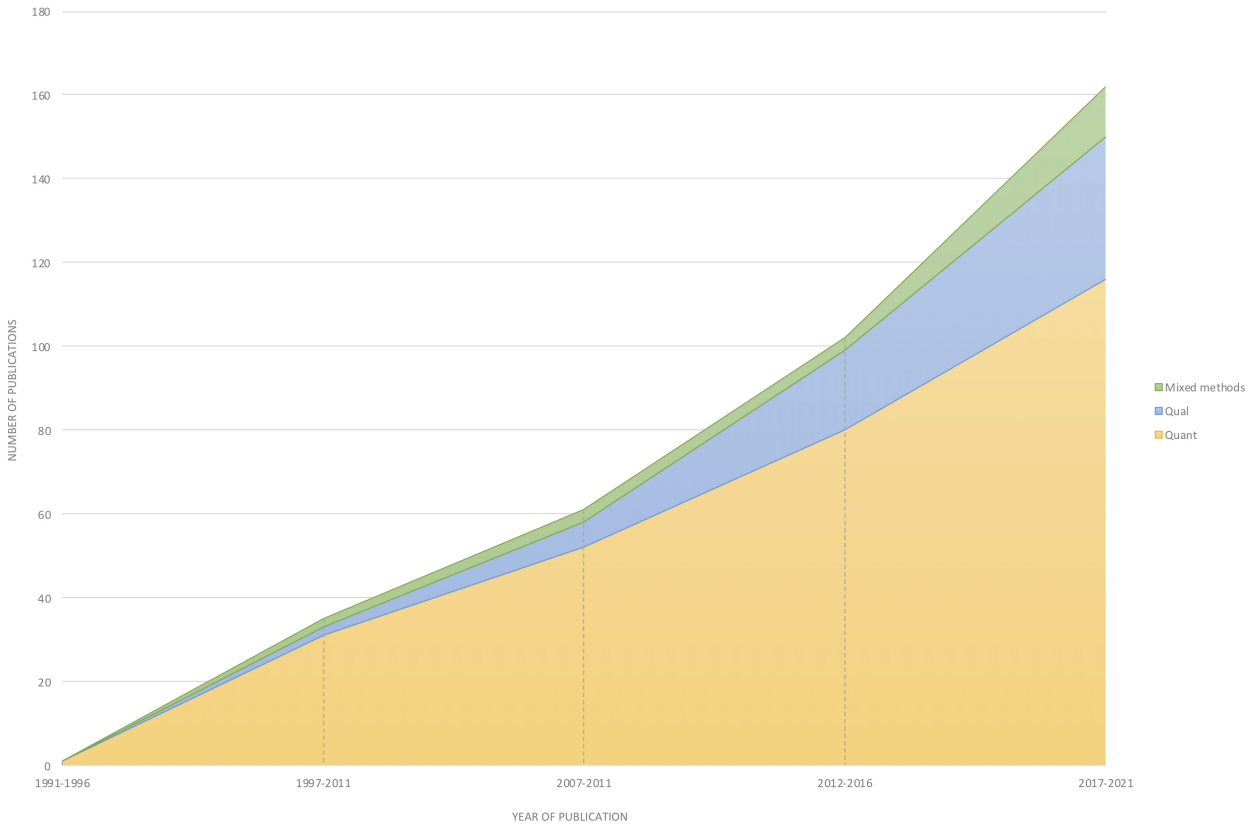

FIGURE 1 | Growth in number of peer-reviewed publications in hope theory by year (1991–2021).

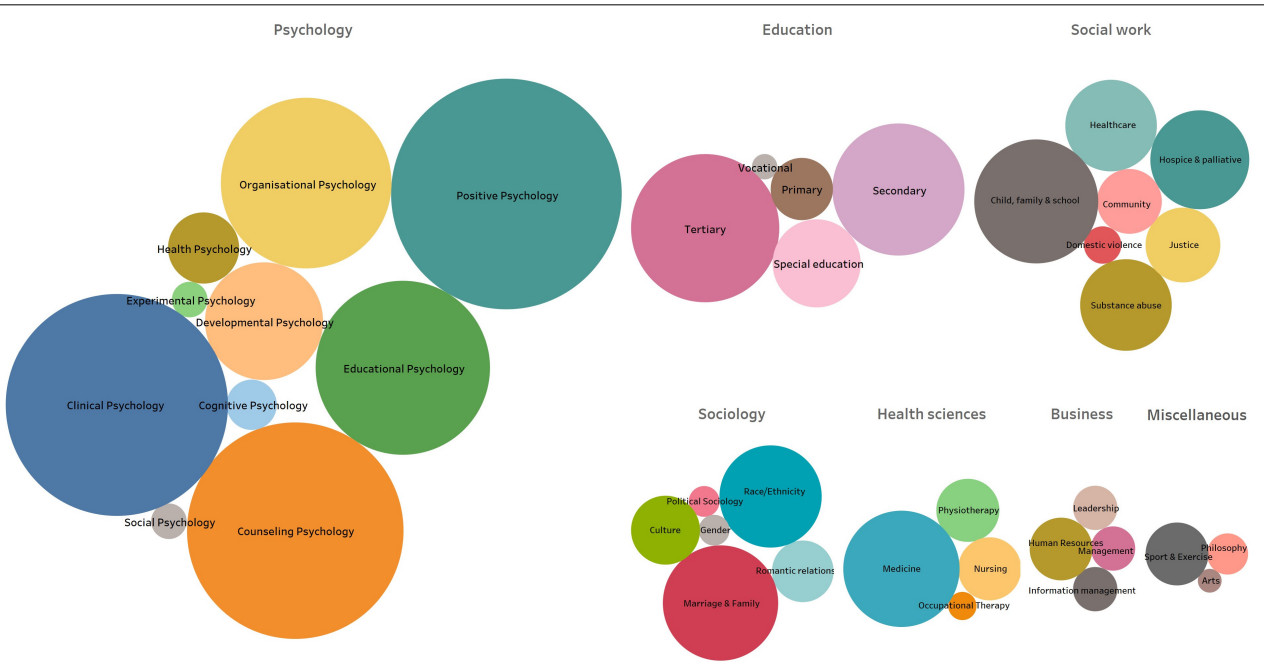

FIGURE 2 | Constellation map showing clusters of application of hope research across disciplines.

young people with a high sense of hope exhibit adaptive psychological and school-related functioning (see **Table 1**). For example, this body of evidence has demonstrated that hope is related to numerous factors relevant to the success of young people during their tertiary studies. Hope has direct associations with academic achievement (Snyder et al., 2002; Collins et al., 2009; Davidson et al., 2012; Feldman and Kubota, 2015; Feldman et al., 2015; Griggs and Crawford, 2017), as well as a range of characteristics related to academic success, including perceived control and exam performance (Crane, 2014), coping strategies for study (Onwuegbuzie and Snyder, 2000), persistence (Muwonge et al., 2017), psychological grit (Cavazos Vela et al., 2018), self-efficacy (Davidson et al., 2012; Macaskill and Denovan, 2013), higher engagement and motivation (Dixson, 2019), autonomous learning, social self-efficacy and self-esteem (Macaskill and Denovan, 2013).

The literature has evidenced strong links between hope and measures of psychological and emotional wellbeing in higher education students (Chang and Banks, 2007; Wandeler and Bundick, 2011; Macaskill and Denovan, 2013; Griggs and Crawford, 2017; Bernardo et al., 2018; Chang et al., 2019). Therefore, hope is an influential protective factor for mental health and wellbeing, making it particularly valid, valuable, and relevant to the challenging transition periods both into and out of tertiary studies. The buffering and building effects hope provides are relevant for building capability to thrive and managing significant challenges. For example, hope mediates psychological adjustment, even in the face of trauma and adversity (Liu et al., 2017), and acts as a protective factor for suicide risk (Davidson and Wingate, 2011; Lucas et al., 2020).

It is also pertinent that hope may be particularly important for those in lower socioeconomic situations, as it is neither significantly related to intelligence (Snyder et al., 2002) nor income (Gallup, 2009). In general, high hope individuals are energetic and intrinsically motivated; able to set clear goals based on their own standards rather than others, and perceive obstacles as challenges that they can overcome with contingency planning (Chang, 1998; Snyder, 2002; Lopez, 2010; Gallagher et al., 2017). Increased hope can act as an enabling factor for those in lower socioeconomic situations, broadening perspectives on the possibilities available and providing motivation to tap into resources to support goal achievement (Dixson et al., 2017).

Hope may also be considered a robust social leveler. Hope can mediate the relationship between socioeconomic status and academic achievement (Dixson et al., 2017). It is predictive of adaptive functioning in an educational setting, even when controlling for intelligence (Snyder et al., 1997), prior academic history (Gallagher et al., 2017), and self-esteem (Snyder et al., 2002). There is also evidence that hope is particularly important in predicting student resilience, especially in response to uncertainty (Goodman et al., 2017). Indeed, as studies begin to emerge from the recent global pandemic, we can see the role that hope played in navigating some of the extraordinary challenges facing students. For example, a recent study of nearly 6,000 Chinese students in the first wave of lockdowns indicated that hope moderated the relationship between family functioning, loneliness, and mental health (Pan et al., 2021). This research evidences that hope is a critical construct to explore further as we prepare our youth for a volatile, uncertain, complex, and ambiguous (VUCA) world. However, it does not tell us the story of the mechanisms through which these positive associations are achieved. In essence, returning to our Star Wars analogy, this got us straight into the action while acknowledging an untold history still to explore.

The Missing Pieces of the Story: Identifying Core Gaps in the Research

In recent years, this missing storyline has begun to be addressed in the hope literature. Several studies utilized path analysis to examine the mediation or moderation role that agency and pathways thinking play in the links to adaptive outcomes. For example, Luo et al. (2019) tested a comprehensive model of the role different aspects of hopeful thinking play in linking to various factors that support learning outcomes, such as teacher and peer support, self-esteem, and belonging. However, the extant literature predominantly focused on demonstrating the utility of hope, missing a depth of examination on some of the core tenets of the theory. This includes its antecedents and the pathways through which hope develops. Cheavens et al. (2019) cite this as their core motivation in a recent study that validated that dispositional hope was related to pathways-generating behaviors and goal setting.

A deeper analysis of the hope literature in university students shows that researchers have not yet thoroughly examined whether hopeful cognitions lead to positive affect or indeed whether the emotional experience is a mechanism that develops agency or pathways thinking. Snyder's theory is that these create an iterative and reciprocal feedback system, but how this has been operationalized and evaluated in the current literature does not build up a "whole picture" of this dynamic process. The two-factor measurement of hope and subsequent analyses of its antecedents, correlates, and outcomes precludes an analysis of the dynamic interaction between these factors to facilitate adaptive relationships, including the mechanisms through which the theoretical reciprocal feedback system functions. Hope also forms a nomological network with other expectancy variables such as self-efficacy, locus of control, and optimism that have been shown to lead to adaptive outcomes (Tennen et al., 2002). While evidence has demonstrated that these variables are distinct but related constructs (Magaletta and Oliver, 1999), much of the research has used path analyses to explain their moderation or mediation impact on adaptive outcomes. However, we believe that this "component" approach to the operationalization of hope does not fully represent the rich and complex interactions that may account for these relationships. With this model of measurement we cannot account for the ways in which pathways thinking and agency thinking may interact in different circumstances, limiting our knowledge and resulting practice to enhance opportunities for hope to emerge.

Despite claims that hope is malleable, there is also limited experimental research in this population that examines how hope develops or whether interventions based on the premises of hope theory effectively increase hope. The small number of

TABLE 1 | Summation of research testing hope theory propositions, correlates, and outcomes in young people in higher education.

Author(s), year	Approach	Methods/Design	Antecedents	Correlates and outcomes	Mediators/Moderators	Location
				Academic achievement and/or graduation success		
Snyder et al., 2002	Deductive	Regression (longitudinal)		GPA and Graduation status		United States
Savage and Smith, 2007	Deductive	Regression		Degree attainment		United States
Collins et al., 2009	Deductive	Regression		Assessment performance		United States
Papantoniou et al., 2010	Deductive	Path analysis		Grades	Learning strategies	Greece
Davidson et al., 2012	Deductive	Quasi-experimental		Grades*		Israel
Feldman et al., 2015	Deductive	Quasi-experimental		GPA*		Israel
Feldman and Kubota, 2015	Deductive	Path analysis		GPA	Academic hope** and academic self-efficacy	United States
Griggs and Crawford, 2017	Deductive	Path analysis		GPA	Core self-evaluations	United States
				Characteristics related to study success		
Onwuegbuzie and Snyder, 2000	Deductive	Correlational		Coping strategies for study		United States
Davidson et al., 2012	Deductive	Correlational		Sense of coherence, self-efficacy*		Israel
Macaskill and Denovan, 2013	Deductive	Experimental		Autonomous learning, course self-efficacy (agency only) Social self-efficacy Self-esteem		United Kingdom
Muwonge et al., 2017	Inductive	Path analysis		Persistence**		Uganda
Vela et al., 2018	Inductive	Regression		Psychological grit		United States
Dixson, 2019	Deductive	Cluster analysis		Higher engagement and motivation		United States
Luo et al., 2019	Deductive	Path analysis		Learning outcomes (cognitive and non-cognitive)		Taiwan
				Goal progress/attainment		
Feldman et al., 2009	Deductive	Path analysis (longitudinal)		Goal attainment	Goal specific hope**	United States
Feldman and Dreher, 2012	Deductive	Experimental		Goal progress		United States
Crane, 2014	Deductive	Regression		Exam performance, approach motivations, perceived control		Australia
Cheavens et al., 2019	Deductive	Regression		Important, prosocial, long-term, and challenging goals		United States
				Wellbeing and adjustment		
Chang and DeSimone, 2001	Deductive	Path analysis		Psychological adjustment (direct and indirect)	Appraisals and coping	United States
Denovan and Macaskill, 2013	Inductive	Interpretive/ phenomenological		Stress and coping in transition to university		
Liu et al., 2017	Inductive	Regression		Adjustment to collective trauma		United States
Griggs and Crawford, 2017	Deductive	Path analysis		Emotional wellbeing	Core self-evaluations	United States
				Career choice/vocational calling		

(Continued)

TABLE 1 | (Continued)

Author(s), year	Approach	Methods/Design	Antecedents	Correlates and outcomes	Mediators/Moderators	Location
Phillips, 2011	Deductive	Path analysis		Vocational calling (for women but not men)		United States
Feldman and Dreher, 2012	Deductive	Experimental		Vocational calling and life purpose		United States
Eren, 2015	Inductive	Path analysis		Satisfaction with career choice and sense of responsibility		Turkey
Buyukgoze-Kavas, 2016	Deductive	Regression		Career adaptability and resilience		Turkey
				Predictors of hope		
Ahmet and Umran, 2014	Deductive	Regression	Authenticity*			Turkey
Soria and Stubblefield, 2015	Deductive	Regression	Strengths-awareness and self-efficacy			
Cole et al., 2019	Deductive	Path analysis	Gender role conflict (negative relationship)	Gender socialization–conformity to masculine norms (agency only)		United States
Luo et al., 2019	Deductive	Path analysis	Social support, belonging, self-esteem			Taiwan
Chang et al., 2019	Deductive	Path analysis	Positive affect	Life satisfaction	Hope agency but not pathways	China
				Individual differences		
Chang and Banks, 2007	Inductive	Regression	Life satisfaction, problem-solving style, positive affect, problem orientation	Variations in levels of agency and pathways thinking between Latino, European, Asian, and African Americans		

This table is not exhaustive but rather represents a sub-set of the research in this population. It was scoped to include core relationships relevant to adaptive university experience for students.
Unless otherwise stated, the relationships in the table are related to trait measures of hope.
**Related to state measure of hope.*
***Related to domain measures of hope.*

experimental studies with young adults have mainly focused on how short hope interventions affect academic performance outcomes (Macaskill and Denovan, 2013; Feldman et al., 2015; Harris, 2015), with some evidence of interventions increasing levels of hope (Davidson et al., 2012; Feldman and Dreher, 2012). Furthermore, a meta-analysis of hope interventions in both community and clinical settings reveal only small effect sizes and inconsistent results depending on the context in which they are delivered (Weis and Speridakos, 2011). Integrated interventions that include other practices based on adaptive constructs such as gratitude or psychological capital (a multi-component construct that includes hope, self-efficacy, resilience, and optimism), have shown increases in hope (Bauman, 2015; Baumsteiger et al., 2019), which further indicates the need to understand the different mechanisms that facilitate the development of hope. Added to this is a lack of inductive or exploratory approaches in research designs that enable a more nuanced picture of hope emerging to be examined. In fact, of all the studies reviewed, only a small handful utilized a mixed-methods or qualitative design, and these were predominantly doctoral theses.

Our review has highlighted that more research is needed to develop a deeper understanding of the factors and interactions that enable hope to emerge in young people. However, we argue that this needs to extend beyond the linear models prevalent in existing meta-theoretical assumptions and methodologies. This is evident from examining the gaps in the evidence base we have discussed thus far and the dearth of hope in our young people. For example, the current landscape reveals that less than half (46%) of Australian and New Zealand school students could be classified as hopeful (Gallup, 2021), indicating that a significant portion of our youth lack abundant ideas and energy for the future. Unfortunately, this trend is replicated in other OECD countries (Gallup, 2018) and highlights a "wicked" problem that is complex, arises from non-linear dynamics, and may have multiple possible causes (Peters, 2017). To address such complexities calls for an expansion in approaches

underpinning theoretical and methodological designs, allowing us to examine the complex interactions and factors that impact hope development in young people.

ADOPTING A SYSTEMS VIEW OF HOPE

Hope theory, as a cognitive model centered on the individual, is grounded in the liberal individualist sociohistorical context in which it was conceived; however, the emergence of post-positivist and post-modern epistemologies signify growing awareness of the challenges inherent in defining truth in a way that transcends context and abstracts individuals from their environment (Gergen, 1990; Ward et al., 2015; Goldman and O'Connor, 2021). The development of social epistemologies such as social constructionism, that recognize the effects of social interactions and social systems, helps redress this imbalance (Goldman and O'Connor, 2021), and recent developments in positive psychology have acknowledged this with a call toward interdisciplinary perspectives that better address the complexity of human behavior (Kern et al., 2020; Lomas et al., 2020). In an eloquent analogy, Lomas et al. (2020) acknowledge the opportunity in the power and energy generated by the last three decades of research to now propel us forward with the emergence of a new wave in positive psychology; one that moves beyond the individual to embracing complexity. It is with this philosophical intent that we argue that the intersection of systems science and more recent developments in wellbeing science can help address some of the limitations inherent in the current meta-theoretical propositions of hope theory and may inform and energize the next wave of research in this area.

Optimal functioning is recognized to be the outcome of complex and interactive processes, predispositions, and experiences (Roffey, 2015). It includes multiple contributory factors—personal and environmental (Keyes, 2006)—that occur in a nested ecological system. This dynamic ecological system encompasses the individual and many other layers of influence that support and guide development (Bronfenbrenner, 1979). While this approach to understanding optimal functioning is well established in many fields (e.g., sociology, anthropology, biology), positive psychology has been criticized for ignoring the influence of the larger context in favor of its focus on the individual (Kern et al., 2020). However, recent advances have begun to address this limitation in different contexts, such as Lomas et al.'s (2015) proposal of the Layered Integrated Framework Example (LIFE) for applied positive psychology and Williams et al.'s (2016) Inside-Out-Outside-In (IO-OI) model of workplace happiness. However, this criticism is still relevant to Snyder's hope theory in its acontextual perspective of individual capacity.

Snyder et al. (1991) were quite clear in arguing that they had drawn a clear boundary around the individual, stating that their phenomenological conceptualization of hope could be considered egocentric in that it taps into how an individual *perceives* their ability to move toward goals, with external environmental influences being incorporated only through the lens of how the individual appraises them in relation to agency and pathways thinking. However, more recent advances in the development of hope theory among individuals from more collectivist social settings have expanded this to demonstrate the validity of an external and internal locus of hope. This additional dimension represents the influence of external agents (family, peers, spiritual) in the development of agency thinking (Bernardo, 2010; Du and King, 2013; Bernardo et al., 2018; Bernardo and Mendoza, 2020), providing evidence of the importance of broader system influences in the emergence of hope.

Furthermore, consideration of the dynamics within the human system also provides the opportunity to re-consider the interplay between emotions, cognitions, and somatic experiences that can influence the emergence of hope. One of the limitations of the meta-theoretical assumptions of Snyder's theory lies in a dualism view that sees the mind as separate from the body and operating independently from the physical world (Buetow, 2007). It is now well-established that mental and physical wellbeing are intimately and bi-directionally linked (Kemp and Quintana, 2013; Steptoe et al., 2015). The vagus nerve, for example, provides a vital structure that communicates between mind and body, providing the opportunity for both thoughts and behavior to influence aspects of wellbeing such as hope (Mead et al., 2021). The solid evidence base that has emerged in recent years regarding the interdependency between various internal factors and the experience of wellbeing calls for a deeper examination of the dynamic interplay of elements within the human system that can contribute to the emergence of hope.

We argue that re-imagining hope theory within a dynamic systems lens can help shine a light on the multiple contributory factors that facilitate the emergence of hope. We aim to expand the theoretical mechanisms that may facilitate Snyder's conceptualization of a dynamic motivation system that enables goal-directed behavior, reflecting developing knowledge of the interplay *between* the human system and *within* social systems. Our goal in expanding these theoretical tenets is to operationalize some of the dynamics left on the "editing floor" in the methodological translation of hope theory. For example, an extension of Snyder's two-factor model to a multi-component dynamic systems model can be achieved by including a more contextual motivational component (WhyPower) at the intrapersonal level, and a social-contextual component (WePower) at the interpersonal level. In the following sections, we address these proposed theoretical expansions to hope theory, including the theoretical mechanisms through which these components could contribute to the emergence of hope.

WhyPower (Intrapersonal Context)

One of the guiding assumptions underpinning hope theory is that humans are goal-oriented (Snyder, 1989, 1995; Snyder et al., 1991). Snyder (2002) positions the importance of goals being of sufficient value to the individual to sustain conscious thought characterizing high hope; however, this criterion is not well represented in the operationalization of hope. One item on the hope trait scale measures an individual's capacity to "come up with many ways to get the things in life that are important to me" (Snyder et al., 1991). While this is clearly linked to pathways

thinking around goals, it does not account for the goal-directed energy that valuable goals can ignite. Incorporating a measure of "sufficient value" in the individual's goals into a model of hope can provide vital insights into the mechanisms that may facilitate the emergence of hope and may be of particular importance for our research agenda's population, namely, emerging adulthood. We argue that this is best operationalized as a sense of meaning in our goals or WhyPower.

A search for meaning is a critical developmental task for adolescents (Bronk, 2013; Damon and Malin, 2020). While definitions of meaning vary widely, there is a consensus that meaning has two major components: comprehension and purpose (Steger, 2018a). Comprehension involves making sense and integrating experiences, while the purpose component involves actively pursuing long-term goals that reflect one's identity but also transcend narrow self-interests (Steger, 2018b). Studies have shown that both these components are positively associated with measures of adaptive functioning in young people (Abe, 2016). In their review of the links between hope and meaning, Feldman et al. (2018) note that the two constructs are "close cousins," both influencing and contributing to the other, with an average correlation of 0.67. This relationship is also reflected in the links between Reker and Wong's (1988) conceptualization of meaning; "cognizance of order, coherence and purpose in one's existence, the pursuit and attainment of worthwhile goals, and an accompanying sense of fulfillment" (p. 221) and key elements of hope theory. Snyder (2002) himself suggested that hope and meaning are "companions," as he proposed that self-reflective hope thoughts lead to a sense of meaning.

While the strong links between meaning and hope have been demonstrated both longitudinally (e.g., Mascaro and Rosen, 2005) and cross-sectionally (e.g., Feldman and Snyder, 2005), the mechanisms through which this occurs have not yet been established. The comprehension component of meaning may provide valuable insights into how individuals develop a sense of agency and pathway thinking. For example, the process of making sense and integrating experiences may be a mechanism that facilitates a belief in one's capacity to move toward their goals effectively, as well as expediting divergent thinking that supports the development of pathways planning. In contrast, the purpose component may be a mechanism that facilitates goal-directed energy. Purpose also serves as a self-organizing principle that stimulates goals and manages behavior; it is imperative in guiding decisions about the use of finite resources and likely to lead to greater persistence (McKnight and Kashdan, 2009). Thus, a sense of WhyPower in ones' goals may lead to enhanced hope through providing energy and motivation with structure and direction (Mascaro and Rosen, 2005).

It is relevant to note that the search for meaning for many young people creates a sense of disconnect rather than leading them to a sense of purpose. One reason may be the context in which this occurs. For example, while many psychologists view purpose from a primarily individualistic perspective (e.g., Ryff, 1989; Damon et al., 2003), Keyes (2011), a sociologist, argues for a conceptualization that reflects that our lives are interwoven within a social construction. He suggests that when viewed through the lens of complete human development, purpose is not just about our own individual sense of direction, but also whether our lives are constructive and contribute to the collective. He terms this authentic purpose, defined as "a quality of being determined to do or achieve an end. . .that employs one's gifts, brings a deep sense of worth or value, and provides a significant contribution to the common good" (p. 286).

The role of social connectedness and relationships as a source of meaning has been well documented (e.g., Delle Fave et al., 2011), making it an important component of WhyPower. Furthermore, in a comparison of the differential effects of hope and optimism on various aspects of wellbeing, it was shown that hope was more important in contributing to the more purposeful components of wellbeing (Gallagher and Lopez, 2009). While the inclusion of WhyPower into a dynamic systems model of hope seeks to operationalize some of the cognitive and affective mechanisms at the individual level, it does not fully address the interplay between the individual and their interpersonal context, especially in terms of their access to resources that can facilitate hope.

WePower (Interpersonal Context)

Bernardo (2010) has argued that a limitation of Snyder's approach is that it does not consider whether the pathways or sense of agency are self-determined or may involve external agents. Expanding the horizon to examine the multi-directional links between individuals and their social context may be particularly relevant when discussing an adolescent population due to the strong developmental need for social engagement (Siegel, 2014). The developmental stage of late adolescence/emerging adulthood incorporates a second sensitive period of brain maturation that triggers important health behaviors, and studies have demonstrated the important protective factors that social patterns can provide in shaping adolescent wellbeing trajectories (Viner et al., 2012). Therefore, it is proposed that integrating an interpersonal perspective into an expanded model of hope theory may enhance our understanding and facilitate better outcomes for young people in higher education. We operationalize this as a sense of connectedness, or WePower, representing an individual's ability to tap into resources within their social system.

A fundamental meta-theoretical assumption of Snyder's hope theory is that hope both acts as a resource *and* facilitates the acquisition of other resources that support healthy development and achievement. Resources can be defined as internal or external entities that are either valued and relevant in their own right, or can be used to obtain valued ends (Hobfoll, 2002). While hope theory has focused on internal resources to date, we propose that external resources are equally important, as are the interrelationships between both forms. For example, how does social connectedness (external) impact the perception of access to resources (internal)? This may be particularly pertinent to students who have moved from being a "big fish in a small pond" in their secondary school context to being "one of many fish in a large pond" in their university context, impacting their perception of access to resources.

Social resources play an essential role in goal attainment and enhanced wellbeing (Hobfoll, 2002), and thus are a critical

factor to incorporate in a dynamic systems perspective of hope. Kelly's (1966) seminal work on the relationships between social resources and wellbeing demonstrated the importance of people's perception of access to resources within their ecological environment. He described an ecological interplay in which resources are transferred between people and their social settings, demonstrating the importance of expanding the horizon beyond the individual to explore how their experience within an interpersonal context may facilitate the emergence of hope. For example, the sharing of experiences with others may be a crucial factor that builds social bonds, allows individuals to soothe the experience of negative emotions that arise from stressful events, and tap into the knowledge and experience of others to help create pathways toward goals (Smyth et al., 2012). Lee and Gallagher (2018) found that high hope individuals actively seek the support of others in working toward their goals but are also likely to support the goal pursuits of others that serve to strengthen social bonds. Their research highlights the dynamic interplay between the individual and their interpersonal context in developing hope, supporting the need for an expanded perspective.

It is important to note that while these two additional components of WhyPower and WePower have been articulated as separate elements, we argue that hope is best conceptualized as an emergent property that cannot be fully understood by breaking the construct down into its constituent parts. Instead, it is theorized as an energy system derived from the dynamic interplay between the parts. However, how to build up whole pictures of social phenomena poses a significant challenge that has created some controversy amongst systems thinkers as to what the best methodological approach is to achieve this (Flood, 2010).

WHAT WE MEASURE (AND HOW) MATTERS

One of the inherent limitations in methodological approaches that arise from a philosophical perspective that takes "an atomistic, ontological view of the world as comprising discrete, observable elements and events that interact in an observable, determined, and regular manner" (Collins, 2010, p. 38) is an oversimplification of dynamic processes. Logical positivist epistemology relies on reducing phenomena to the simplest elements and thus may limit the capacity to analyze the complexity and inherent "messiness" that characterizes human functioning, including reducing influences of the environment.

Given this landscape of knowledge development, it is unsurprising to see quantitative research designs dominating the literature in hope theory to date. Friedman (2003) argues that this seemingly religious devotion to one method and their underlying epistemologies are a flawed form of "methodoltry, the undue elevation of a method to a sacred artifact" (p. 817). While elements of this claim ring true, it is perhaps not a fair representation of the state of play in hope research to date. Indeed, these methods have built robust confidence in the impact of hopeful thinking and its role in adaptive functioning. What is less clear from this literature, driven by deductive reasoning in research design, is the complex interactions that enable hope to emerge. Snyder's theory was seeded from his conversations with participants in his studies on excuse-making, but he has predominantly taken a top-down approach to theory development rather than a grounded theory approach. There is no doubt that his theoretical propositions draw on a solid evidence base, but this was not grounded in the lived experience of hope. We argue that there is more backstory (a prequel to the trilogy!) that would help articulate some missed nuances inherent in the experience of hope.

Some scholars have sought to remedy this limitation, but this has predominantly focused on more marginalized populations such as domestic violence support workers (Crain and Koehn, 2012) and African American gay men living with HIV (Hergenrather et al., 2013). To our knowledge, there is only one study that has examined the lived experience of hope in university students, centered on prospective teachers and their hopes for their teaching careers. The results indicated hope oriented around an active/passive axis, providing support for some of the goal-oriented cognitive components present in Snyder's model, as well as a generalized positive expectation that is more representative of the construct of optimism (Eren and Yeşilbursa, 2017). Participants also reported that both internal and external sources, such as peers, family, and friends, contributed to the experience of hope, providing further support for the need to incorporate an interpersonal dimension. These results demonstrate how qualitative studies can complement and enrich an understanding of the lived experience of hope and how it impacts adaptive outcomes, such as teacher retention.

Studies of hope in recent years suggest a shift to more mixed-methods and qualitative designs (see **Figure 3**). However, this still represents a very small proportion of studies (approximately 10% in this review) consistent with trends reported in the broader positive psychology literature (Donaldson et al., 2015). This trend is to be expected in a field that initially embraced a perspective of positivism that views qualitative research as less valuable and scientific (Mruk, 2006). Even when scholars aim to bring more methodological pluralism to their research, they have been thwarted by the dominant narrative of what constitutes scientific knowledge. For example, Shane Lopez, one of the leading scholars in hope research, reported being asked to reduce the qualitative aspects of a mixed-methods paper he submitted to a top positive psychology journal (personal communication, cited in Friedman, 2008).

Expanding methodologies to include more qualitative components can facilitate inquiry into some of the under-researched areas of investigation in hope theory, such as enabling a deepened picture of *how* hope is experienced and the nature of *how* it acts as a protective or enabling factor in adaptive functioning. Qualitative methodologies are ideal for this type of research question because they value the messiness and complexity of the human experience in a sociocultural environment, which can build upon our existing knowledge base. We are not arguing that they are a better approach, but rather that developing methodological diversity increases

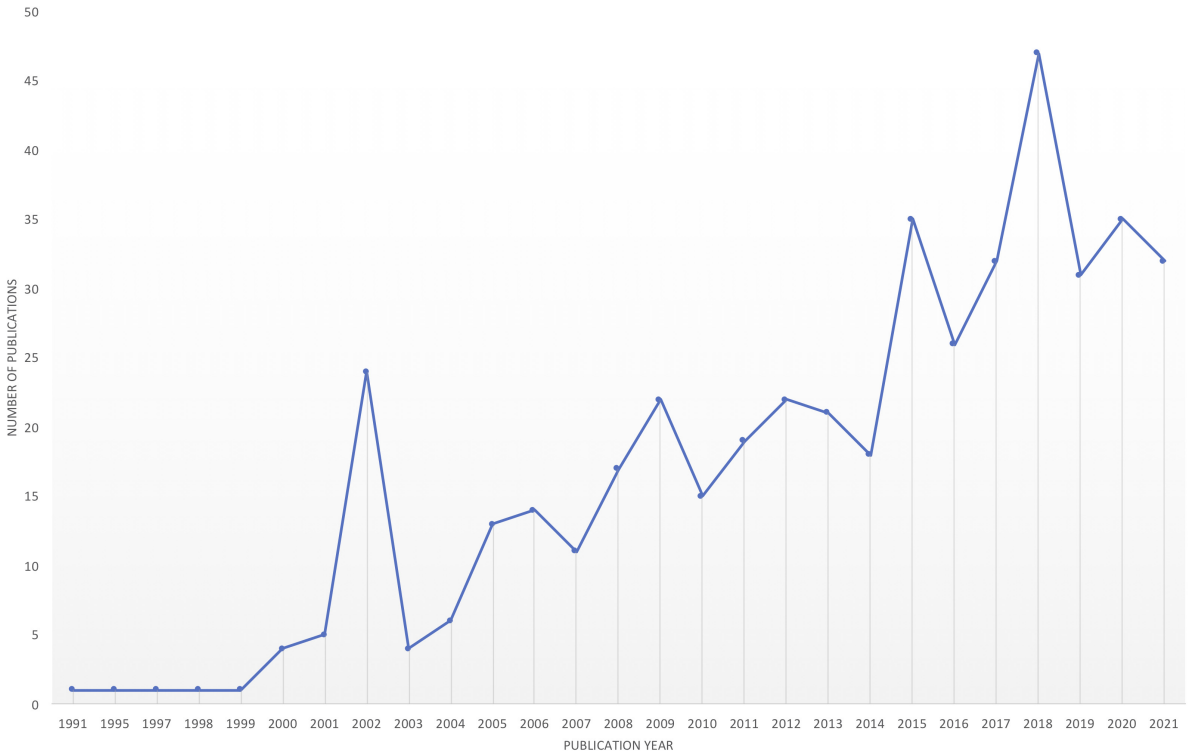

FIGURE 3 | Analysis of the type of research method (quantitative, mixed-methods, qualitative) utilized by year.

knowledge formation (Hefferon et al., 2017). Said another way, qualitative approaches can add color and texture to the lines that have been drawn from the quantitative approaches to date. An interdisciplinary approach that integrates more holistic and inductive methods to examine the emergence of hope can help drive the next level of knowledge in the development of hope theory.

A "NEW HOPE" IN TAKING AN INTEGRATIVE PERSPECTIVE

Several scholars have argued that consilience, the principle of bringing together evidence from seemingly independent sources to converge in a common groundwork of explanation, is one of the most promising pathways to scientific advancement (Wilson, 1998; Siegel, 2014; Scharmer, 2016). To achieve this requires a move away from the traditional manner of conducting research that leans toward homogenous and disciplinary silos, toward a more heterogeneous and interdisciplinary approach (Rhoten, 2004). Indeed, broadening both our epistemological and methodological horizons can enable us to reveal new and ground-breaking insights. However, it can also present unique challenges in integrating different ways of knowing; an ongoing challenge in interdisciplinary research, which requires mastery of specific competencies to facilitate respectful dialogue to deepen understanding and integrate different epistemological and methodological approaches (Larson et al., 2011).

Law (2016) underscores the importance of reflective practice in this endeavor, suggesting we "re-search" to integrate different perspectives. Re-searching refers to the practices of engaging in a reflective process throughout the entire life-cycle of research; from ongoing questioning about the assumptions that underpin our research design and selection of methods, through to self-questioning our assumptions and sociocultural context that influences our selection and interpretation of data (Law, 2016). Methodologies that acknowledge the co-creative process of knowledge-making with participants are also essential to achieve this aim (Alcoff, 1991). Unfortunately, methods rooted in positivist epistemologies typically assume the researcher possesses greater interpretative and analytical expertise and knowledge than the research participants (Kleinsasser, 2000).

Shotter (1993) also provides a strong argument for this approach in broadening our knowledge development. He positions the importance of "knowing from within" as a third way of knowing, that complements our traditional focus on "knowing that" and "knowing how" in psychological research. Given the lack of diversity in positive psychology research dominated by Western, Industrialized, Educated, Rich, and Democratic (WEIRD) populations (Rao and Donaldson, 2015), this "knowing from within" can give rise to a more nuanced perspective that is representative and validating of different views. Utilizing more inclusive participatory approaches that give voice and empower the participants themselves in developing knowledge can help bridge some of this gap.

The research agenda we are proposing utilizes a methodology that explicitly facilitates co-creation and participant agency in the research process. Using approaches that enable this, such as Participatory Narrative Inquiry (PNI), can add value in shedding light on participants' meaning and attributions to make sense of the experience of hope (Czarniawska, 2004). The origins of the PNI methodology are in the systems sciences, influenced by the development of Cynefin, a conceptual framework that helps make sense of influences in a complex and complicated environment (Snowden, 2002). PNI is an approach that senses patterns in the social system through the analysis of stories. The participants play a pivotal role in analyzing those stories to understand the system's complexity (Kurtz, 2014). Stories have long been used to help us navigate complex social problems, as words are used as tools for meaning-making and constructing mental models (Shotter, 1993; Gottschall, 2012). The inherent simplexity in using stories is that they are both nouns and verbs and thus can provide both research data and methodology for inquiry.

By involving participants in sharing stories and the sense-making process of research, we empower them to give voice to their own experiences and play a key role in contributing to knowledge development. It may also be that this method can provide a two-pronged role as both inquiry and intervention. For example, in a participatory narrative inquiry into mental health recovery, participants described the method as giving them hope, providing them with "a ladder" that facilitated autonomy and direction to climb out of the loneliness and isolation of depression and reconnect with society and work (Torrissen and Stickley, 2018).

Narrative has been described as a two-way reflexive process in which language is used as the vehicle to "construct, to organize, and to attribute meaning to our stories" (Anderson, 1997, p. 213). This process enables the storyteller to make sense of their experience through story sharing and invites the researcher into this sense-making process, giving them unique insight into lay theories of how hope emerges and is experienced. The use of narrative methods rather than surveys also allows us to represent and integrate changes and events in our lives into a comprehensive story. We can include causes and consequences of events, plots, subplots, and overarching themes to weave a coherent narrative of our experience (Smyth et al., 2012). The richness of stories as a source of data and methodology for investigating wicked problems lies in their inherent nature, that is, "stories form complex emergent patterns and all complex patterns have stories" (Kurtz, 2014, p. 633).

Participatory Narrative Inquiry is an excellent example of methodological pluralism that integrates various data sources and ways of knowing (Friedman, 2008). For example, data derived from a more positivist epistemology can be integrated, forming part of the material for sense-making. They provide data into one perspective, while data from methodologies rooted in social constructivist epistemologies offer another view, including a gateway into the mental models that drive these perspectives (Kurtz, 2014). The triangulation of data supports the development of a deeper perspective of the subject of inquiry. PNI can also incorporate analytical methods from various disciplines such as systems mapping, natural language processing, and participatory theater. This provides a unique process for integrating knowledge from different disciplinary perspectives and different meta-theoretical philosophies of knowledge.

Complex social problems deserve diverse perspectives to address the multiplicity and interconnectedness of potential causes and contributory factors. We contend that stories may be an under-tapped resource in the use of interdisciplinary research designs to examine the complexity of the human experience in a way that balances the boundaries of time and resources without compromising cohesiveness.

CONCLUSION

Our manuscript has sought to pave the way forward in the next generation of research in hope theory by outlining a "storyboard" that explores both the backstory of the development of hope theory and a roadmap to uncover some of the as yet untold stories of hope. One of our goals in this critical review of hope theory was to pay homage to the scholarly icons of Rick Snyder and Shane Lopez, whose legacies live on in the impact their work has had across a broad range of disciplines. Their choice to "get straight into the action" has paved the way for a significant number of eminent scholars who have followed in their footsteps and taken up the charge to carry on this vital work, providing us with crucial insights into the merits of hope as a fundamental resource to support thriving.

By analyzing the roots of the development of Snyder's hope theory, we have provided insights into the sociohistorical context that influenced the meta-theoretical assumptions that underpin hope theory. This context helps us understand some of the technical limitations that have impeded the operationalization of hope theory and subsequently led to several gaps in the ensuing research base. Perhaps the most significant of these is the impact of the lost dynamics between elements that facilitate the emergence of hope. Of course, we know the story does not end here, but rather this may provide the necessary "cliff-hanger" that creates the impetus and energy for the subsequent development of this story.

We propose that this is best achieved through a dynamic systems reconceptualization of hope as a pathway to addressing these limitations. This research agenda aims to create a new storyline that expands our operationalization of hope to deepen understanding of the dynamic interactions between the elements that create the unique alchemical reaction of hope. This may include introducing two new "characters," namely, WhyPower and WePower, expanding the theoretical horizons of hope to integrate systemic intrapersonal and interpersonal perspectives.

However, to translate this vision to action, it is imperative that we broaden our methodological approaches to facilitate an examination of the complexities and interdependencies in such a model. In the same way that we have seen significant advances in technology since the first episodes of Star Wars that have enhanced the cinematic experience and storytelling, we

can also draw on more sophisticated interdisciplinary methods now available to advance the study of hope. We advocate a pragmatist approach that pays homage to the wealth of knowledge generated through the methodologies that have dominated the research to date, while intentionally selecting diverse methods to broaden and deepen our understanding of the emergence of hope in young people. Engaging in research covering the full spectrum of epistemological perspectives can enable us to develop richer pictures of positive psychology's fundamental theories and principles; and, in doing so, realize the vision of "a new hope" for the field.

AUTHOR CONTRIBUTIONS

RC conceptualized the research questions for this review and theoretical expansion of Snyder's theory, developed the search protocols, conducted the research using PRISMA-Sc, developed and organized the database, including coding 80% of the data, and wrote the manuscript. PW and LO added contextual insights and provided contributions in shaping arguments. JC-M coded studies by discipline and performed the mapping analysis. PW and RC contributed to the manuscript revision, read, and approved the submitted version.

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Seeing Is Believing: Making Wellbeing More Tangible

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Positive Psychology has been instrumental in promoting wellbeing science in the modern era. However, there are still ways in which positive psychology interventions and positive education programmes can be improved to achieve more robust and sustained effects. One suggested method is to make wellbeing more salient and tangible through the use of objective tools that assess the relationship between psychological and physiological wellbeing, and enable wellbeing status and change to be seen. With the addition of an interdisciplinary team, as well as technology-enabled and pedagogically sound learning tools and approaches, the potential for positive outcomes and impact increases exponentially. Monitoring wellbeing progress in this way can provide evidence, motivation and belief in positive psychology and wellbeing interventions. This can lead to engaged learning, sustained benefits and systemic impact. Positive psychology needs to strategically extend on the emerging work in this field to help everyone, including policy makers, notice and value wellbeing.

Keywords: positive psychology, positive education, wellbeing science, interventions, biofeedback, physiology, interdisciplinary

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INTRODUCTION

Positive psychology has made many important contributions to wellbeing science, including spotlighting research focused on understanding 'what makes life worth living' and examining how to 'thrive, not just survive' (Seligman and Csikszentmihalyi, 2000). These catch phrases are now well cited in wellbeing literature. At the very least, founding scholars and champions of positive psychology have raised academic and public awareness about the biased attention on psychopathology and mental illness within psychology (Seligman and Csikszentmihalyi, 2000; Westerhof and Keyes, 2010) and the simultaneous need to focus on the presence of wellbeing (flourishing) for people to experience good mental health (Keyes, 2002).

Although some of the core principles underlying positive psychology, such as focusing on emotion regulation, strengths and fostering eudaimonic wellbeing, may not be novel (Vella-Brodrick, 2013, 2016), there are areas in which positive psychology has made unique contributions beyond bringing more attention to the positive side of the mental health spectrum (Seligman, 2002). However, it will be argued that after two decades since its inception, positive psychology needs to innovate. Interdisciplinary, objective and technology-supported approaches are suggested to expand and complement what already exists. In this paper, we will first briefly explore the unique contributions of positive psychology; then, we will identify key issues and areas where more progress is needed and finally, we will conclude with some examples of work already commenced in these recommended areas.

UNIQUE CONTRIBUTIONS OF POSITIVE PSYCHOLOGY

Two noteworthy areas where positive psychology has advanced wellbeing science include the development of wellbeing measures and the proliferation of positive psychology interventions (PPIs), including positive education programmes (Vella-Brodrick, 2013; Slemp et al., 2017; Vella-Brodrick et al., 2020). With regards to measures, the development of standardised scales is evident in a number of key areas of positive psychology including strengths (Peterson and Seligman, 2004), meaning (Steger et al., 2006), gratitude (McCullough et al., 2002), flourishing (Diener et al., 2009) and hedonic and eudaimonic wellbeing (Delle Fave et al., 2011). The development of these standardised scales has enabled considerable progress to be made with measuring wellbeing, identifying correlates of wellbeing and evaluating the effectiveness of wellbeing interventions (Vella-Brodrick, 2013).

A concurrent undertaking has involved the development of a range of PPIs and positive education programmes focused on expressing gratitude, identifying and using character strengths, meaning making and building hope, such as imagining your 'best possible self' (Seligman et al., 2005; Slemp et al., 2017). Studies examining the efficacy of these interventions and programmes have found favourable results in a diverse range of wellbeing outcomes including happiness, satisfaction with life, social and emotional skills, competence and autonomy (McCullough et al., 2002; Seligman et al., 2005; Vella-Brodrick et al., 2021). Meta-analyses also support these subjective and psychological wellbeing benefits (Sin and Lyubomirsky, 2009; Boiler et al., 2013; Carr et al., 2020; Tejada-Gallardo et al., 2020); however, the effect sizes have been relatively small to moderate (White et al., 2019). Although strong effects are rare in wellbeing or prevention science interventions, and context-relevant comparisons are encouraged (Tanner-Smith et al., 2018), these findings of around 0.20 do not meet the average effect size (or hinge point) for school-based learning interventions, which according to Hattie's (2011) work is 0.40. It is incumbent on any scientific field that examines a fundamental human quality such as wellbeing, to optimise the intervention effects for as many people, in as many contexts as possible. Positive psychology is now at the stage where it needs to strategically build on its foundational work by diversifying and advancing its methods and interventions.

TIME FOR MORE PROGRESS AND KEY ISSUES

Recently, there have been calls for positive psychology to adopt a more interdisciplinary and systemic approach to studying wellbeing (Kern et al., 2020; Mead et al., 2021). Developing a broader conceptualization of wellbeing that moves beyond the positive psychology lens by integrating complementary disciplines and theories could lead to improved understanding and innovative approaches to enhancing wellbeing. Collaborating with others from different disciplines or approaches who also study and value wellbeing, and to identify best practices that could be adopted or combined to optimise the positive effects of wellbeing strategies seems a logical next step. Disciplines and fields of inquiry such as sports science, neuroscience, medicine, psychology, education, policy, technology, positive youth development and social and emotional learning may have developed theory, methods, measures and interventions that can complement or integrate with positive psychology practices to yield more powerful benefits or engaging methods. Lyubomirsky (2008) identifies the importance of person-activity fit and variety to maintain interest and benefits. There are some examples of this integration starting to emerge. For example, Nisbet et al. (2019) combined a nature intervention with mindfulness. She found better wellbeing outcomes for the combined intervention relative to the same nature intervention without mindfulness. Peters et al. (2010) combined mental imagery with the 'best possible self' writing intervention and found significant effects. These examples illustrate how strategies from various disciplines can be combined to achieve improved outcomes or increased variety for sustained benefits. However, many scholars working within positive psychology tend to remain within their disciplinary 'boundaries' even though the topic of wellbeing lends itself nicely to interdisciplinary work.

Another issue with wellbeing interventions including PPIs is the high level of engagement and training required to facilitate genuine learning and enable skill transfer when needed. It is important that PPIs 'stick' so that they can help create significant and sustained improvements to the individual's life. A clear pedagogical learning framework and the latest technological innovations can improve the learning process and make skill development through training more enticing. For example, a meta-analysis of social and emotional learning interventions in school settings found that programmes adopting a sequenced, active, focused and explicit (SAFE) framework for learning were more effective than programmes not following this process (Durlak et al., 2011). Programmes that have clear learning intentions and clear feedback about progress are also deemed to be of better quality. For example, Hattie (2011) stresses the importance of making the learning experience visible to both teachers and students and to help students to become their own teachers over time so that they can be passionate about learning and make it a lifelong pursuit. Seeking and acting upon feedback are an important theme associated with effective learning.

Increasingly, technological advances are being used to enhance learning experiences. The onset of the Internet and the rapid development of portable, affordable and scalable devices have seen Technology-Enabled Learning (TEL) become commonplace in educational settings (Kirkwood and Price, 2016). Despite this, using technology alone as a novel replacement for traditional learning frameworks will not necessarily be successful in the long-term unless combined with a solid pedagogical rationale (Ferguson, 2019). Ferguson (2019) points out that without this solid rationale, the novelty of using new technological approaches will fade over time and positive change will not be sustained. However, the use of innovative technological approaches to support sound pedagogical practice can result in positive outcomes. An example of a technological innovation that has the potential to enhance traditional pedagogical practices is using video games to enhance learning. Gamification can provide incidental learning

which is augmented by providing challenges and rewards in an engaging and immersive environment (Sharples, 2019) thus making it more likely that users will be kept motivated and engaged in the learning process (Weerdmeester et al., 2020). The use of technology can heighten interest, enjoyment and learning efficiency (Liang and Xiaoming, 2013; Lee et al., 2017). Serious games with intentional learning principles can increase motivation to learn and improve performance (Gee, 2009; Laamarti et al., 2014). For example, Chen and Hsu (2019) exposed a group of 66 college students to a serious game titled *Slave Trade* to examine if vocabulary and history knowledge improved. They found significant improvements in both areas from pre- to post-game and also found that participants reported a positive learning experience through the gaming environment.

In addition, technological advances have allowed us to access a range of information about how we respond to the world around us. Ubiquitous 'smart' devices or 'wearables' collect an ongoing stream of health and wellness information (e.g., activity, sleep and heart rate) to enable us to monitor and track our health status (Weerdmeester et al., 2020). This information can help combat the abstract nature of subjective wellbeing where it can be difficult to quantify and see change, and thus motivate individuals to enhance their wellbeing. The need for objective data is becoming inescapable. Indeed, we are in the era of what is being described as the 'quantified self' where everything about a person and their responses to their environment is being measured (Lupton, 2016).

Physiological data that are collected from smart devices can also be used as a form of biofeedback, where individuals can monitor their personal data and learn how to adapt physiological functioning to improve other aspects of their health (e.g., mental health). Subsequently, biofeedback is increasingly being incorporated in smartphone self-monitoring apps (Weerdmeester et al., 2020; Leonidis et al., 2021) which use the health and wellness information to provide personalised nudges to help individuals adapt. Given the breadth of the data that is currently being collected by wearables it also provides an opportunity for a more holistic approach to biofeedback in which several health and wellness markers could be used to provide accurate personalised guidance. This approach has been used in the design of Intelligent Homes that use real-time data collected by wearables, as well as information received from various sensors in the house, to provide personalised relaxation and sleep advice (Leonidis et al., 2021). The system '…aims to detect, as unobtrusively as possible, whenever a user is stressed and try to help him/her relax by exploiting a variety of devices…' (Leonidis et al., 2021, p. 12). This holistic approach, which incorporates multiple health and wellness markers (e.g., sleep, physical activity, nutrition and sunlight), as well as other more objective measures, may provide a direction for the development of future biofeedback apps.

To date, the science of positive psychology and wellbeing has remained largely in the 'subjective' and introspective realm. Hence, individuals may lack belief in and motivation to engage with wellbeing strategies because the processes and benefits are not immediately visible to them. Positive psychology needs to consider these consumer behaviours around the quantified self, best practice education (pedagogy) and technology-enabled learning to consider ways of making learning about wellbeing more tangible and salient so that it is valued. While the more nebulous subjective experience is a significant part of psychological wellbeing and should not be abandoned simply because it is complex to measure and understand, there are ways of integrating objective wellbeing data to add another dimension to the wellbeing experience and the way it is understood and translated into practice. The mind–body connection seems to be a good starting place.

Monitoring our physiology can provide relatively accurate insights—not only about our physical condition but also our psychological health and wellbeing given that physiology and psychology are inextricably linked (Niedenthal, 2007). This aligns with the perspective that the mind and body are connected. The way we think, behave and function physiologically are all interconnected (Weerdmeester et al., 2020). For example, how we identify and interpret physiological indices has an effect on how we respond emotionally (Gross, 2002; Kanbara and Fukunaga, 2016). It has been suggested that when these systems are coherent and perceived stress matches the concurrent physiological response, it can lead to better adaptive functioning (see Sommerfeldt et al., 2020). For instance, individuals who display greater coherence of subjective stress and electrocardiogram recorded heart rate have been found to exhibit higher levels of psychological wellbeing (Sommerfeldt et al., 2020). Furthermore, low stress-heart rate coherence can be an indicator of maladaptive coping strategies such as denial (Sommerfeldt et al., 2020).

The connection we have with our inner selves, including physiological processes, is known as interoceptive awareness. Those who report low levels of interoceptive awareness (e.g., introspection) are less likely to be self-connected; that is, they are less likely to be self-aware, have self-acceptance and align their behaviour with their true self (Klussman et al., 2020). Two types of barriers to self-knowledge have been identified, informational and motivational. Informational barriers refer to limited or inaccurate details about the self, whereas motivational barriers refer to perceptual biases such as self-enhancement and self-verification of pre-existing beliefs (Vazire, 2010). In addition to these biases, individuals report that they do not have time or space in their busy schedules to become self-connected. According to Klussman et al. (2020) objective self-observation and knowledge can enhance self-connection.

Advances in technology and neurophysiological devices make it possible to measure internal bodily states with the intent of gaining awareness and taking control over processes previously outside the individual's level of awareness. Known as biofeedback this objective, real-time information can make wellbeing more tangible and appealing, increasing motivation and engagement. Thus, incorporating this additional pathway to self-awareness has the potential to significantly impact the way we approach mental health and wellbeing promotion.

EXAMPLES OF TANGIBLE WELLBEING IN PROGRESS

There has been some emerging work examining how the mind and body are connected among positive psychology and medical

scholars. For example, Kok et al. (2013) identified how emotional health can influence physical health (vagal tone). Similarly, studies examining heart rate variability (HRV) and the role of the vagus nerve in relation to psychological wellbeing have been undertaken. The vagus nerve is the largest autonomic nerve of the central nervous system and has a direct role in parasympathetic control, regulating heart rate, respiration and digestion. Higher vagal activity is associated with greater autonomic flexibility or the capacity of the autonomic nervous system to change according to environmental needs (Friedman and Thayer, 1998; Porges, 2007). Heart rate variability is often used as an indirect measure of vagal tone or activity (Marmerstein et al., 2021). Higher vagal tone has been linked with improved emotional regulation (Thayer et al., 2009), pro-social behaviour (Eisenberg et al., 1995), self-regulation (Park and Thayer, 2014) and adaptive coping resources (Porges et al., 1994). In addition, it has been proposed that there is a reciprocal relationship between wellbeing and vagal activity, whereby positive social and emotional experiences support autonomic health and vice versa (Kok and Fredrickson, 2010; Kok et al., 2013). Thus, HRV can provide people with information about their autonomic functioning and wellbeing.

Adopting a more extensive systems approach, Mead et al. (2021) have proposed a transdisciplinary model of wellbeing science that encompasses individual, community and environmental domains and physical and socio-contextual factors that may positively or negatively impact peoples' experiences and cultivation of wellbeing. They highlight the importance of self-connection which can be enhanced by developing greater awareness or understanding of the self (Klussman et al., 2020; Mead et al., 2021). Although traditionally this might refer to an understanding of beliefs, values, goals and behaviour, it could also be extended to incorporate physical and physiological factors. Central to supporting this self-connection is the vagal nerve as it provides a structural link between the mind and body (Mead et al., 2021). What this work suggests is the need to progress towards assessing coherence levels among different measures that contribute to a more holistic understanding of wellbeing. Integrating psychological states with physiological response data can provide more complete information than is possible with a single measurement approach (Sommerfeldt et al., 2020).

Similarly, Davidson's (2021) work at the Centre for Healthy minds underscores that individuals' perceptions and feelings of stress can differ from their physiological response to stress. Their work has found that individuals whose subjective experience of stress aligns strongly with physiological changes in their body (i.e., have strong stress-heart rate coherence) tend to have higher psychological and physical wellbeing. They are now exploring whether interoceptive accuracy of heart rate is a prerequisite for physiological and subjective experience coherence, as well as whether mindfulness practice can enhance this coherence. In response to their comment that the field of psychological wellbeing 'lacks a unifying framework that clarifies the dimensions of human flourishing that can be cultivated' Dahl et al. (2020, p. 32197) have proposed a four pillar framework focused on the plasticity of wellbeing that includes awareness, connection, insight and purpose. In so doing, they include evidence from clinical psychology, wellbeing science and neuroscience, and encourage future wellbeing researchers to move beyond insular and self-report approaches to consider how psychological and biological mechanisms as well as new technology might increase our understanding and promotion of human flourishing.

We at the Centre for Wellbeing Science are focusing on the mind–body connection as a way to help individuals engage more fully with wellbeing education. For example, our Bio-Dash wellbeing programme integrates biofeedback first as a monitoring tool to enhance interoceptive awareness and identify areas of strength and improvement, and secondly to enhance the wellbeing learning process by gaining feedback about how the application of the learning is progressing, not just subjectively but also at a neurophysiological level that can be observed and controlled. Bio-Dash integrates the learnings from a variety of models that are aimed at increasing motivation and engagement to participate in wellbeing interventions. These include the promotion of person-activity fit (Lyubomirsky, 2008; Lyubomirsky and Layous, 2013), self-concordant motivation and need striving (Sheldon and Elliot, 1998, 1999), self-determination (Ryan and Deci, 2000), growth mindset (Dweck, 2008) and visible learning (Hattie, 2011). These approaches collectively emphasise the need for variety, choice, intrinsic motivation, self-efficacy, being open to learning and skill development, and providing clear, personalised feedback. In addition, Bio-Dash includes a range of virtual and real challenges to help transfer the learning in applied settings and scenarios, as well as gamification features that provide metrics such as time taken to complete a task, time spent in stress, neutral and relaxed states and rewards when relaxation goals are achieved. As found by Chen and Hsu (2019) adopting these tangible and creative learning strategies can enhance learning engagement so that it is a more positive experience. This can promote more practice, knowledge and skill development and overall wellbeing habits that can be applied in practical situations, as reported by nearly 200 students from a private boy's school in Melbourne, who trialled and provided anonymous feedback on the Bio-Dash. Many identified the technological aspects of Bio-Dash (biofeedback and gamification) as novel features that helped to keep them motivated to learn more about the wellbeing strategies (see West et al., 2021 for further details about the Bio-Dash).

Aside from connecting the mind and body, there are other ways of making wellbeing more tangible, especially if an interdisciplinary perspective is adopted. For example, Stanley et al. (2021) have monetized wellbeing using a sustainability analysis framework including the economic, social and environmental trade-offs to support improved transport policy. This work has extended the cost–benefit analysis beyond traditional economic measures to show in dollar terms, the significant value of wellbeing to socio-economic outcomes. It also highlights the strength of interdisciplinary collaborations, whereby scholars with expertise in economy, social work, transport policy and psychology have infused their approaches to create new and valuable knowledge in a language that will

appeal to different but highly relevant audiences. This reinforces a systems approach which speaks to policy makers and government and is critical for sustained benefits.

Along these lines, we recognise that wellbeing is not housed exclusively in an individual but in a complex system (Kern et al., 2020). Hence, building a culture of wellbeing, where it is readily expressed can make wellbeing more salient and part of everyday life. There is a growing understanding that people, groups and communities can express their level of wellbeing in a variety of ways, including through creative outlets such as writing and artistic works (e.g., singing, song writing, painting and poetry) and that this type of wellbeing expression can be learned (Oades and Johnston, 2017; Oades et al., 2020). These varied forms of expression become physical representations of wellbeing that can be seen, experienced and measured in terms of their ability to provoke different emotions, cognitions and behaviours that relate to wellbeing. Quantifying the extent to which people communicate, comprehend and compose wellbeing—wellbeing literacy—can provide a set of metrics that people can see and use as a point of comparison in the future, particularly in response to wellbeing interventions (see Oades et al., 2020). This can also enable cultural diversity to be more readily identified and understood.

CONCLUSION

When individuals can witness firsthand how intentional effort to enhance wellbeing, through evidence-based approaches, actually influences the 'hardwiring' and neurophysiology of the body and experience the benefits of mind–body coherence, the value of wellbeing increases. When dollar values are placed on wellbeing such that the benefits of wellbeing initiatives outweigh the costs, this also attracts attention from policy makers and government. When we start to see and measure expressions of wellbeing in daily life and the ways in which these align with, for example, pro-social and civic behaviours across diverse cultures, this can have socio-political value. There is growing empirical evidence revolving around psychosocial and neurophysiological factors to support the sustained benefits of wellbeing interventions Rickard and Vella-Brodrick (2014). Cumulatively, these interdisciplinary, creative and objective approaches enable a case to be built for why wellbeing is important beyond the subjective, individual experience, and demonstrate that these outcomes are not imagined but are very real. Positive psychology has an important role to play in bringing together interdisciplinary work that draws on subjective and objective wellbeing methods and the latest technology. This will make wellbeing more tangible and help individuals to see and believe that they can have access to data and skills to improve their wellbeing.

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.

AUTHOR CONTRIBUTIONS

DV-B conceived of the paper idea, designed the paper outline and content, prepared a first draft of the paper, made subsequent edits to the final stage, and submitted the paper. AG contributed to the writing and edits and assisted with the paper formatting. KP contributed to the writing and edits as well as proofreading. All authors contributed to the article and approved the submitted version.

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Positive Psychology: Looking Back and Looking Forward

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Envisioning the future of positive psychology (PP) requires looking at its past. To that end, I first review prior critiques of PP to underscore that certain early problems have persisted over time. I then selectively examine recent research to illustrate progress in certain areas as well as draw attention to recurrent problems. Key among them is promulgation of poorly constructed measures of well-being and reliance on homogeneous, privileged research samples. Another concern is the commercialization of PP, which points to the need for greater oversight and quality control in profit-seeking endeavors. Looking ahead, I advocate for future science tied to contemporary challenges, particularly ever-widening inequality and the pandemic. These constitute intersecting catastrophes that need scientific attention. Such problems bring into focus "neglected negatives" that may be fueling current difficulties, including greed, indifference, and stupidity. Anger, which defies easy characterization as positive or negative, also warrants greater scientific study. Going forward I advocate for greater study of domains that likely nurture good lives and just societies – namely, participation in the arts and encounters with nature, both currently under study. Overall, my entreaty to PP is to reckon with persistent problems from its past, while striving toward a future that is societally relevant and virtuous.

Keywords: positive, negative, commercialization, inequality, greed, indifference, arts, nature

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INTRODUCTION

I have studied psychological well-being for over 30 years (Ryff, 1989, 2014, 2018), seeking to define its essential features as well as learn about factors that promote or undermine well-being and probe how it matters for health. I bring this past experience and expertise to thinking about positive psychology (PP), noting that I have never considered myself a positive psychologist, mostly because it has always seemed misguided to me to partition science by valence. Everything that interests me involves complex blends of good and bad things, what Rilke called the beauty and terror of life. With these ideas in mind, I reflect about the future of PP by first looking at its past to highlight what it has, or has not, contributed over the last two decades. My views represent personal observations from an outsider who, from the outset, was dubious about the point of launching the PP movement.

I begin with a look at early critiques, including my own, that distilled various concerns about the launching of PP. Some of those problems have endured, such as the failure to embrace the deeper history of psychology and related fields that have long addressed optimal human functioning. This distortion undermines the building of cumulative and coherent knowledge, while also contributes to insularity within PP. Additional past critiques, some from within PP, emphasized the need to put negative and positive experience together, as in dialectical approaches. I made similar points along the way. For this essay, I describe work outside the PP umbrella doing exactly that, drawing largely on the Midlife in the United States (MIDUS) national longitudinal study[1], which I have led over the past two decades.

Returning to PP, on the topic of scientific progress I highlight select contributions over the past 20 years, but again underscore that most of these topics predated PP. On the downside, two notable problems are discussed: (1) poorly constructed measures of well-being and problematic findings, which contradict the claim that PP rests on solid science; and (2) widespread use of homogeneous research samples (white, well-educated, Western) in PP, thereby ignoring how race/ethnicity, socioeconomic status, and culture matter for positive human functioning. Linked to these problems is widespread pursuit of financial profit, purportedly grounded in rigorous scientific findings. Such commercialization, illustrated by products and shopping carts on websites, makes clear that PP has become a major business. Money-making, I observe, is a strange counterpoint to the recurring emphasis on character strengths and virtue. Financial gain raises additional issues of ethical oversight and quality control in what is being sold.

Going forward, PP and the human sciences in general need to address contemporary societal problems. I focus on ever-widening inequality, now compounded by the pandemic. What we know is that the suffering is not occurring equally, but is happening disproportionately among those who were already vulnerable. These difficulties bring into high relief topics that psychology has largely neglected. Among pernicious negatives of our era that may be fueling the problems we see are greed and indifference, especially among the privileged, as well as stupidity, which seems to cut across educational strata. Anger is another important contemporary emotion that defies easy characterization as positive or negative. These topics stand in marked contrast to what PP was meant to correct – namely, the preoccupation with psychopathology, weakness and damage (Seligman and Csikszentmihalyi, 2000).

Looking ahead, I examine factors that may be key in nourishing good lives and just societies, such as active engagement with the arts, broadly defined. Widespread initiatives are moving in this direction, though few emphasize the critical role of the arts in understanding human suffering, which I bring into high relief. A key question is whether great literature, music, poetry, painting, and film can activate caring and compassion, particularly among the advantaged. Encounters with nature constitute another domain for nourishing good lives, while also strengthening commitments to take care for our planet. I note currently unfolding work along these lines.

[1] www.midus.wisc.edu

LOOKING BACK

Early Critiques of Positive Psychology

Most cite Seligman and Csikszentmihalyi (2000) as the definitive statement of what PP was about and why it was needed. The essay began with the authors describing what led each of them to believe that psychology as a discipline was preoccupied with "pathology, weakness, and damage" (p. 7). These assertions were remarkably at odds with extensive literatures on the positive in clinical, developmental, existential, and humanistic psychology – decades of prior work, much of which I drew on to formulate an integrative model of psychological well-being (Ryff, 1989). Instead, most of the foundational exegesis was devoted to describing the 15 articles that followed. All represented longstanding programs of research on such topics as evolution, subjective well-being, optimism, self-determination, maturity, health, wisdom, creativity, and giftedness. These realms were themselves notably at odds with the assertion that psychology was preoccupied with the negative, a point strangely missed by the founders of PP.

Three years later *Psychological Inquiry* published a target article titled "Does the Positive Psychology Movement Have Legs?" (Lazarus, 2003), followed by numerous commentaries. Ryff (2003) found fault with many aspects of the Lazarus critique (e.g., subjectivism, dimensional versus discrete models of emotion, and cross-sectional research), most of which I clarified were not problems specific to PP. On the topic of emotion, however, I argued for joint focus on negative and positive emotions because "...bad things happen to people, and the healthy response is to feel the sadness, pain, frustration, fear, disappointment, anger, or shame resulting from the adverse experience. However, good things also happen to people, and the healthy response is to feel joy, pride, love, affection, pleasure, or contentment from such experience positive experiences. Thus, the capacity for experiencing and expressing both realms of emotion is central to healthy functioning." (p. 154).

The unsatisfactory Lazarus critique meant that the central strengths and limitations of PP had not been addressed. On the credit side of the ledger, I praised the special issue for bringing together in the same forum research programs that addressed positive, healthy, adaptive features of human functioning, but underscored that everything assembled came from longstanding programs of prior research. *Nothing meant to exemplify this new movement was new*: "This myopia about past and present is damaging not for the superficial reason of taking credit for advances already contributed by others but for more serious problems of increasing the likelihood of reinventing wheels, both conceptual and empirical, such that science fails to be incremental and cumulative" (Ryff, 2003, p. 155).

To illustrate historical precursors, I drew on Coan's (1977) *Hero, Artist, Sage, or Saint*. It described centuries of scholarly efforts to depict the more noble attributes of humankind, such

as the ancient Greeks' emphasis on reason and rationality, St. Augustine's emphasis on close contact with the divine, the Renaissance emphasis on creative self-expression, and the poets and philosophers of the Enlightenment. I also noted James (1902/1958) eloquent writings about healthy-mindedness juxtaposed with the sick soul, along with others who formulated individuation (Jung, 1933; Von Franz, 1964), ego development (Erikson, 1959), maturity (Allport, 1961), self-actualization (Maslow, 1968), the fully functioning person (Rogers, 1961), and positive mental health (Jahoda, 1958).

My own work on well-being (Ryff, 1989) had drawn extensively on these sources, while Ryan and Deci's (2001) review of hedonic and eudaimonic well-being distilled other philosophical precursors. I noted other contributions on positive topics, such as studies of ego development (Loevinger, 1976), adult personality development (Helson and Srivastava, 2001), generativity (McAdams and St. Aubin, 1998), the human quest for meaning (Wong and Fry, 1998), effective coping and self-regulation (Carver and Scheier, 1998), and proliferating research on human resilience and post-traumatic growth (Tedeschi et al., 1998; Luthar et al., 2000). My point: "Taken as a whole, this impressive array of current and past research on the upside of human condition leaves one wondering what all the fanfare has been about. Positive psychology is alive and well, and it most assuredly has legs, which stretch back into the distant history of the discipline. *It is only from particular vantage points, such as clinical or abnormal psychology that the positive focus constitutes a novelty*. For other subfields, especially life-span developmental and personality psychology, there has always been a concern for healthy, optimal human functioning. Perhaps the main message in the positive psychology initiative is thus how deeply entrenched and divided are the subfields within which psychologists work" (Ryff, 2003, p. 157). Unfortunately, this failure to consider relevant wider literatures has persisted through time. More than a decade later, the positive in PP was defined entirely from "Three Foundational Documents" (Pawelski, 2016), which included Seligman (1999) and Seligman and Csikszentmihalyi (2000), and an unpublished paper from a 2000 conference in Akumal, Mexico organized by Seligman. Effectively, all meanings of the positive in PP emanated from its founder, thus more deeply entrenching the historical myopia.

My 2003 essay concluded with a call for psychology to organize its house of strengths and to be circumspect about generating new assessments: "Those who would add to the many tools already available need to be clear that they are not contributing to clutter – that is, generating instruments that are redundant with extant measures." (p. 157). The concern went unheeded, as I detail later.

Calls to Put Negative and Positive Realms Together

Wong (2011) advocated for a balanced and interactive model of the good life: "the development of character strengths and resilience may benefit from prior experience of having overcome negative conditions" (p. 70). The call to maximize positive affect and minimize negative affect could also create a "happy person as a well-defended fortress, invulnerable to the vicissitudes of life" (King, 2001, p. 53). New to the discourse, Wong called for a balance between individualist and collectivist orientations, thereby signaling the need to address cultural issues. Similarly, Lomas and Ivtzan (2016) called for second wave positive psychology to recognize the insufficiency of the admonition of first wave PP to go beyond a psychology preoccupied with disorder and dysfunction. Negative states could be conducive to flourishing, calling again for recognition of the dialectical nature of wellbeing. Five dichotomies were examined: optimism versus pessimism, self-esteem versus humility, freedom versus restriction, forgiveness versus anger, and happiness versus sadness. Within each, the value of both sides was described. These ideas aligned with other prior work, such as Carver and Scheier's (2003) observation that doubt and disengagement play critical roles alongside commitment and confidence as well as Larsen et al. (2003) emphasis on co-activation of positive and negative emotions that allow individuals to make sense of stressors and gain mastery over them.

At the 6th European Conference on PP in Moscow, I spoke about "Contradiction at the Core of the Positive Psychology Movement: The Essential Role of the Negative in Adaptive Human Functioning" (Ryff, 2012), beginning with a quote from Dostoyevsky's *Notes From the Underground:* "And why are you so firmly and triumphantly certain that only what is normal and positive – in short, only well-being is good for man? Is reason mistaken about what is good? After all perhaps prosperity isn't the only thing that pleases mankind. Perhaps he is just as attracted to suffering. Perhaps suffering is just as good to him as prosperity." I then drew on Mill's (1893/1989) *Autobiography:* "Those only are happy, I thought, who have their minds fixed on some object other than their own happiness, on the happiness of others, on the improvement of mankind, even on some art or pursuit, followed not as a means, but as itself an ideal end. Aiming thus as something else, they find happiness by the way."

Arguing that psychology should not be partitioned by valence because all lives encompass both positives and negatives, I provided three examples of how they might come together. In the first, the positive is construed as an *antidote* to the negative, such as how positive emotions can help undo negative emotions (Fredrickson, 1998), or how psychological well-being can help prevent relapse of depression or anxiety (Fava et al., 1998; Ruini and Fava, 2009). In the second, the negative is seen as the *route or path* to the positive, as in trauma contributing to personal growth (Tedeschi et al., 1998), or the expression of negative emotion fostering relational intimacy (Reis, 2001), or the expression of negative emotion in childhood contributing, via skilled parenting, to emotional development (Gottman, 2001). In the third, the positive and negative emotions are inextricably linked, such that embedded within every negative is a positive and within every positive is a negative. This dialectical perspective is more common in interdependent cultural contexts, with our findings (Miyamoto and Ryff, 2011) showing that Japanese adults report experiencing both positive and negative affect, whereas United States adults report mostly positive affect. The dialectical emotional style was also linked with

better health (fewer physical symptoms) in Japan compared to the United States.

Around the same time, McNulty and Fincham (2012) issued an important new challenge to PP: to consider that psychological traits and processes are not inherently positive or negative, but can be either depending on the context in which they occur. This insight was illustrated with interpersonal research (longitudinal studies of marital partners). Four putatively positive processes (forgiveness, optimism, benevolent attributions, and kindness) were shown to be beneficial, or harmful, depending on the context in which they occurred. For example, whether forgiveness was linked with self-respect differed by levels of agreeableness of one's partner. Martial satisfaction over time also varied depending on whether attributions for spouses' undesirable behaviors were more or less benevolent. This work, including numerous other examples, offered compelling evidence that simplistic characterizations of phenomena as positive or negative are misguided.

Integrative Work Outside the Positive Psychology Umbrella

Extensive research not part of PP has brought negative and positive aspects of human experience together. To illustrate, I describe select findings from the MIDUS (Midlife in the United States) national longitudinal study (see text Footnote 1), which is based on diverse probability samples, thereby facilitating analyses of how well-being and health vary by age, race, gender, and socioeconomic status. A counterpart study in Japan (MIDJA) has illuminated cultural differences in well-being and health. MIDUS has unprecedented depth in high quality measures of hedonic well-being (life satisfaction, positive, and negative affect), eudaimonic well-being (autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance), optimism, sense of control, personality traits, generativity, social responsibility, and social ties with spouse/significant other as well as parents during childhood. Deeply multidisciplinary in scope, MIDUS has facilitated linkage of all of the above variables to epidemiology, biology, neuroscience, and genetics. Most importantly, MIDUS data are publicly available and are widely used by scientists around the world.

Many findings have combined positive and negatives. For example, Morozink et al. (2010) showed that those with lower educational attainment had elevated levels of IL-6 (interleukin-6, an inflammatory marker implicated in numerous diseases) but higher psychological well-being buffered against such effects. Miller et al. (2011) showed that those from lower socioeconomic backgrounds had increased risk for metabolic syndrome in adulthood, but maternal nurturance buffered such risk. Resilience findings (see Ryff et al., 2012) showing that positive psychosocial factors afforded protection against poor health and physiological dysregulation in the face of various challenges (aging, inequality, early life adversity, cancer, loss of spouse). Breaking new ground, multiple studies have documented that higher purpose in life predicts increased length of life and better health behaviors (Ryff and Kim, 2020). Regarding underlying mechanisms, Heller et al. (2013) showed that sustained activation of reward circuitry in the brain predicted higher eudaimonic well-being as well as better diurnal regulation of cortisol. Personality researchers have studied "healthy neuroticism," with findings from multiple international studies showing that neuroticism is less strongly linked with poor health behaviors (smoking, inactivity) among those who are high in conscientiousness (Graham et al., 2020).

With regard to race, MIDUS has advanced knowledge of the Black-White paradox in health (Keyes, 2009) – i.e., despite inequality and discrimination, Blacks show higher levels of flourishing and lower levels of mental disorders than Whites. Keyes (2005, 2007) also revealed neglected types of mental health in the general population by jointly examining mental distress (depression and anxiety) and well-being (emotion, psychological, and social). In contrast to those who are flourishing (high well-being and no mental distress) are those who are languishing, defined as not suffering from mental distress but having low well-being. Declining well-being over time also predicted increased subsequent risk of mental distress (Keyes et al., 2010), while positive mental health predicted subsequent recovery from mental illness (Iasiello et al., 2019). Space does not permit the details, but many findings from MIDUS and MIDJA have documented cultural differences in how emotion and well-being matter for health and biological risk (Miyamoto and Ryff, 2021).

To reiterate, I include the above glimpse at MIDUS research is to underscore the need for greater interplay and exchange between the field of PP and much parallel science being done by those who do not view themselves as positive psychologists and are not publishing in journals aligned with PP or happiness.

RECENT WORK IN POSITIVE PSYCHOLOGY

This section first below examines select areas of research that represent forward progress of PP over the past two decades. Then I note recent evaluative overviews of PP from those within the field. Some of their concerns are elaborated in the next sections on what I see as problems within PP science: first, the promulgation of poor instruments for assessing well-being, and second, the reliance on largely privileged, homogeneous samples for conducting PP research.

Forward Empirical Progress

Whether the science of PP is moving constructively forward can examined in various ways. Rather than conduct a systematic review of empirical findings, I choose to focus on chapter-writing, mostly from 3rd Edition of the *Oxford Handbook of Positive Psychology* (Snyder et al., 2021). Unlike journal articles, chapters allow authors to combine many advances on particular topics over time thereby offering a narrative overview of multiple findings. The book includes 68 chapters written by 153 authors, 86% of whom were from the United States.

In the study of emotion, multiple lines of progress are evident. The broaden and build theory continues to evolve by showing short- and long-term benefits of positive emotions in multiple domains, including thoughts, actions, stress, health,

physiological and neurological connections (Tugade et al., 2021). Studies of positive affectivity, a trait composed of different components (joviality, self-assurance, and attentiveness) have also progressed via linkages to other constructs (extraversion, happiness, and well-being) as well as psychological disorders, health, marital and job satisfaction, and cultural issues (Naragon-Gainey and Watson, 2021). Positive affect has been linked to longer life, lower incidence of disease, better recovery from disease and better overall health (Hunter et al., 2021), with calls for further work on mechanisms, culture, and technology. The emotional approach to coping (EAC) shows evidence on the intentional use of emotional processing and expression to manage adverse circumstances, such as infertility, sexual assault, diabetes, cancer (Moreno et al., 2021), while calling for more work on interventions, including who benefits (which contexts).

Happiness studies have examined ways in which happy and unhappy people respond to social comparisons, make decisions, and reflect (Boehm et al., 2021), along with strategies (experiments and activities) to improve happiness and formulation of underlying mechanisms. Veenhoven (2021) reviewed differences in happiness across nations and linked them to important questions about what governments can or cannot do to raise levels of happiness, thus reaching toward issues of public policy. A unified model of meaning in life was advanced, underscoring the need for conceptual integration in this growing area of science (Steger, 2021). Positive aging was covered via multiple positive formulations that have been extensively studied, in some cases with interventions (Nakamura and Chan, 2021).

Shifting to life outlooks, how the future is construed was covered with work on optimism showing that those who expect good things to occur have higher well-being, better health, and higher quality social ties, partly attributable to how they cope with adversity (Mens et al., 2021). Detrimental consequences of hope were considered, while calling for greater work on the origins of hope and cultural issues. Hope, defined as the perceived ability to achieve desired goals via pathways and agency, was examined with a goal pursuit process model and linked to academic and athletic performance, health and well-being, social relationships, and work (Rand and Touza, 2021). Resilience, the capacity for positive adaptation in the face of significant adversity, was examined in models that illuminated self-regulation skills, good parenting, community resources and effective schools (Cutuli et al., 2021). Strategies for reducing risk, building strengths and mobilizing adaptive systems were future directions.

Positive mental health was covered with a thoughtful historical perspective and overview of current conceptualizations and measures (Delle Fava and Negri, 2021), examined from life course and cultural perspectives. Illustrating methodological novelty, Tarragona (2021) considered the benefits of personal narratives and expressive writing on mental health and physical health (immune function and cardiovascular health), particularly in the context of trauma. Dominant approaches to mental health interventions (psychotherapy, counseling, and coaching) were examined for commonalities and differences in time perspectives, therapeutic strategies and recipients (Ruini and Marques, 2021), while emphasizing the need for professional regulation and oversight.

Several chapters covered interpersonal themes. Attachment theory was presented as a framework for studying positive relationships (Mikulincer and Shaver, 2021) via links between mental representations of attachment security and how they matter for diverse outcomes (health, social adjustment or interpersonal conflict, and personal growth). Relationship complexities were examined, underscoring both meaningful rewards and substantial risks of close social ties (Gable and Maisel, 2021). They highlighted positive processes, involving positive emotions, intimacy, growth of self-concept, and benefits of sharing positive events. Past research on empathy was reviewed and emerging work on the neuroscience of empathy described (Duan and Sager, 2021). How empathy relates to racial/ethnic diversity, multiculturalism, and social justice were future directions. Forgiveness was described in terms of the methods used and the differentiation of various antecedents, some intrapersonal (empathy, personality, attributions, and religion) and others interpersonal (closeness and conciliatory behavior) (Tsang and Martin, 2021). Whether forgiveness is uniformly positive was considered.

Pawelski and Tay's (2021) described efforts to connect PP to the humanities through new conceptual analyses and various interventions. Silvia and Kashdan (2021) examined curiosity and interest, framed as recognizing, seeking out, and preferring things outside one's normal experience. How these tendencies matter for well-being is under study in the laboratory and everyday life. Courage, defined as facing personal risks in pursuit of worthy goals, was examined historically and via modern theory and measurement tools focused on volition, goals, and risk (Pury et al., 2021). Humility, formulated as accurate and modest self-presentation and being other-oriented, showed steady progress in empirical findings from 2000 to 2015 (Worthington et al., 2021).

In sum, considerable evidence reveals forward progress on important topics in PP. Even though most areas of inquiry predated PP, it is useful to bring such contributions together to convey the range and diversity of topics on adaptive human functioning. At the same time, several chapters in the collection were not current in coverage, and some had a paucity of empirical findings. All ended with future questions. An interesting question is whether these have evolved over the past 20 years, or are largely similar to where the field was back then. Before addressing problematic areas of PP science, I next examine evaluative reviews from within the PP field.

Overarching Concerns About Positive Psychology

Lomas et al. (2021) call for PP to broaden toward complexity – go beyond the individual toward analysis of groups, organizations, and broader systems as well as to embrace diverse methodologies. Better understanding of context (historical, social, cultural, and institutional) was also emphasized. Contextual approaches were illustrated with positive organizational scholarship (Cameron et al., 2003), positive educational approaches in schools (Waters et al., 2010), and family-centered positive psychology

(Sheridan et al., 2004; Henry et al., 2015). Lomas et al. (2021) called for greater ethical oversight of the ever-expanding cadre of PP practitioners from applied programs: "...unless practitioners are affiliated to a particular profession, they may be operating outside the advice and provisions of any set of ethical guidelines" (p. 16).

Kern et al. (2020) contrasted the rapid growth of PP with concern about exaggerated claims, inflated expectations, disillusionment, and possibly, unintentional harms. Issues of over-promising and under-delivering in programs with individuals, schools, the workplace, and communities were noted. To help the field mature, they advocated for systems informed PP, which would clarify epistemological, political, and ethical assumptions and commitments. The implications of such ideas for research and practice were examined.

van Zyl (2022) reviewed criticisms and concerns about PP, including the lack of a unifying metatheory that underpins the science as well as fundamental ideas for how positive psychological phenomena should be researched. Related criticisms were that PP has borrowed most of its theories from social, behavioral and cognitive psychology, thereby advancing few of its own unique perspectives. There is the problem of terminological confusion – e.g., using terms like flourishing or well-being interchangeably when operationalizations of them are notably different, or failing to recognize the possible overlap among putatively distinct topics, such as grit, conscientiousness, or diligence. Inconsistency in the factorial structures of various measurement models is a further problem. The fact that most PP has failed to produce significant or sustainable changes was noted, along with its cultural (Western) biases.

Taken together, I agree with most of the above assessments and further illustrate them below.

Problems in Positive Psychology Science: Flawed Conceptualization and Measurement of Well-Being

I bring my expertise in the study of psychological well-being to how some have approached this topic in PP. As noted above, I foresaw problems of measurement clutter at the dawning of PP (Ryff, 2003). My prediction was prescient and needs attention, given growing interest in the measurement of well-being across scientific disciplines. A recent edited volume (Lee et al., 2021) included scrutiny of multiple measurement approaches along with an animated exchange among contributors (Ryff et al., 2021a,b; VanderWeele et al., 2021a,b) on the pluses and minuses of various assessment strategies. What came into high relief was concern about the proliferation of thin, poorly validated measures that are undermining quality science in the study of well-being.

Although not considered in the above volume, Seligman and his collaborators have contributed to this problem. I offer two examples of the promulgation of poorly constructed and poorly validated measures of well-being that are at odds with claims that PP rests on rigorous science. A first study (Seligman et al., 2005) sought to validate five different interventions (gratitude visit, three good things, you at your best, using signature strengths in a new way, and identifying signature strengths). Internet-based samples were recruited through the authentic happiness website[2]; most participants were white and highly educated.

All completed baseline assessments and five follow-up assessments over a 6-month period after completion of the intervention assignment. As a general observation, the findings were overstated – most comparisons between the control group and intervention groups were not significantly different across time, nor was there coherence in when such effects were evident. There was also insufficient attention given to pre–post comparisons, which are central for demonstrating intervention effectiveness. My primary focus, however, is on the outcomes assessed – specifically, the measure of happiness.

Described as "scientifically unwieldy" (p. 413) happiness was "dissolved" into three distinct components: "(a) positive emotion and pleasure (the pleasant life), (b) engagement (the engaged life), and (c) meaning (the meaningful life)." I note the redundancy in defining each component. The source for this tripartite formulation was Seligman's (2002) trade book, *Authentic Happiness,* which was operationalized with the Steen Happiness Index (SHI), an unpublished 20-item inventory. No evidence was provided that the inventory measures three distinct components of well-being, nor is it likely such evidence could be assembled. Many items lack face validity – i.e., they pertained to other constructs, such as optimism, positive self-regard, frustration, energy, social connection, making good choices. Adding to the befuddlement was this statement: "We continue to use the word happiness, but only in the atheoretical sense of labeling the overall aim of the positive psychology endeavor and referring jointly to positive emotion, engagement, and meaning" (p. 413). All analyses focused the atheoretical construct of happiness – i.e., the component parts were nowhere to be seen.

Next came PERMA, defined by Seligman (2011) in *Flourish,* another popular book. Added to the prior components of positive emotion, engagement, and meaning, were now two additional components: relationships and accomplishment. Again, none were explicitly defined, nor was the pronouncement about what happiness entails theoretically grounded in *anything*, nor was it linked with the extensive prior empirical literatures on subjective and psychological well-being as well as research on positive emotions (exemplified by the diverse MIDUS measures). Such obliviousness to what the field had been investigating for decades made inevitable that there would be redundancy with already validated approaches and assessment tools. Such duplication became a certainty given how PERMA was operationalized – namely, *by taking items from prior instruments* (Butler, 2011). These were transformed into the PERMA-Profiler (Butler and Kern, 2016) via multiple studies (none clearly defined) involving a large samples recruited mostly through online systems; most participants were well-educated.

Missing from the reported analyses were key preliminaries required to develop quality assessments. For example, of central importance was whether the item pools for the five components were empirically distinct (i.e., did each item correlate more highly with its own scale than another scale?). In

[2]www.authentichappiness.org

subsequent tests of convergent validity with other measures, a further problem, not addressed, was the degree of item-overlap (redundancy), given that all PERMA items came from prior instruments. Additional analyses correlated PERMA scales with 20+ measures. For many (e.g., organizational practices, political orientation, work performance, social capital, burnout, values, self-efficacy, perceived stress, and gratitude), the relevance of these analyses was unclear.

Subsequent work showed that PERMA and subjective well-being are indistinguishable (Goodman et al., 2018). Seligman (2018) responded by calling for the need to "transcend psychometrics," accompanied by an exegesis on the psychometrics of baseball pitching. Also offered was the observation that "SWB probably is the useful final common path of the elements of well-being" (p. 1) – presumably an effort to deflect evidence away from the clear empirical redundancy of PERMA with subjective well-being. Most incoherent was the following: "All of this is to say that a good theory of the elements of well-being helps to build well-being and that the psychometric findings that the elements correlate perfectly with overall well-being and that the elements correlate very well with each other is not very instructive when it comes to building well-being" (p. 2).

Other findings have shown questionable support for the putative five-factor structure of PERMA (Watanabe et al., 2018; Ryan et al., 2019; Umucu et al., 2020). Data from German speaking countries Wammerl et al. (2019) supported for the five-factor model but also bifactor models (Reise, 2012). My observation is that these latter methodological studies examining various multivariate structures are largely disconnected from substantive issues of what well-being is, or critical questions needed to advance the field. Those are not about dimensional structures of recycled items, but about the antecedents and consequents well-being, whether well-being is protective in the face of adversity, and whether interventions can promote well-being. On all of these questions, the above two efforts to articulate a meaningful, conceptually grounded theory of happiness that works empirically (i.e., the data support the claimed multifactorial structure) AND that is distinct from what was already in the field, have failed.

Problems in Positive Psychology Science: Samples and Contexts

A second major problem in PP research, already illustrated in preceding sections, is the overwhelming reliance on *homogeneous, privileged samples*. This lack of diversity pervades subfields of psychology that have tended to conduct their research with readily available college students or community volunteers. Others call this the WEIRD phenomenon (Henrich et al., 2010) – doing research with western, educated, industrialized, rich, and democratic societies. Minorities and socioeconomically disadvantaged individuals are missing in such inquiries, although population research makes clear that well-being and health are linked with sociodemographic factors (Ryff et al., 2021c). Our review, which included findings from MIDUS and other large studies, made clear that numerous aspects of well-being (hedonic and eudaimonic) do, in fact, differ by age, socioeconomic status, race, and gender. These differences also predict diverse health outcomes, assessed in terms of symptoms, chronic conditions, biological risk factors, and mortality. Thanks to the MIDJA (Midlife in Japan) study, we have illuminated cultural differences in many of these same topics (Miyamoto and Ryff, 2021).

Closer to PP, I note that *Frontiers in Psychology* issued a recent call for papers to address with PPI (positive psychology interventions) work in non-WEIRD contexts (van Zyl et al., 2021). Their bibliographic analyses showed that only about 2% of PPIs to date have been conducted with vulnerable groups, or in multi-cultural contexts. Clearly, a major need going forward is the importance of reducing the bias toward Western (often United States) samples of privileged people whose lives are clearly not representative of those from other cultural contexts as well as focusing on disadvantaged groups within such contexts.

The Commercialization of Positive Psychology: Needed Oversight

It is without question that PP has become a big business (Horowitz, 2018). Happiness promotion involves billions of dollars spent on popular books, workshops, counseling/coaching, apps, websites, and social media platforms. PP has entered the corporate world through happiness consulting companies that claim to "bridge the gap between cutting-edge research in the field of positive psychology and best practices within corporate and community cultures around the globe" (p. 244). Horowitz wryly observes that few promoting happiness as the route to success consider the alternative – i.e., that success leads to happiness. There is also a marked failure to address the needs of lower echelon workers, such as better wages and benefits. Instead, motivational speakers cheer on executives, managers and workers with messages consonant with positive psychology and neoliberalism. Via apps and other gadgets happiness has become a "measurable, visible, improvable entity" (p. 246), thus replacing global commitments to combat stress, misery, and illness was with relaxation, happiness, and wellness.

I will not detail the dizzying array of websites promoting happiness, flourishing, and positive psychology; they are easily found online. Instead, I ask whether the for-profit cart has gotten seriously ahead of the scientific horse. This is a matter the scientific community cannot afford to ignore because it addresses whether the evidential basis behind the proliferation of products is truly there, or has been glossed over in the frenzy to sell. Prior to the commercialization of PP, scientists had shared understanding of what is required to demonstrate intervention effectiveness, as in randomized clinical trials, a staple of the National Institutes of Health. These guidelines exist to protect the public from products that are not credible. That the advertised promise of happiness promotion may be overstated is intimated by the "Earnings Disclaimer and Statement of Individual Responsibility" from the Flourishing

Center[3]. It states that "the Flourishing Center, Inc. makes no guarantees that you will achieve results similar to ours or anyone else's." Additional text in this format follows: YOU FULLY AGREE AND UNDERSTAND THAT YOU AND YOU ALONE ARE RESPONSIBLE FOR YOUR SUCCESS OR FAILURE. NO REFUNDS ARE AVAILABLE UNLESS STATED OTHERWISE ON A PROGRAM'S SALES PAGE.

Closer to the heart of PP, we need to ask what it means when character strengths are being sold, when virtue has become a commodity, and when PP scientists have shopping carts on their websites. There is also the matter of pricing. Horowitz (2018) describes some who are receiving $25,000 speaker fees – are these defensible in academia? Many believe we have a responsibility to share our knowledge and expertise, but not to do so in pursuit of personal profit. Scrutiny also is required regarding the content of educational programs. Here I focus on the flagship program that is presumably leading the field – namely, the Master's in Applied Positive Psychology (MAPP) at the University of Pennsylvania, described with no shortage of hubris, as Medici II (Seligman, 2019). MAPP offers two semesters (nine courses) and a summer capstone project for a price of over $70,000. The curriculum is thinly described on the website, but if students are being taught that the theory, history, and meanings of PP (Introduction to Positive Psychology) began with Seligman and Csikszentmihalyi (2000) and other foundational documents (Pawelski, 2016), they are not getting what they paid for. Further, if PERMA is being taught as a credible tool for measuring well-being (Research Methods and Evaluation), they are being miseducated. The theoretical, empirical, and experiential nature of positive interventions (Foundations of Positive Interventions) are not detailed on the website, but if Seligman et al. (2005), reviewed above, is presented as credible evidence that PP interventions work, they are being misled.

Amidst these questions, it is important to underscore that high quality teaching materials for such programs do exist, such as the recent book on *Positive Psychology Through the Life Span: An Existential Perspective* (Worth, 2022) and another on *Positive Psychology in the Clinical Domains* (Ruini, 2017). Both offer thoughtful, *historically comprehensive* perspectives in their respective domains, which are essential features of quality education in PP.

The larger issue is the *quality* of what PP is marketing, not just in master's programs, but also certificate programs and short-term seminars. Horowitz (2018) notes those who have expressed concerns about ethical oversight, calling for standardized nomenclature, formal training and certification guidelines, given uneven credentialing among those doing this work. Central concerns are whether the teaching in some programs is superficial and short-term practices lack scientific evidence of effectiveness. Stated otherwise, the commercialized end of PP appears to be fundamentally unregulated. "Despite all the research carried out in the field, what remains too often neglected are the who, why, and with what results ordinary consumers gain from all the money and time they spend on pursuing positive psychology by reading books, attending workshops, and carrying out recommended exercises." (Horowitz, p. 274).

[3]www.theflourishingcenter.com

LOOKING FORWARD: SUGGESTED NEW DIRECTIONS FOR POSITIVE PSYCHOLOGY

Societal Ills as Research Imperatives

Two major challenges of our era, ever-widening inequality and the world-wide pandemic, need scientific attention. Together, they constitute *intersecting catastrophes* (Ryff, forthcoming). Among those who were already disadvantaged, the pandemic has aggravated difficulties many were already facing plus added new challenges (unemployment, loss of healthcare, evictions due to unpaid rent, and food lines/hunger). MIDUS has been a prominent forum for investigating health inequalities, given its rich psychosocial, behavioral, and biological assessments (Kirsch et al., 2019). Our findings have linked lower education and incomes to compromised well-being, greater psychological distress, poorer health behavior, higher stress exposures, elevated biological risk factors, greater morbidity and earlier mortality (see Text Footnote 1). A unique feature of the study has been recruitment of two national samples situated on either side of the Great Recession. Over the period covered by these two samples, educational attainment in the United States improved.

Despite such educational gains, the post-Recession refresher sample reported less household income (after adjusting for inflation), lower financial stability, worse health (multiple indicators) and lower well-being (multiple indicators) than the pre-Recession baseline sample. Further work compared the two samples on measures of negative and positive emotions, showing more compromised mental health in the later refresher sample, particularly among those with lower socioeconomic standing (measured with a composite of education, occupation, income, and wealth) (Goldman et al., 2018). This worsening of mental health among disadvantaged Americans has occurred in the context of the opioid epidemic, growing alcoholism and increased death rates, including suicide, among middle-aged white persons of low SES standing (Case and Deaton, 2015; Kolodny et al., 2015; Grant et al., 2017; Schuchat et al., 2017), a phenomenon known as *deaths of despair* (Case and Deaton, 2020).

Positive psychologists need to engage with these societal changes. I note promising work already underway (Waters et al., 2021). Although human strengths constitute important protective resources in the face of adversity, it is also the case that significant challenge can sometimes disable pre-existing strengths (Shanahan et al., 2014). We found evidence of such disablement among those exposed to high levels of hardship in the Great Recession (Kirsch and Ryff, 2016). Going forward, it is critical that studies of psychological strengths in the face of pandemic stress include assessment of key sociodemographic variables such as socioeconomic status in national samples. Vazquez et al. (2020) illustrated such work in a representative sample of Spanish

adults. It is critical that future PP contributions to understanding impacts of the pandemic not perpetuate the longstanding prior focus on privileged, homogeneous samples.

Neglected Negatives Behind the Current Societal Problems

The founders of PP advocated that psychology should encompass more than psychopathology (depression and anxiety) and other forms of dysfunction. Hence, the call to elevate positive aspects of human functioning. I observe that psychology as a discipline has neglected something else: namely, a category of negative characteristics that may be implicated in the societal problems we now face. These include greed, indifference, and stupidity (Ryff, 2017, 2021a), along with anger, which is not inherently positive or negative. I cover these topics below because they reveal a possibly pernicious blind spot in the larger vision of PP: namely, that the well-being and positive human functioning of some (especially those who are disadvantaged) may be compromised by the priorities and actions of others (especially those who are advantaged). To the extent that PP ministers primarily to the better educated and economically comfortable in conveying how to get the most out of life and achieve personal potential, PP may, itself, be part of the problem.

To illustrate, I note the widespread marketing of mindfulness meditation, including to CEOs as described by Horowitz (2018) in *Happier?* Purser (2019) offers more, observing that "mindfulness programs do not ask executives to examine how their managerial decisions and corporate policies have institutionalized greed, ill will, and delusion. Instead, the practice is being sold to executives as a way to de-stress, improve productivity and focus, and bounce back from working 80-h weeks. They may well be 'meditating,' but it works like taking an aspirin for a headache. Once the pain goes away, it is business as usual. Even if individuals become nicer people, the corporate agenda of maximizing profits does not change."

Greed

Following from the above quote, we must consider that among the malevolent forces contributing to ever-widening inequality are behaviors of excessive self-interest orchestrated by those in positions of power. These problems are empirically evident when corporate profits soar, but worker paychecks lag (Cohen, 2018), a problem described by economists as "monopsony power" – the ability of employers to suppress wages below the efficient or perfectly competitive level of compensation (Kruger and Posner, 2018). Human history shows longstanding concern about problems of greed. The ancient Greeks saw greed and injustice as violating virtues of fairness and equality, and thereby, contributing to civic strife (Balot, 2001). Dante's *Divine Comedy* (Dante's, 1308/2006) placed sins of greed and gluttony, along with fraud and dishonesty, in his nine circles of hell. Adam Smith's *Wealth of Nations* (Smith's, 1776/1981) made the case for self-interest and capitalism, but recognized the problem of greed, framed as the limitless appetites of the vain and insatiable.

Some within psychology are addressing what lies behind the worship of money and selfish wealth gratification, sometimes orchestrated through fraudulent tactics (Nikelly, 2006). Motivational psychologists have studied "the dark side of the American Dream" (Kasser and Ryan, 1993), showing that those motivated by primarily extrinsic factors (financial success) have lower well-being and adjustment compared to those motivated by less materialistic values. Social psychologists have shown that those with higher social class standing have increased sense entitlement and narcissism compared to those from lower class backgrounds; those in the upper-class are also more likely to behave unethically than those in the lower-class (Piff et al., 2012; Piff, 2013). A large study of United States students examined what lies behind the widespread acceptance of inequality (Mendelberg et al., 2017) by asking them to indicate their agreement or disagreement with the statement: "Wealthy people should pay a larger share of taxes than they do now." The main finding was that students from affluent colleges (defined by family SES background) were more likely than those from public or less affluent colleges and universities to disagree with the statement – i.e., the most privileged were also the most strongly opposed to having the wealthy pay more taxes. In addition, such tendencies were most pronounced among those who were active in college fraternities and sororities.

The seamy underside of philanthropy, usually thought of as elites doing good in the world, is also under scrutiny (Giridharadas, 2018). The Sackler family, well-known for their philanthropy in art museums around the world, offers a singular example. They owned Purdue Pharma, which created oxycontin, the highly addictive opioid painkiller that was aggressively marketed, thereby leading to massive over-prescribing. To date, more than 500,000 have died from overdose deaths. A 2021 HBO documentary, *Crime of the Century,* revealed the widespread individual actions behind this public health tragedy – within drug companies, political operatives, and government regulators, all of whom backed the reckless distribution of this deadly, but highly profitable, drug.

Some might argue that the above examples are isolated actions of those of extreme wealth and do not represent most of the rest of us. Stewart's (2021) recent look at the new American aristocracy suggests otherwise. With a solid evidential basis, he shows that a much larger segment of the population is involved in warping our culture – i.e., how those laser-focused on career success are relying on an underpaid servant class to fuel their forward progress, while also making personal fitness a national obsession, even as large segments of the population lose healthcare and grow sicker. The privileged also segregate themselves in exclusive neighborhoods and compete relentlessly in getting their children into elite schools, which has contributed to ever-more extreme costs of higher education. Perhaps most troubling is the ethos of merit they have created to justify their advantages. Stewart powerfully distils that these people are not just around us, they are us.

Indifference

On this topic I have little to say other than to quote Elie Wiesel, Nobel Prize winning author and Holocaust survivor: "I believe that a person who is indifferent to the suffering of others is complicit in the crime. And that I cannot allow, at least not

for myself. The opposite of love is not hate, it's indifference." In the present era, such indifference to the widespread suffering of others must be studied and documented. It is a character weakness that psychologists should try to understand – where does it come from? How is it enacted? What are its consequents?

Stupidity

Marmion's (2018) tongue-in-cheek edited collection on the *Psychology of Stupidity* warrants consideration, given psychology's long preoccupation with studying intelligence (of multiple types) and cognitive capacities (also of multiple types). The book offers a taxonomy of morons and links stupidity with established topics (cognitive bias, narcissism, and negative social networks). Wisely, Marion asserts: "No matter what form it takes, stupidity splatters us all. Rumor has it that we ourselves are the source of it. I am no exception" (p. ix). The kind of stupidity that most interests me and needs critical study is the swallowing of lies, or being duped by others. Lies are perpetrated by people in high or low places, but the essential question is why they have impact – why they are believed. Some in the clinical realm have examined such questions, focusing on those who lie with impunity, sometimes revealing clear sociopathy (Peck, 1983; Stout, 2006). We need more science about these assaults on the truth and why they have become such pervasive part of contemporary life. My hypothesis is that all levels of human experience (personal ties, the workplace, communities, and societies) are damaged by the swallowing of lies, whether knowingly or unknowingly.

Anger

Often depicted as toxic, anger is sometimes legitimate as Aristotle understood. He reminded that at the right time, to the right degree, and for the right reasons, anger can be a powerful and needed response. Indeed, its neural underpinnings look more like positive affect than depression or anxiety (Harmon-Jones et al., 2011). Anger may be uniquely justified vis-à-vis profoundly unequal life opportunities. Mishra's *Age of Anger* (Mishra's, 2017), offers an astonishing integration of history, philosophy, literature, politics, economics, and cultural studies on the topic. He begins with this: "Individuals with very different pasts find themselves herded by capitalism and technology into a common present, where grossly unequal distributions of wealth and power have created humiliating new hierarchies. This proximity is rendered more claustrophobic by digital communications and the improved capacity for envious and resentful comparison" (p. 13). Drawing on Arendt, Mishra describes *existential resentments* that are poisoning civil society and fueling authoritarianism.

Most powerful is Mishra's portrayal of the distinct philosophies of Rousseau and Voltaire, eighteenth century interpreters of life. Voltaire praised material prosperity and consumerism, boldly professing his love of conspicuous consumption. Rousseau reminded that the ancients spoke incessantly about morals and virtue whereas the French *philosophes* spoke only of business and money. He saw the new commercial society as acquiring features of class division, inequality, and callous elites whose members were corrupt, hypocritical and cruel. According to Mishra: "What makes Rousseau, and his self-described 'history of the human heart,' so astonishingly germane and eerily resonant is that, unlike his fellow eighteen-century writers, he described the quintessential inner experience of modernity for most people: the uprooted outsider in the commercial metropolis, aspiring for a place in it, and struggling with complex feelings of envy, fascination, revulsion, and rejection" (p. 90). Although Rousseau's books were best sellers in his era, they are rarely invoked in current discourse. He castigated the Enlightenment *philosophes* for their self-love and self-interest, writing that *amour propre* (McLendon, 2009) was a dangerous craving to secure recognition for self over others and an insatiable ambition to raise personal fortunes. These observations need serious examination vis-à-vis the thriving business of PP – to what extent are self-interest and personal ambition the central motives behind what is being sold?

Returning to empirical science, I note that MIDUS includes multidimensional assessments of anger, from over 20 publications have been generated (see Text Footnote 1). Anger expression has been linked to multiple indicators of health (sleep, cognitive function, inflammation, and allostatic load) as well as to race/ethnicity, socioeconomic status, early life adversity, and cultural context.

What Nurtures Our Better Selves: The Arts and Humanities

To those who find my views to be overly negative, I end this section with more hopeful topics. I note that my career journey has reflected this dual focus on the forces that both undermine as well as nurture positive psychological functioning (Ryff, 2022). As stated at the outset and multiple times long the way, I have always believed both are fundamental parts of the human experience. I begin this part with distant observations from Matthew Arnold, who in *Culture and Anarchy* (Arnold, 1867/1993), emphasized that freedom should be employed in the service of higher ideals and further noted that these ideals are critically important during times of great peril, such as pandemics and wars. For him, culture was the study of perfection tied to the moral and social passion for doing good.

I have long believed that the arts (broadly defined) and humanities (history and philosophy) can help us discern how to do good and be well (Ryff, 2019). Growing research is now linking diverse art (music, literature, poetry, art, film, and dance) to health (Fancourt, 2017; Fancourt and Finn, 2019). To maintain a thread to current societal challenges, I here consider the arts in a somewhat different way – namely, whether they might be venues for nurturing compassion and insight about human suffering, which has become so widespread. Starting with contemporary film, multiple examples (e.g., *The Florida Project, American Honey, Paterson, Parasite*, and *Nomadland*) reveal the lived experience of inequality, including descending into prostitution to feed a child, growing up with addicted parents, having dreams of self-realization stymied, experiencing homelessness, and working in physically-difficult, mind-numbing jobs. These works also portray the poetry in disadvantaged lives, including cleverness and resourcefulness vis-à-vis insensitive elites. The relevance of these domains for contemporary science, largely

unstudied, is whether such inputs increase quotients of caring and compassion, and possibly challenge the complacency and indifference among those who are not suffering. Such questions elevate themes of social justice in ongoing research on well-being and health, while pointing to the arts as possible venues for informing and mobilizing individual and societal action.

The visual arts may also powerfully activate compassion vis-à-vis the pandemic or contemporary conflicts. The self-portrait of the Austrian artist, Egon Schiele, painted in 1912 and looking gravely ill before his death at age 28 from the Spanish flu, which also took his wife and their unborn child, is an example. Kandinsky painted *Troubled* in 1917, an abstract work of turbulence and trauma created during the Russian revolution when he was lived in Moscow and had a child die of malnourishment. A last visual example comes from over 1,000 watercolors painted from 1940 to 1942 and brought together in *Charlotte Salomon: Life? Or Theater?* (Salomon, 2017). Born in 1917, this woman experienced multiple suicides in her family during her brief lifetime. She was a student at the Berlin Fine Arts Academy and in 1938 fled to southern France where an intense period of creativity unfolded. Next to a series of paintings depicting multiple faces with dramatic eyes and sad countenances, she wrote: "I realized that no heaven, no sun, no star could help me if I did not contribute by my own will. And then I realized that actually I still had no idea who I was. I was a corpse. And I expected life to love me now. I waited and came to the realization: what matters is not whether life loves us, but that we love life." This insight about loving life had tragic salience: she was transported to Auschwitz in 1943 where, at age 26 and 5 months pregnant, she died.

Literature is another powerful realm for revealing travesties of the human condition. In *A Tale of Two Cities* (Dickens, 1859/2004), Charles Dickens brought horrors of the French Revolution to the hearts and minds of his readers. We learned of the awful lives of those imprisoned within the Bastille, and after it was stormed, the executions by guillotine at the Place de La Concorde in Paris. The bloodbath of class retribution took more than 1,200 lives, including the French Queen and King. Here is how Dickens described the context: ". . .the frightful moral disorder born of unspeakable suffering, intolerable oppression, and heartless indifference" (p. 344). At the core of the book is Madame DeFarge, the tigress quietly knitting, observing, and overseeing the acts of vengeance. Near the end, we have insight into her fury, learning that her younger sister was the victim of shameless male aristocrats who carelessly exploited her and destroyed her life and family.

Two contemporary books of fiction address the current migration crisis. Mohsin Hamid's *Exit West* (Hamid's, 2017) describes the awful realities of refugees whose lives have been stolen out from under them, only to be subjected to endless trauma as they try to find another home. Another recent work, *Call Me Zebra* (Van der Vliet Oloomi, 2018), winner of the 2019 PEN/Faulkner award for fiction, tracks a family escaping from Iran by foot. The mother dies along the way, but the father and daughter eventually make their way to New York. The family is a group of anarchists, atheists, and autodidacts who took refuge in books; their distilled philosophy: "Love nothing except literature, the only magnanimous host there is in this decaying world. . .. The depth of our knowledge, the precision of our tongues, and our capacity for detecting lies is unparalleled" (p. 8). Memorization is key; thus, sprinkled throughout the book are quotes from Nietzsche, Omar Khayyam, Dante, Goethe, Rilke, Kafka, Cervantes, Garcia Lorca, Dali, and Picasso – "These writers' sentences deposited me at the edge of the unknown, far from the repulsive banality of reality others refer to as life" (p. 205).

I conclude with examples of satire vis-à-vis experiences of oppression and want. Jonathan Swift's, *A Modest Proposal*, written in Swift's (1729), was put forth with the stated intent of preventing the children of the poor people in Ireland from being a burden to their parents or the country, as well as to make them beneficial to the wider public. Swift began by describing female beggars in Dublin followed by their many children, all in rags, importuning every passing person for alms. He elaborated on the numerical scope of the problem and then observes that these young children cannot be fruitfully employed until they are around age twelve. Swift thus suggests that these children, if well nursed for their first year, be sent to England to provide "a most delicious nourishing and wholesome food, whether stewed, roasted, baked, or boiled; and I make no doubt that it will equally serve in a fricassee, or a ragout" (p. 3). Calculations were included to show the financial benefits that would follow. This satirical hyperbole mocked the heartless attitudes toward the poor among the British as well as their policies toward the Irish in general. The book is widely recognized as one of the greatest examples of sustained irony in the history of the English language.

Moving to the present, Paul Beatty's *The Sellout* (Beatty's, 2015) won the Man Booker Prize and was praised as "Swiftian satire of the highest order." The book covers race relations in the fictional township of Dickens (meaningfully named), California, a place where residents are left to fend for themselves. With masterful humor, Beatty parodies everything – from contemporary psychology to "slapstick racism" to public transportation to depict the obstacles of being poor and black in racist America. Sister cities for Dickens are identified: Chernobyl, Juárez, and Kinshasa – all known for their pollution, poverty, and dysfunction. The satire and razor-sharp wit reveal what it means to exist in a culture saturated with negative stereotypes.

To summarize, I have emphasized the role of the arts in awakening the wider public to human suffering. Central questions for science and praxis are whether these inputs can effectively increase needed supplies of compassion and empathy, while perhaps also provoke awareness of complacency among those who are comfortable, if not indifferent. Such topics can and should be studied, including in experimental and educational contexts. The National Endowment for the Humanities regularly tracks who partakes of the arts and further shows variation therein by educational status. Such practices are fundamentally not different from studying health behaviors (smoking, drinking, and exercise). These parts of living, focused on the content of what people are taking in, need to part of large epidemiological studies, where they could be linked with other important topics such as reported levels of social responsibility and caring

(Ryff and Kim, 2020) as well as their views about who should be taxed at what levels (Mendelberg et al., 2017).

What Nurtures Human Flourishing: The Natural Environment

Nature is powerfully present in the visual arts and music as well and has been throughout human history. I have recently covered these topics elsewhere, including nature's role in nurturing the human spirit (Ryff, 2021b) and here highlight some of that work. My overall messages are that those interested in understanding influences that nurture good lives as well as a concern for our planet need to bring encounters with nature into their scientific studies, including interventions designed to promote diverse aspects of well-being and health.

Vibrant research is now investigating how nature contributes to human flourishing (Capaldi et al., 2015; Mantler and Logan, 2015). These ideas take on greater salience as more of the world's population live in nature-impoverished urban milieus. Multiple theories have been invoked to explain how we benefit from nature, such as the biophilia hypothesis from evolutionary thinking, which suggests that our human ancestors depended on connecting with nature to survive (Kellert and Wilson, 1993), or stress-reduction theory (Ulrich et al., 1991), which proposes that past exposures to unthreatening natural environments contributed to survival via stress-reducing physiological responses. Other perspectives consider roles of the natural environment in addressing existential anxieties, such as meaning in life, isolation, freedom, and death (Yalom, 1980). Eco-existential positive psychology (Passmore and Howell, 2014) thus describe how restorative experiences with nature might contribute to sense of identity, multiple forms of happiness, meaning, social connectedness, freedom, and awareness of one's mortality.

Empirical evidence has linked encounters with nature to high hedonic well-being, both short and long-term, and to aspects of eudaimonic well-being (Capaldi et al., 2015; Mantler and Logan, 2015; Triguero-Mas et al., 2015). Some inquiries have examined intervening mechanisms, such as increased physical activity, increased social contact, stress reduction and restoration of cognitive attention. The focus on green spaces underscores growing concerns about urbanization, loss of biodiversity, and environmental degradation. Increasingly dire consequences of climate change (droughts, wildfires, and floods) have also led to research on pro-nature behaviors that support conservation of nature and biodiversity. Richardson et al. (2020) conducted an innovative population survey in the United Kingdom examining links between pro-nature actions with time spent in nature as well as knowledge of and concerns about nature.

Nature as a source of inspiration and uplift is pervasively present in poetry, literature, music, art, history, and philosophy. An example is the life of Alexander von Humboldt (1769-1859), beautifully written about in *The Invention of Nature* (Wulf, 2016). Primarily a scientist, naturalist, and explorer (of South America and Siberia), Humboldt influenced many of the great thinkers of his day, including Jefferson, Darwin, Wordsworth, Coleridge, Thoreau, and Goethe. Humboldt was ahead of his time in thinking about the degradation and exploitation of nature, warning that humankind had the power to destroy the natural environment, the consequences of which would be catastrophic. He wanted to excite a 'love of nature' and thereby, revolutionized how the natural world was seen. He believed that nature speaks to humanity in a voice "familiar to our soul" (p. 61), thereby aligning himself with the Romantic poets of his time who believed nature could only be understood by turning inward.

The educator Mark Edmundson uses great literature and poetry to nurture well-being, including the ideals needed by the human soul such as courage, contemplation, and compassion (Edmundson, 2015). In *Why Read* (Edmundson, 2004). Edmundson elaborates what a liberal, humanistic education can contribute to personal becoming. Apropos of Humboldt and his contemporaries, Edmondson examined Wordsworth's famous poem, "Lines Composed a Few Miles from Tintern Abbey" written in 1798. Wordsworth's life had become flat – "he lived in a din-filled city, among unfeeling people, and sensed that he is becoming one of them . . .there is a dull ache settling in his spirit" (p. 57). Returning to a scene from his childhood, he remembered himself as a young boy, free and reveling in nature. The return to nature, which is the heart of the poem, reminds him of its role in nurturing his own vitality. "Wordsworth's poem enjoins us to feel that it (the answer to one's despondency) lies somewhere within our reach – we are creatures who have the capacity to make ourselves sick, but also the power to heal ourselves" (p. 49).

Wordsworth's poetry served the same vital function in the life of John Stuart Mill (1893/1989), who in early adulthood realized something deeply troubling – that he lacked the happiness central to the utilitarian philosophy in which he was immersed. Reflecting on his life, Mill described an early educational experience that was exceptional, but profoundly deficient. His father began teaching him Greek and Latin at a young age and then expanded the pedagogy to fields of philosophy, science, and mathematics. However, his father was deeply opposed to anything connected to sentiment or emotion. To escape the logic machine he had become, Mill began a quest to feel, and it was the poetry of Wordsworth, mostly about nature, that ministered deeply to the longings in his soul. He credited it for helping him recover from the crisis in his mental history.

To summarize, amidst the many interventions under study in PP, I lobby for a focus on encounters with nature, which some are already investigating. The preceding examples give us reason to believe that human lives may be enriched by such experiences. These can occur by being in nature as well as from reading about nature in poetry and literature, taking it in through film, or listening to music inspired by nature.

CONCLUDING THOUGHTS

My observations about what PP has accomplished over the last two decades are clearly mixed. Some may see the criticism as unfounded, if not mean-spirited, while others may view the input as long overdue straight talk about problems with an initiative

intended to be transformational. I have long believed that self-criticism is central to making progress, whether in our individual lives, or our collective pursuits. My hope is thus that the field of PP will grow and flourish going forward, but also come to grips with its limitations. How might this happen?

One way is to pay attention to the problem of *overreach* in what PP claims to have accomplished. This will require greater scrutiny of the science touted as the evidential basis that PP works. Peer review is all we have to monitor the quality of the work that we do, but alas, it is an imperfect system, such that seriously flawed work sometimes gets published, even in high visibility outlets. There is the related problem of PP taking credit for more than it can credibly call its own achievements – i.e., the impact of PP (Rusk and Waters, 2013) has been overstated. As conveyed at the outset, extensive science on positive human functioning was happening well before PP declared its visionary new path. The upshot is that quantitative summaries of positive science unavoidably include many products that have nothing to do with the field of PP. Work from MIDUS is but one example of such wide-ranging science, much published in top-tier journals, showing protective benefits of psychological strengths. These studies were not created or nurtured by PP, and therefore, do not constitute evidence of its impact. Such distortion diminishes the stature of PP.

Relatedly there is need to recognize the *insularity* of PP, much seeming United States-centric, particularly in leadership. By creating its own professional society and journal, PP unfortunately removed itself from the wider discipline of psychology and its subfields, each with their own organizations and journals. While new groups can nurture comradery and a sense of identity, they can also create distance from related areas of inquiry. Most problematic, they can lead to insider peer reviewing that likely lowers rather than elevates the quality of the work generated.

On the matter of the *commercialization* of PP, I am perhaps an outlier in seeing this as a significant problem. However, it is construed, those who care about the long-term future of PP need to grapple with how to prevent the pursuit of profit from becoming a force that could ultimately take the enterprise down – on grounds that it is not scientifically substantiated, nor is it properly regulated, or doing lasting good, or is even creating harm. Without proper oversight, business pursuits could become the antithesis of the original promise and purpose of PP – to advance optimal human functioning.

Most of my essay has not been about these troublesome matters. Rather, I have tried to underscore the widespread consensus, from within PP and beyond, that thoughtful formulations are needed going forward, which put positives and negative together – i.e., research and practice that integrates human strengths and vulnerabilities. Parenthetically, one benefit of this shift may be that the adjective "positive" is less relentlessly present in titles of articles, books, and journals. As many have observed, greater attention must be given to diversity – i.e., how the wide array of topics being studied vary by numerous dimensions (e.g., age, gender, race/ethnicity, socioeconomic status, disability status, sexual orientation, and cultural context). It is also critical that societal relevance be a priority in the future science and practice that lies ahead. So doing demands attending to contemporary problems, and how they are negotiated in diverse life contexts. Our societal ills further call for study of negatives that have historically been neglected (greed, indifference, stupidity, and anger). Nonetheless, amidst the contemporary turbulence is the promise of the arts and of nature to help us be better – in seeing and caring about the suffering of others as well as in inspiring us to make the most of the lives we have been given and do so with commitment that encompasses families, schools, the workplace, communities, and the planet.

DATA AVAILABILITY STATEMENT

Publicly available datasets were analyzed in this study. This data can be found here: www.midus.wisc.edu.

AUTHOR CONTRIBUTIONS

The author confirms being the sole contributor of this work and has approved it for publication.

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REVIEW
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A Scoping Review of Flow Research

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Flow is a gratifying state of deep involvement and absorption that individuals report when facing a challenging activity and they perceive adequate abilities to cope with it (EFRN, 2014). The flow concept was introduced by Csikszentmihalyi in 1975, and interest in flow research is growing. However, to our best knowledge, no scoping review exists that takes a systematic look at studies on flow which were published between the years 2000 and 2016. Overall, 252 studies have been included in this review. Our review (1) provides a framework to cluster flow research, (2) gives a systematic overview about existing studies and their findings, and (3) provides an overview about implications for future research. The provided framework consists of three levels of flow research. In the first "Individual" level are the categories for personality, motivation, physiology, emotion, cognition, and behavior. The second "Contextual" level contains the categories for contextual and interindividual factors and the third "Cultural" level contains cultural factors that relate to flow. Using our framework, we systematically present the findings for each category. While flow research has made progress in understanding flow, in the future, more experimental and longitudinal studies are needed to gain deeper insights into the causal structure of flow and its antecedents and consequences.

Keywords: flow, scoping review, individual level, contextual level, cultural level

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INTRODUCTION

Flow "is a gratifying state of deep involvement and absorption that individuals report when facing a challenging activity and they perceive adequate abilities to cope with it" (EFRN, 2014). The phenomenon was described by Csikszentmihalyi (1975) in order to explain why people perform activities for no reason but for the activity itself, without extrinsic rewards. During flow, people are deeply motivated to persist in their activities and to perform such activities again (Csikszentmihalyi, 1975; EFRN, 2014). Csikszentmihalyi (1975, 1990) distinguished up to nine characteristics of the flow experience: (1) challenge-skill-balance, (2) merging of action

and awareness, (3) clear goals, (4) unambiguous feedback, (5) concentration on the task, (6) sense of control, (7) loss of self-consciousness, (8) time transformation, and (9) autotelic experience.

The first of these characteristics—the challenge-skill balance—gained much attention in flow research. In his Flow Channel Model, Csikszentmihalyi (1975) operationalized flow in the context of skills and challenges: if the individual's skills meet the situational challenges, the individual is in the so-called *flow channel* and flow occurs. In later modifications of this model, as in the Experience Fluctuation Model (EFM), flow was said to occur if both challenges and skills are *high* and in balance (e.g., Massimini et al., 1987; Carli et al., 1988; Csikszentmihalyi, 1997). This assumption gained empirical support: for example, Inkinen et al. (2014) showed that if challenges and skills are high and in balance, this combination is characterized by an active and pleasant emotional experience, as described in the EFM. Also, a recent meta-analytical study confirmed the stability of challenge-skill balance as a condition of flow (Fong et al., 2015), together with clear goals and sense of control.

Later, Nakamura and Csikszentmihalyi (2002) and Landhäußer and Keller (2012) sorted Csikszentmihalyi's (1990) characteristics of flow experience into preconditions and components of flow. They also defined the balance between task demands and skills as a central precondition of flow, together with clear goals and clear feedback. They defined components of flow as concentration, merging of action and awareness, sense of control, autotelic experience, reduced self-consciousness, and transformation of time. Further conceptualizations of flow exist (e.g., Bakker, 2005; Engeser and Rheinberg, 2008; Abuhamdeh, 2021; Barthelmäs and Keller, 2021; for an overview see Engeser et al., 2021; Peifer and Engeser, 2021). Recently, Peifer and Engeser (2021) have critically discussed the existing components of flow and proposed an integration of those into the three meta-components *absorption*, *perceived demand-skill balance*, and *enjoyment*.

Since the introduction of the flow concept, there has been much research investigating the concept itself, its preconditions, and its consequences. The research shows that "flow experiences can have far-reaching implications in supporting individuals' growth, by contributing both to personal wellbeing and full functioning in everyday life" (EFRN, 2014). Potentially due to its positive consequences, flow research is further growing and there is a wealth of empirical articles dedicated to this phenomenon. However, due to the large amount of studies, there is a lack of a broad and systematic overview on flow research. Accordingly, this review aims to provide such a structured overview of flow research and to provide directions for future flow research.

Since 2012, the European Flow-Researchers' Network (EFRN) has met on a yearly basis to foster scientific progress in flow research and application. Following this aim and having identified the described lack of agreement within flow research, the network decided in their meeting in November 2015 to unite their expertise and provide a scoping review on studies addressing flow experience published as of the year 2000. The advantage of a scoping review is that it collects, evaluates and presents the available research with a more systematic approach than is used in traditional review articles (Arksey and O'Malley, 2005). Compared to meta-analyses or systematic reviews, a scoping review regards not just a specific, narrow research question, but a broad scope of research with respect to a certain concept (Arksey and O'Malley, 2005), in our case, flow experience. Accordingly, a scoping review aims to identify and structure existing research in order to provide a framework and to build a basis for future research.

The scoping review follows three steps: first, we present a framework to structure flow research. Second, we review empirical flow research that has been published between 2000 and 2016. Third, based on our results, we discuss implications for future research.

Framework to Structure Flow Research

In order to structure and review the empirical research regarding flow experiences, the authors developed a framework (see **Figure 1**). The framework consists of three circles lying within each other and containing categories of flow research. The inner circle represents individual factors. On this individual level, we distinguish between the categories of personality, motivation, physiology, emotion, cognition, and behavior. The middle circle—the contextual level—represents the categories contextual and interindividual factors and the outer circle represents the cultural category. Within our framework, all categories contain preconditions or consequences of flow, and all categories can influence each other.

METHODS

As proposed by Arksey and O'Malley (2005), our scoping review was developed using the following 6 steps.

Identification of the Research Question

The importance of providing a scoping review on flow experience was identified during the 4th meeting of the European Flow Researchers' Network (EFRN) in Braga (Portugal), 2015. To fulfill this aim, the network searched for a systematic overview of the existing flow research as a basis for future research. The finding of that literature search was that the number of publications on flow experience is growing, but that a systematic overview was not available. Accordingly, the EFRN decided to unite their expertise to develop such a systematic overview, i.e., a scoping review. To start, during the 4th EFRN meeting in Braga (Portugal), EFRN members worked on a preliminary framework to categorize flow research.

Literature Research

For the literature search, we consulted the platforms *PsycInfo, PubMed, PubPsych, Web of Science* and *Scopus*. We searched for empirical studies using the terms "*flow/optimal experience/challenge-skill balance*" in order to cover different terms for flow which are typically used in the literature. Also, we excluded "*cerebral blood flow*" and "*work-flow centrality,*" as

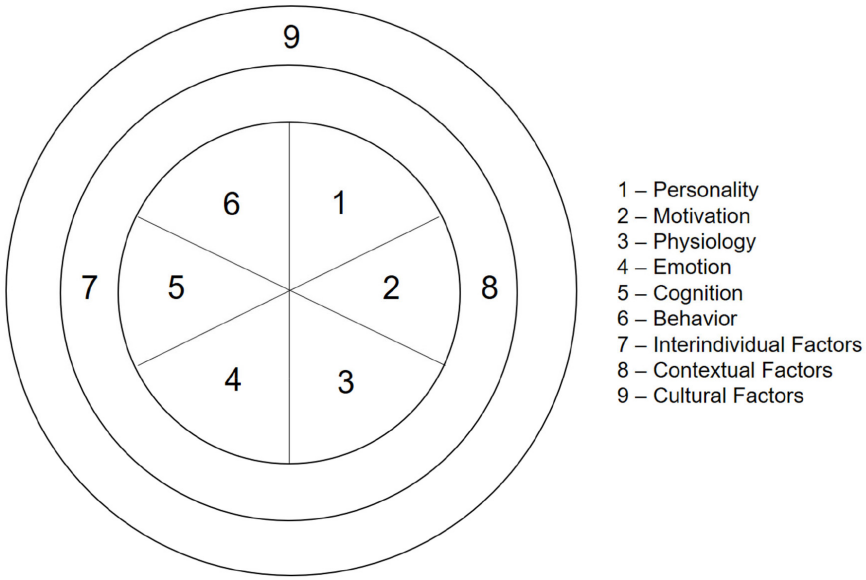

FIGURE 1 | Categorization of flow research 2000–2016.

these terms produces many false hits. Further, we decided to add the term "*Csikszentmihalyi*" to the search, as we considered that reputable articles on flow would cite Csikszentmihalyi and, at the same time, many articles which are not related to flow experience would be excluded. We only included empirical studies that were published between 2000 and 2016. The resulting search string was (for PsycInfo):

(((“flow” or “optimal experience” or “challenge-skill balance”) and “Csikszentmihalyi”) not “cerebral blood flow” not “work-flow centrality”).af. and (“2000” or “2001” or “2002” or “2003” or “2004” or “2005” or “2006” or “2007” or “2008” or “2009” or “2010” or “2011” or “2012” or “2013” or “2014” or “2015” or “2016”).yr.

We did not include conference abstracts or articles that were not in the English language. Also, within this first step, we excluded publications that clearly did not deal with the topic of flow experience. The literature search was conducted in 2016 and updated in 2017 to cover also the full year of 2016.

Selection of Relevant Studies

Overall, we found 257 publications that were then rated by the authors with respect to their relevance for our scoping review. In the next step, publications were excluded if they did not contain original data on flow experience. Accordingly, twelve empirical studies were excluded because although the concept of flow was discussed, their data did not investigate flow experience. Forty-six articles were excluded because they were theoretical articles, reviews, meta-analyses or book chapters without original data. From the 257 publications, 199 empirical studies were included in the review (**Table 1**).

Charting the Information

During the 5th EFRN meeting in Milan (Italy), in November 2016, the preliminary framework of flow research as agreed during the 4th EFRN meeting was adapted. Based on the identified articles within our literature research, categories were added if necessary to adequately describe the literature. The final framework that was used in this Scoping Review is depicted in **Figure 1**.

During the meeting in Milan, experts from the EFRN were assigned to each category, and were responsible for that category in the following process. All experts are active flow researchers and members of the EFRN, who have published peer-reviewed papers in the field of their respective category. These experts are the team of authors of this Scoping Review.

In order to ensure a common understanding of the categories, the experts provided a clear description of their category. These were gathered, shared, and discussed between the authors. The outcome of step 4 was a final document which contained the agreed list of categories and their respective descriptions. This document forms the basis of the categorization of articles in the following step 5.

All articles were then distributed among the authors for them to rate their relevance for each category (see **Figure 1**) based on the abstracts. It was therefore possible that one article would be rated as being relevant for more than one category. Every article was independently reviewed by two authors. Empirical studies that were rated as relevant to the category by both authors were immediately included in the review of the category. Empirical studies that were only rated as relevant to the category by one author were again rated by the responsible expert(s). If he or she rated this article as relevant, it was also included in the review of the category. Otherwise, it was excluded.

TABLE 1 | Overview of the studies included in this review ($N = 252$).

Authors	Authors	Authors
Added based on the literature search	($N = 199$)	
Asakawa and Csikszentmihalyi (2010)	Hudock (2015)	Pratt et al. (2016)
Bachen et al. (2016)*	Ivory and Magee (2009)	Rathunde (2010)
Bailis (2001)	Jackman et al. (2016)*	Rathunde and Csikszentmihalyi (2005)
Bakker (2005)*	Johnson et al. (2014)	Reynolds and Prior (2006)*
Bakker et al. (2011)*	Jones (2013)	Rha et al. (2005)*
Banfield and Burgess (2013)	Jonson et al. (2015)*	Robinson et al. (2012)
Bass (2007)	Karageorghis et al. (2000)*	Rodríguez-Sánchez et al. (2011a)*
Bassi and Delle Fave (2012a)*	Katuk et al. (2013)	Rodríguez-Sánchez et al. (2011b)*
Bassi et al. (2014a)	Kawabata and Mallett (2011)	Rogatko (2009)
Bassi et al. (2014b)*	Kee and John Wang (2008)	Ryu and Parsons (2012)*
Bassi et al. (2012)*	Keeler et al. (2015)	Salanova et al. (2014)*
Bassi et al. (2007)	Keller and Bless (2008)*	Sartori and Delle Fave (2014)*
Baumann and Scheffer (2011)*	Keller and Blomann (2008)	Sartori et al. (2014)
Baumann et al. (2016)*	Keller et al. (2011a)*	Schattke (2011)*
Beard and Hoy (2010)	Keller et al. (2011b)*	Schattke et al. (2014)*
Belchior et al. (2012)*	Khan and Pearce (2015)	Schiefele and Raabe (2011)
Bonaiuto et al. (2016)*	Kim et al. (2014)	Schmierbach et al. (2014)
Boyns and Appelrouth (2011)	Klasen et al. (2012)*	Schmierbach et al. (2012)
Bressler and Bodzin (2013)*	Koehn and Morris (2014)	Schüler (2007)*
Bressler and Bodzin (2016)*	Konradt and Sulz (2001)*	Schüler and Brandstätter (2013)
Bricteux et al. (2017)	Kopačević et al. (2011)	Schüler et al. (2010)*
Brinthaupt and Shin (2001)	Kuhnle et al. (2012)	Schüler and Brunner (2009)
Brown and Westman (2008)	Kuhnle and Sinclair (2011)	Schüler and Nakamura (2013)
Busch et al. (2013)*	Lee (2013)	Schüler et al. (2016)*
Byrne et al. (2003)	Lee et al. (2016)	Schweinle et al. (2008)*
Ceja and Navarro (2009)	Lee and LaRose (2007)*	Seddon et al. (2008)
Chen and Lu (2016)	Liu and Shiue (2014)	Sharitt (2010)
Chen and Sun (2016)	Liu et al. (2015)*	Shernoff et al. (2003)*
Chen et al. (2010)	Llorens et al. (2013)	Shin (2006)*
Cheok et al. (2011)*	MacDonald et al. (2006)*	Silverman et al. (2016)
Coleman (2014)	MacNeill and Cavanagh (2013)	Sinnamon et al. (2012)
Csikszentmihalyi and Hunter (2003)	Maeran and Cangiano (2013)*	Smith et al. (2012)*
Culbertson et al. (2015)*	Magyaródi and Oláh (2015)*	Steele and Fullagar (2009)*
Dawoud et al. (2015)*	Mao et al. (2016)	Stephanou (2011)
Debus et al. (2014)	Marin and Bhattacharya (2013)*	Sugiyama and Inomata (2005)*
Delespaul et al. (2004)	Marston (2013)	Swann et al. (2017)*
Delle Fave and Bassi (2009)*	Mesurado and Richaud de Minzi (2013)	Swann et al. (2015a)*
Delle Fave and Massimini (2005)*	Mesurado et al. (2016)*	Swann et al. (2015b)
Deol and Singh (2016)	Meyer et al. (2016)*	Swann et al. (2012)
de Manzano et al. (2010)	Meyer and Jones (2013)	Szymanski and Henning (2007)
Demerouti (2006)*	Min et al. (2015)*	Tan and Chou (2011)
Diaz and Silveira (2013)*	Mirlohi et al. (2011)	Tanaka and Ishida (2015)
Drengner et al. (2008)*	Montgomery et al. (2004)	Thin et al. (2011)*
Eisenberger et al. (2005)*	Moore (2013)	Thornton and Gilbert (2011)
Emanuel et al. (2016)	Mosing et al. (2012)	Tozman et al. (2015)
Engeser and Baumann (2016)*	Moreno Murcia et al. (2008)*	Tramonte and Willms (2010)
Engeser and Rheinberg (2008)*	Nielsen and Cleal (2010)	Tyagi et al. (2016)
Escartin Solanelles et al. (2014)	Nissen-Lie et al. (2015)	Ullén et al. (2012)*
Faiola et al. (2013)	Niu and Chang (2014)*	Ulrich et al. (2014)*
Fink and Drake (2016)	Oertig et al. (2014)*	Urmston and Hewison (2014)*
Freer (2009)	Oertig et al. (2013)	van der Hoorn (2015)
Fullagar et al. (2013)	Ortner et al. (2014)	van Schaik et al. (2012)*
Fullagar and Kelloway (2009)*	Ozkara et al. (2016)*	Vealey and Perritt (2015)
Fulmer and Tulis (2016)	Páez et al. (2015)	Harris et al. (2017)
Gaggioli et al. (2013)*	Panadero et al. (2014)*	Valenzuela and Codina (2014)*
Garces-Bacsal (2016)	Panebianco-Warrens (2014)	Voiskounsky and Smyslova (2003)
Gnoth et al. (2000)		Vuorre and Metcalfe (2016)
Graham (2008)*		Wang and Hsu (2014)

(Continued)

TABLE 1 | Continued

Authors	Authors	Authors
Griffiths (2008)	Payne et al. (2011)	Wang et al. (2015)
Guizzo and Cadinu (2016)*	Pearce et al. (2005)*	Wanner et al. (2006)
Guo and Poole (2009)	Peifer et al. (2015)	Winberg and Hedman (2008)*
Gute et al. (2008)	Peifer et al. (2014)	Wissmath et al. (2009)*
Harris et al. (2017)*	Peterson and Miller (2004)	Wrigley and Emmerson (2013)*
Hefferon and Ollis (2006)	Pilke (2004)	Yan and Davison (2013)
Heller et al. (2015)*	Pinquart and Silbereisen (2010)	Zha et al. (2015)
Hernandez et al. (2014)	Plester and Hutchison (2016)	Zumeta et al. (2016)
Hong et al. (2013)*	Pocnet et al. (2015)	
Hsu et al. (2013)*		
Added by the experts:	(*N* = 41)	
Abuhamdeh and Csikszentmihalyi (2009)	Hirao et al. (2012b)	Nacke et al. (2011)
Armstrong (2008)	Hodge et al. (2009)	Novak et al. (2003)
Asakawa (2010)	Inkinen et al. (2014)	Salanova et al. (2006)
Aubé et al. (2014)	Jackson et al. (2001)*	Synofzik et al. (2008)
Bassi and Delle Fave (2010)	Kivikangas (2006)	Ullén et al. (2016)
Berta et al. (2013)	Kuo and Ho (2010)	Ulrich et al. (2016a)
Butkovic et al. (2015)	Collins et al. (2009)	Ulrich et al. (2016b)
Coatsworth et al. (2005)	Mäkikangas et al. (2010)	Walker (2010)
Delle Fave et al. (2003)	Martin and Cutler (2002)	Wolf et al. (2015)
de Manzano et al. (2013)	Meng et al. (2016)	Yoshida et al. (2014)
Demerouti et al. (2012)*	Mills and Fullagar (2008)*	Zubair and Kamal (2015a)
Harmat et al. (2015)	Moneta (2004)	Zubair and Kamal (2015b)
Heutte et al. (2016)	Montijo and Mouton (2016)	
Hirao and Kobayashi (2013)	Nacke and Lindley (2008)	
Hirao et al. (2012a)		
Added from the EFRN publication list:	(*N* = 12)	
Bassi and Delle Fave (2012b)	Moneta (2012)*	
Baumann and Scheffer (2010)*	Tobert and Moneta (2013)	
Ceja and Navarro (2012)	Vittersø (2003)*	
Ceja and Navarro (2011)	Vittersø et al. (2001)	
Cseh et al. (2016)*	Voiskounsky et al. (2005)	
Cseh et al. (2015)*	Wright et al. (2007)*	

**Marked articles were rated as fitting to more than one category.*

Collating, Summarizing and Reporting of Study Results

A large table listing all articles with their respective categories as rated by the authors was sent to the experts (i.e., the authors for a specific category) in order to start the process of summarizing the study results. In addition to the articles in the table, experts could include further empirical articles which had not been found in the initial search that they considered relevant for their respective category. That way, we aimed at providing a broad picture of flow research, as required in a Scoping Review. Forty-one additional empirical studies were included in the review by our experts and twelve articles from the EFRN publication list. **Table 1** presents all included empirical studies. Next, experts extracted all relevant articles for their category from the large table and created a table of articles of their category. The final tables of included articles for each category can be found in the Results section for the respective categories.

Based on this extraction, and on the description of the category, experts summarized the results of articles placed in their assigned category, thereby ignoring findings reported in an article that did not belong to that category: 93 of the articles are represented in more than one category, each time with a different focus (see **Table 1**). To achieve a coherent manuscript without too many redundancies, the content of each category was revised during an internal review process.

Discussion of the Results and Implications for Future Research

In addition to the summaries of the categories in the result section, experts collected points for discussion. These points were picked up and integrated into our general discussion of flow research, which built step 6 of our Scoping Review. During the 6th EFRN meeting in Tilburg (Netherlands, 2017), these points were discussed within the network and further elaborated. At this point, and in line with the aims of the EFRN, implications for future research which would foster scientific progress in flow research were identified.

RESULTS

The following section provides the expert summaries of each category. **Table 2** provides an overview of all categories, the number of integrated articles and the operationalization of the respective category.

TABLE 2 | Overview of categories.

Category	N	Studies were included, that. . .
Personality	40	. . . investigated personality traits and motives as stable individual factors. Furthermore, studies were included that dealt with heritability or genes of flow proneness and individual differences.
Motivation	54	. . . dealt with intrinsic or extrinsic motivation, interest and volition. Furthermore, studies were included that dealt with motivational concepts such as self-determination, self-efficacy, self-regulation and locus of control.
Physiology	21	. . . used physiological and/or neuropsychological methods (e.g., ECG, EEG, EMG, fMRI, eye-tracking, saliva sampling, etc.) to measure the relationship of physiological parameters with flow.
Emotion	49	. . . dealt with a wide range of concepts associated with different components of the emotional experience, which tends to be generally associated with a certain subjective degree of pleasure and displeasure, or positive and negative experiences, such as affect, mood, wellbeing, enjoyment, activation, or excitement.
Cognition	26	. . . dealt with perception, attention, decision-making and cognitive control. Also, brain studies referring to cognitive processes during flow experiences and effortless attention were included, as well as studies dealing with embodied cognition (e.g., body image, agency, intentions) and effects of flow experiences on cognitive processes (e.g., memory and reasoning).
Behavior	53	. . . dealt with flow and different forms of behavior such as performance (e.g., in-role/extra-role performance, physical, athletic, creative, or cognitive performance), risk taking, consumption behavior, online behavior and addiction, as well as variables that are closely related to performance and motivate high performance such as engagement, commitment, and persistence.
Context factors	94	. . . investigated different contexts and activities in which flow occurs (e.g., different kinds of work, study, sports etc.), as well as contextual characteristics/external circumstances that foster or hinder flow (e.g., differences in environmental characteristics, external demands and resources).
interindividual factors	13	. . . dealt with flow in social contexts, measured at the individual or collective level and as a social phenomenon (e.g., team flow, group flow, social flow etc.). Also, studies were included, which looked at the effects of flow on more than one individual (e.g., small groups, social settings, networks, and other collectives).
Cultural factors	16	. . . did cross-cultural investigations on flow. Furthermore, studies were included that dealt with individualism or collectivism, culture and the construction of the self, social identity, or special artifacts (e.g., Manga). Additionally, studies are included that addressed specific countries.

Personality

The category *Personality and Flow* included studies that investigated personality traits and motives as stable individual factors. Studies that dealt with heritability or genes of flow proneness and individual differences were also included. Expert ratings revealed that 31 articles have met these inclusion criteria. Seven additional articles were included by our experts and two articles from the EFRN publication list. The final list of articles that were integrated into this section is depicted in **Table 3**.

The personality studies on flow can be divided into four categories: (1) studies dealing with autotelic personality, (2) dispositional proneness to experience flow and its relation to Big Five personality traits, (3) the relationship of flow with other personality traits or motives and (4) flow and motive-fitting situations.

Studies Dealing With Autotelic Personality

Autotelic personality is the ability to enter a flow state relatively easily (Csikszentmihalyi and Csikszentmihalyi, 1988) which was investigated in an interview-study from Sugiyama and Inomata (2005). Moneta (2004) and Abuhamdeh and Csikszentmihalyi (2009) state that intrinsic motivation is associated with autotelic personality, but little is known about its exact components. Existing studies suggest that these components of autotelic personality are personal innovativeness, self-efficacy, control, focused attention (Tan and Chou, 2011), and the achievement motive (Baumann and Scheffer, 2011; Busch et al., 2013).

TABLE 3 | Personality.

Authors	Authors
Bailis (2001)	Mosing et al. (2012)
Bassi et al. (2014b)	Moreno Murcia et al. (2008)
Baumann and Scheffer (2011)	Oertig et al. (2014)
Baumann et al. (2016)	Peterson and Miller (2004)
Beard and Hoy (2010)	Schattke (2011)
Busch et al. (2013)	Schattke et al. (2014)
Fullagar and Kelloway (2009)	Schüler (2007)
Heller et al. (2015)	Schüler and Brandstätter (2013)
Jackman et al. (2016)	Schüler et al. (2010)
Johnson et al. (2014)	Schüler et al. (2016)
Keller and Bless (2008)	Sinnamon et al. (2012)
Keller and Blomann (2008)	Sugiyama and Inomata (2005)
Kuhnle et al. (2012)	Tan and Chou (2011)
Liu et al. (2015)	Ullén et al. (2012)
Marin and Bhattacharya (2013)	Vealey and Perritt (2015)
Mesurado and Richaud de Minzi (2013)	
Added by the experts:	
Abuhamdeh and Csikszentmihalyi (2009)	Mills and Fullagar (2008)
Butkovic et al. (2015)	Moneta (2004)
de Manzano et al. (2013)	Ullén et al. (2016)
Hirao et al. (2012b)	
Added from EFRN publication list:	
Baumann and Scheffer (2010)	
Vittersø (2003)	

Studies were included that investigated personality traits and motives as stable individual factors. Furthermore, studies were included that dealt with heritability or genes of flow proneness and individual differences.

Dispositional Proneness to Experience Flow and Its Relation to Big Five Personality Traits

Flow proneness is a dispositional tendency to experience flow and there are large individual differences in the frequency and intensity of flow experiences. Several self-report questionnaires have been developed to measure the variation between individuals in flow proneness e.g., Jackson and Eklund's Dispositional Flow Scale-2 (Jackson and Eklund, 2002; Jackson et al., 2008; e.g., applied by Sinnamon et al., 2012, Johnson et al., 2014); and the Swedish Flow Proneness Questionnaire (SFPQ, Ullén et al., 2012). Existing studies suggest that flow proneness is related to well-established personality traits and that this association has a biological basis: Ullén et al. (2012) found that flow proneness is correlated with the Big Five personality traits emotional stability (i.e., low neuroticism) and conscientiousness. In addition, trait flow is related to extraversion, openness to experience, and agreeableness (Ullén et al., 2016). Other studies found that dispositional flow is associated with high extraversion and low neuroticism, and trait emotional intelligence in musicians (Marin and Bhattacharya, 2013; Heller et al., 2015). In addition, openness and music-specific flow were found to be the strongest predictors of music practice (Butkovic et al., 2015). In line with this, further studies suggest that extraversion and openness to experience are positively related to flow, while high neuroticism and introversion related to less flow experience (Vittersø, 2003; Baumann and Scheffer, 2010; Mesurado and Richaud de Minzi, 2013; Bassi et al., 2014b; Heller et al., 2015).

The Relationship of Flow With Other Personality Traits or Motives

Other personality traits also seem to be associated with flow experience: Bailis (2001) found that athletes' trait self-handicapping score was positively related to optimal experience in competition. High mental toughness, i.e., a personal capacity supporting the process of high performance (Jackman et al., 2016), perceived motivational climates, and individuals' goal orientations (Moreno Murcia et al., 2008) could account for differences in dispositional flow in athletes. Further, Kuhnle et al. (2012) found that self-control predicted flow experiences in eighth graders. Keller and Blomann (2008) found that a strong internal locus of control fosters flow under a skill-demand fit. Furthermore, studies suggest that action orientation fosters flow under skill-demand fit (Keller and Bless, 2008) and even under suboptimal (no skill-demand fit) conditions (Baumann et al., 2016). Beard and Hoy (2010; using state flow) and Vealey and Perritt (2015; using dispositional flow) found that optimism was positively related to flow whereas another study with Japanese students found that shyness predicted the frequency of flow experience (Hirao et al., 2012b). However, while empirical studies show that personality factors foster flow experiences, situational factors seem to have a bigger effect on flow (Fullagar and Kelloway, 2009; Ullén et al., 2016).

Using the SFPQ, Mosing et al. (2012) measured genetic influences on flow proneness in a cohort of adult twins and multivariate twin modeling indicated a moderate heritability of flow proneness. De Manzano et al. (2013) used positron emission tomography (PET) and found a positive relation between flow proneness and D2 receptor availability in the striatum. Their results suggested that the differences in the dopamine system could reflect personality differences.

Flow and Motive-Fitting Situations

Studies indicate that motives foster flow experiences in motive-fitting situations (Schattke, 2011; Oertig et al., 2014; Schüler et al., 2016). For example, Schüler et al. (2016) found that people scoring high on the autonomy motive experience flow in situations that satisfied participant's autonomy-motive. Furthermore, Mills and Fullagar (2008) found that the need for autonomy moderated the relationship between flow and intrinsic motivation. Oertig et al. (2014) found that a high avoidance motive results in greater flow when performance-avoidance goals were induced. Schüler et al. (2010) found that the feeling of competence resulted in higher flow of participants who had a high achievement motive in sports [see also Schüler and Brandstätter (2013)]. Furthermore, high achievement motive and high hope of success were positively correlated with flow experience of wall climbers' and students (Peterson and Miller, 2004; Schüler, 2007; Schattke, 2011; Schattke et al., 2014).

Motivation

The category *Motivation and Flow* included studies that dealt with intrinsic or extrinsic motivation, interest, and volition. Also included were studies that dealt with motivational concepts such as self-determination, self-efficacy, self-regulation, and locus of control. Expert ratings revealed that 44 articles have met these inclusion criteria. Another eight articles were included by our experts and two articles from the EFRN publication list. The final list of articles that were integrated into this section is depicted in **Table 4**.

The motivation studies on flow can be divided into four categories: studies dealing with flow and (1) motivational indicators (volition, engagement, goal orientation, achievement motive, interest, intrinsic motivation), (2) self-determination (3) self-efficacy, and (4) social motivation.

Motivational Indicators

If "motivation" can be simplistically defined as "move to action," for its part, "volition" can be simplistically defined as "will to persist in action." Thus, if motivation promotes an intention to act, then volition protects it (Corno, 2001). It was found that volition is positively linked to flow (e.g., Schattke, 2011). Another motivational indicator associated with flow is engagement, which "reflects an employee's intention to throw their full self—heads, hands, and heart—into their work" (Plester and Hutchison, 2016, p. 4). Many studies investigated the association between the two concepts (e.g., Karageorghis et al., 2000; Shernoff et al., 2003; Montgomery et al., 2004; Rha et al., 2005; Steele and Fullagar, 2009; Belchior et al., 2012; Ulrich et al., 2014; Valenzuela and Codina, 2014; Pocnet et al., 2015; Mesurado et al., 2016; Plester and Hutchison, 2016). Goal orientation was also found to be linked to flow (e.g., Delle Fave and Massimini, 2005; Moreno Murcia et al., 2008; Schüler et al., 2010; Oertig et al., 2013, 2014; Bonaiuto et al., 2016; Jackman et al., 2016; Ozkara et al., 2016), as well as the achievement motive (e.g., Engeser and Rheinberg, 2008; Baumann and Scheffer, 2011; Busch et al., 2013; Schüler and Brandstätter, 2013; Schattke et al., 2014;

TABLE 4 | Motivation.

Authors	Authors
Bachen et al. (2016)	Mesurado et al. (2016)
Bassi and Delle Fave (2012a)	Meyer et al. (2016)
Baumann and Scheffer (2011)	Montgomery et al. (2004)
Belchior et al. (2012)	Moreno Murcia et al. (2008)
Bonaiuto et al. (2016)	Oertig et al. (2014)
Bressler and Bodzin (2013)	Oertig et al. (2013)
Bricteux et al. (2017)	Ozkara et al. (2016)
Busch et al. (2013)	Plester and Hutchison (2016)
Chen and Lu (2016)	Pocnet et al. (2015)
Chen and Sun (2016)	Rha et al. (2005)
Delle Fave and Massimini (2005)	Rodríguez-Sánchez et al. (2011a)
Eisenberger et al. (2005)	Rodríguez-Sánchez et al. (2011b)
Engeser and Rheinberg (2008)	Salanova et al. (2014)
Fulmer and Tulis (2016)	Schattke (2011)
Gaggioli et al. (2013)	Schattke et al. (2014)
Jackman et al. (2016)	Schüler et al. (2016)
Karageorghis et al. (2000)	Schüler et al. (2010)
Keller and Bless (2008)	Shernoff et al. (2003)
Keller et al. (2011a)	Steele and Fullagar (2009)
Keller et al. (2011b)	Ulrich et al. (2014)
Kim et al. (2014)	Valenzuela and Codina (2014)
Lee and LaRose (2007)	Yan and Davison (2013)
Added by the experts:	
Armstrong (2008)	Mills and Fullagar (2008)
Heutte et al. (2016)	Novak et al. (2003)
Hodge et al. (2009)	Salanova et al. (2006)
Martin and Cutler (2002)	Walker (2010)
Added from the EFRN publication list:	
Bassi and Delle Fave (2012b)	
Moneta (2012)	

Studies included dealt with intrinsic or extrinsic motivation, interest and volition. Furthermore, studies that dealt with motivational concepts such as self-determination, self-efficacy, self-regulation, and locus of control were included.

see Personality and Flow). Furthermore, interest, which can be described as a motivational state resulting from attraction to a certain domain or activity (Reeve, 2008), was found to be related to flow (e.g., Eisenberger et al., 2005; Bressler and Bodzin, 2013; Bachen et al., 2016; Bricteux et al., 2017). Intrinsic motivation was investigated particularly often in its relation to flow, with evidence for a positive link found in various settings, such as education (Schüler et al., 2010; Keller et al., 2011b; Valenzuela and Codina, 2014; Meyer et al., 2016), Information and Communication Technologies (ICT) use (Voiskounsky and Smyslova, 2003; Montgomery et al., 2004; Keller and Bless, 2008; Yan and Davison, 2013; Kim et al., 2014; Chen and Lu, 2016); daily activities (Gaggioli et al., 2013) and physiological aspects (Keller et al., 2011a; Ulrich et al., 2014).

Self-Determination

Self-determination theory (SDT) "is an empirically derived theory of human motivation and personality in social contexts that differentiates motivation in terms of being autonomous and controlled" (Deci and Ryan, 2012, p. 416). Autonomous motivation combines forms of intrinsic motivation with those forms of extrinsic motivation, which go along with a sense of identification with the activity and its values; accordingly, it goes along with increased volition and self-endorsement (Deci and Ryan, 2008). In contrast, controlled motivation is associated with experiencing the "pressure to think, feel, or behave in particular ways" (Deci and Ryan, 2008, p. 182). Many authors (e.g., Schüler et al., 2010; Schattke, 2011; Bassi and Delle Fave, 2012a,b; Fulmer and Tulis, 2016) consider that flow experience is linked to autonomous motivation. Studies which examine flow in the context of self-determination theory showed for example that work-related flow is associated with both autonomous regulation and controlled regulation (Bassi and Delle Fave, 2012a). Furthermore, raising children in a way that promotes self-determination will help them to engage in activities which will enhance their flow experience (Schattke, 2011). In another study, it was found that flow enhanced learning motivation in computer-based learning systems if participants experienced self-control (Kim et al., 2014). Goal-directed activities with clear instructions are supported in environments where the individual feels autonomous and self-determined (e.g., providing choices). These activities are motivating as well as flow-inducing (Novak et al., 2003). Conceptually, and on the approach-avoidance spectrum, the approach aspect of goals is likely to promote intrinsic motivation because it facilitates challenge appraisals and task absorption, whereas the avoidance aspect of goals is likely to undermine intrinsic motivation because it evokes threat appraisals, anxiety, and self-concern (Elliot, 2005).

Self-Efficacy

This category of studies within this section reviews studies dealing with flow and self-efficacy, i.e. the "people's judgments of how well they can organize and execute, constituent cognitive, social, and behavioral skills in dealing with prospective situations" (Bandura, 1983, p. 467). The degree of self-efficacy affects the initiation, persistence and effort in activities (Bandura, 1977), and is, thus, an influential motivational theory. Results of empirical studies confirm that self-efficacy is linked with flow frequency and higher levels of challenge and skills showing that self-efficacy predicts flow over time (Rodríguez-Sánchez et al., 2011a; Heutte et al., 2016). Collective efficacy beliefs predict collective flow over time (Salanova et al., 2014, see sections *Interindividual Factors and Flow and Cognition and Flow*). High levels of efficacy beliefs have a positive impact on flow experiences in academic settings (Salanova et al., 2006; Bassi et al., 2007; Heutte et al., 2016). Various aspects of Bandura's (1986) self-regulation learning model were shown to exert a significant and positive effect on flow (Lee and LaRose, 2007; Rodríguez-Sánchez et al., 2011a; Chen and Sun, 2016).

Social Motivation

Some first studies highlight the social motivational conditions of flow (Sawyer, 2003; Armstrong, 2008; Walker, 2010; Heutte et al., 2016). Although this requires further investigation, it seems that the quality of interpersonal relationships, supporting in particular basic psychological needs (autonomy, competence, and relatedness), will support a motivational climate favorable to the emergence of flow within a group.

Physiology

The category *Physiology and Flow* included studies that used physiological and/or neuropsychological methods (e.g., ECG, EEG, EMG, fMRI, eye-tracking, saliva sampling, etc.) to measure

TABLE 5 | Physiology.

Authors	
de Manzano et al. (2010)	Peifer et al. (2015)
Gaggioli et al. (2013)	Peifer et al. (2014)
Harris et al. (2017)	Tozman et al. (2015)
Keller et al. (2011a)	Ulrich et al. (2014)
Klasen et al. (2012)	
Added by the experts:	
Berta et al. (2013)	Nacke and Lindley (2008)
Brom et al. (2014)	Nacke et al. (2011)
Harmat et al. (2015)	Ulrich et al. (2016a)
Hirao et al. (2012a)	Ulrich et al. (2016b)
Kivikangas (2006)	Wolf et al. (2015)
Meng et al. (2016)	Yoshida et al. (2014)

Studies included used physiological and/or neuropsychological methods (e.g., ECG, EEG, EMG, fMRI, eye-tracking, saliva sampling, etc.) to measure the relationship of physiological parameters with flow.

the relationship of physiological parameters with flow. Expert ratings revealed that nine articles meet these inclusion criteria. Another twelve articles were included by the experts. The final list of articles integrated into this section is set out in **Table 5**.

Subtopics identified in the literature include flow's relationship with (1) physiological arousal as represented by sympathetic (SA) and parasympathetic activation (PA), and cortisol, (2) facial muscle activation (FMA) and (3) neural activity.

Physiological Arousal

Flow was found to relate negatively to cardiac output and systolic blood pressure, and positively to diastolic blood pressure and heart rate (de Manzano et al., 2010; Gaggioli et al., 2013; Harris et al., 2017). Furthermore, mixed associations of flow with SA were found, with some studies showing positive associations (Nacke and Lindley, 2008; de Manzano et al., 2010; Gaggioli et al., 2013; Ulrich et al., 2016b), other studies showing negative associations (Harmat et al., 2015; Tozman et al., 2015; Harris et al., 2017) and—under stress—the relationship was found to be inverted u-shaped (Peifer et al., 2014; Tozman et al., 2015). Two studies found no association between flow and SA (Kivikangas, 2006; Hirao et al., 2012a). Similarly, PA has been negatively associated with flow (de Manzano et al., 2010; Keller et al., 2011a), but under stress, studies identified a positive relationship (Peifer et al., 2014) and an inverted u-shaped relationship (Tozman et al., 2015). Respiratory depth, related to PA, increased during flow (de Manzano et al., 2010). Regarding flow and cortisol, studies have found a positive association (Keller et al., 2011a), no association (Brom et al., 2014), a negative effect of high cortisol on flow (Peifer et al., 2015) and an inverted u-shaped relationship between cortisol and flow in stress-relevant conditions (Peifer et al., 2014; Tozman et al., 2015).

Facial Muscle Activation

Studies examining FMA found associations with flow for the Zygomaticus Major (de Manzano et al., 2010; Nacke et al., 2011), Orbicularis Oculi (Nacke et al., 2011), and Corrugator Supercilii (Kivikangas, 2006). In this sub-category, findings were also inconsistent.

Neural Activity

Neuroscientific research showed that flow was characterized by greater activation of the "multiple-demand system," which is involved in task-relevant cognitive functions, and reduced activation of the default mode network (*via* a relative increase in the dorsal raphe nucleus), which is linked to self-referential processing (Ulrich et al., 2014, 2016a,b). Computer gamers reporting flow showed increased activity in the neocerebellum, somatosensory cortex, and motor areas, possibly indicating a synchronization between reward-related brain structures and task-relevant cortical and cerebellar areas during flow (Klasen et al., 2012). Larger stimulus-preceding negativities (SPNs) were found during flow, indicating increased motivation and anticipatory attention (Meng et al., 2016). Experts experiencing more flow had greater right temporal cortical activity when imagining the activity, possibly reflecting the automaticity of a highly trained skill (Wolf et al., 2015).

Of particular interest is frontal activity during flow, inspired by the Hypofrontality Hypothesis suggested by Dietrich (2004). The Hypofrontality Hypothesis states that analytical and meta-conscious capacities are temporarily suppressed during flow, physiologically indicated by a downregulation of prefrontal activity. Respective findings support no association of flow with frontal activity (Harmat et al., 2015), or a greater activation of the ventrolateral prefrontal cortex (Yoshida et al., 2014). Findings regarding EEG activity were similarly mixed: Nacke et al. (2011) found no relationship, while Berta et al. (2013) found that alpha and lower- and mid-beta power predicted flow.

Emotion

The category *Emotion and Flow* included studies that dealt with a wide range of concepts associated with different components of the emotional experience, which tends to be generally associated with a certain subjective degree of pleasure and displeasure, or positive and negative experiences, such as affect, mood, wellbeing, enjoyment, activation, or excitement. Although a unique and clear definition of emotion does not exist in these articles, the relation of emotion with flow experience seems to follow a clear understanding of the kind of emotional components that can be relevant when studying this relationship. Although the concept of emotion, in its broad sense, can integrate cognitive, affective, and behavioral or even physiological aspects, this section tried to avoid overlapping with others that are specifically devoted to one of these components in its relation with flow experience (e.g., cognition and flow). Expert ratings revealed that 40 articles have met these inclusion criteria. Four additional articles were included by our experts and five articles from the EFRN publication list. The final list of articles that were integrated into this section is depicted in **Table 6**.

The identified studies show four main subtopics, i.e., (1) affect, (2) wellbeing, (3) enjoyment, and (4) emotional contagion. Studies investigated relationships of the emotional concepts with several components of flow, in particular with challenge-skill

TABLE 6 | Emotion.

Authors	Authors
Bachen et al. (2016)	Ozkara et al. (2016)
Bassi et al. (2014a)	Páez et al. (2015)
Bassi et al. (2014b)	Panadero et al. (2014)
Chen et al. (2010)	Pinquart and Silbereisen (2010)
Culbertson et al. (2015)	Rathunde (2010)
Csikszentmihalyi and Hunter (2003)	Robinson et al. (2012)
Delespaul et al. (2004)	Rogatko (2009)
Delle Fave and Massimini (2005)	Sartori and Delle Fave (2014)
Diaz and Silveira (2013)	Schmierbach et al. (2014)
Eisenberger et al. (2005)	Schüler (2007)
Engeser and Baumann (2016)	Schweinle et al. (2008)
Fink and Drake (2016)	Shin (2006)
Fullagar et al. (2013)	Silverman et al. (2016)
Fullagar and Kelloway (2009)	Steele and Fullagar (2009)
Graham (2008)	Sugiyama and Inomata (2005)
Hsu et al. (2013)	Thin et al. (2011)
Karageorghis et al. (2000)	Tramonte and Willms (2010)
Kopačević et al. (2011)	Tyagi et al. (2016)
Maeran and Cangiano (2013)	Wanner et al. (2006)
Marin and Bhattacharya (2013)	Wissmath et al. (2009)
Added by the experts:	
Demerouti et al. (2012)	Inkinen et al. (2014)
Hirao and Kobayashi (2013)	Collins et al. (2009)
Added from the EFRN publication list:	
Baumann and Scheffer (2010)	Vittersø (2003)
Cseh et al. (2015)	Wright et al. (2007)
Tobert and Moneta (2013)	

Studies included dealt with a wide range of concepts associated with different components of the emotional experience, which tends to be generally associated with a certain subjective degree of pleasure and displeasure, or positive and negative experiences, such as affect, mood, wellbeing, enjoyment, activation, or excitement.

balance (Delespaul et al., 2004; Delle Fave and Massimini, 2005; Sugiyama and Inomata, 2005; Schweinle et al., 2008; Tramonte and Willms, 2010; Robinson et al., 2012; Panadero et al., 2014; Sartori and Delle Fave, 2014). In general, these studies showed that high challenge-skill balance is associated with higher positive emotional states (e.g., activation, excitement, positive affect).

Affect

Regarding the first subtopic, several studies suggest a positive relationship between flow and positive affect. Of relevance is the study by Baumann and Scheffer (2010) showing that achievement flow is supported by dynamic changes in positive affect, highlighting the role of reduced and restored positive affect. Some other findings show that flow predicts positive mood or positive affect (Eisenberger et al., 2005; Schüler, 2007; Collins et al., 2009; Fullagar and Kelloway, 2009; Baumann and Scheffer, 2010; Tobert and Moneta, 2013; Inkinen et al., 2014; Bachen et al., 2016; Ozkara et al., 2016). The reverse relationship also exists, with studies demonstrating that both positive and negative affect are significant predictors of flow experience (e.g., Collins et al., 2009; Kopačević et al., 2011; Hirao and Kobayashi, 2013; Tobert and Moneta, 2013). Cseh et al. (2015) demonstrated that flow is purported to have positive consequences on affect and performance. Some other studies looked at the relationship between flow and affect in different groups of participants (Rogatko, 2009; Fullagar et al., 2013; Bassi et al., 2014a; Fink and Drake, 2016; Tyagi et al., 2016), different activities or domains (Pinquart and Silbereisen, 2010; Engeser and Baumann, 2016; Silverman et al., 2016), or in relation to specific variables, for example, the quality of a relationship or experiential wisdom (Karageorghis et al., 2000; Graham, 2008; Rathunde, 2010), and trait emotional intelligence (Marin and Bhattacharya, 2013; see *Personality and Flow*).

Wellbeing

In studies considering wellbeing, flow experience tends to be positively associated with the concept of emotional wellbeing (Wanner et al., 2006), and psychological wellbeing (Bassi et al., 2014a,b), with others showing that flow experience can predict psychological wellbeing (Steele and Fullagar, 2009; Bassi et al., 2014b), life satisfaction (Collins et al., 2009; Chen et al., 2010; Bassi et al., 2014b), happiness (Csikszentmihalyi and Hunter, 2003), job satisfaction (Maeran and Cangiano, 2013), course satisfaction (Shin, 2006), and e-satisfaction and e-loyalty (Hsu et al., 2013).

Enjoyment

Regarding enjoyment, studies showed that it is positively associated with flow, with authors trying to understand which flow dimensions are related to the perception of enjoyment and under what circumstances (Wright et al., 2007; Wissmath et al., 2009; Thin et al., 2011; Diaz and Silveira, 2013; Inkinen et al., 2014; Schmierbach et al., 2014). In a diary study which aimed at examining the relationship between flow experiences and energy both during work and non-work, results indicated that the flow-characteristics absorption and enjoyment were associated with energy only after work, accompanied by feeling more vigorous and less exhausted (Demerouti et al., 2012).

Emotional Contagion

Two studies brought the topic of flow to collective and group contexts. It was shown that positive collective gatherings could stimulate shared flow experiences, promoting personal wellbeing and social cohesion (Zumeta et al., 2016). In the group context of a classroom, it was shown that Students' perceptions of their classmates' flow as well as their teachers' flow were related to their own reported flow experience (Culbertson et al., 2015). Authors concluded that their finding can be explained by contagion effects of flow within the group, in line with emotional contagion theory (Hatfield et al., 1994).

Cognition

The category *Cognition and Flow* included studies that dealt with perception, attention, decision-making, and cognitive control. Also, brain studies referring to cognitive processes during flow experiences and effortless attention were reviewed in this section. Studies dealing with embodied cognition (e.g., body image, agency, intentions) and effects of flow experiences on cognitive processes (e.g., memory and reasoning) were reviewed. Expert ratings revealed that 26 articles met these inclusion criteria. Two additional articles were included by our experts and one article

TABLE 7 | Cognition.

Authors	Authors
Delle Fave and Massimini (2005)	Payne et al. (2011)
Diaz and Silveira (2013)	Pearce et al. (2005)
Guizzo and Cadinu (2016)	Reynolds and Prior (2006)
Harris et al. (2017)	Rodríguez-Sánchez et al. (2011a)
Kawabata and Mallett (2011)	Schiefele and Raabe (2011)
Kee and John Wang (2008)	Schweinle et al. (2008)
Klasen et al. (2012)	Swann et al. (2017)
Konradt and Sulz (2001)	Swann et al. (2015a)
Kuhnle and Sinclair (2011)	Ullén et al. (2012)
Lee and LaRose (2007)	Ulrich et al. (2014)
Moore (2013)	Vuorre and Metcalfe (2016)
Ortner et al. (2014)	Winberg and Hedman (2008)
Ozkara et al. (2016)	Wissmath et al. (2009)
Added by the experts:	
Jackson et al. (2001)	
Synofzik et al. (2008)	
Added from the EFRN publication list:	
Cseh et al. (2016)	

Studies included dealt with perception, attention, decision-making and cognitive control. Also, brain studies referring to cognitive processes during flow experiences and effortless attention were included, as well as studies dealing with embodied cognition (e.g., body image, agency, intentions) and effects of flow experiences on cognitive processes (e.g., memory and reasoning).

from the EFRN publication list. The final list of articles that were integrated into this section is presented in **Table 7**.

Cognition studies on flow can be divided into two main areas: (1) those that studied its relationships with cognitive processes, and (2) those that analyzed cognitive aspects of flow-related processes while considering flow in specific applied contexts.

First of all, flow itself can be considered a state of consciousness in which an individual is fully concentrated on, paying attention to and engaged in a certain activity (Delle Fave and Massimini, 2005); at the same time, flow can be considered as a process or a dynamic mental activity characterized by clear goals, a match between capacity and challenge, absence of disturbances, experience of mastery, etc. (Pearce et al., 2005; Kawabata and Mallett, 2011). There is not a discrepancy between state and process—rather they can be seen as related and interdependent; a flow state typically occurs when an individual engages in a process with the formerly mentioned characteristics.

Relationships With Cognitive Processes

Flow is related to attentional processes. For example, as demonstrated by Harris et al. (2017), sustained attention toward the task is needed as a component of flow. Indeed, from a cognitive point of view, when attention is hindered by other processes or stimuli, flow experience is reduced or blocked. For instance, in the experiment by Guizzo and Cadinu (2016), feeling objectified by men's gaze draws women's attention away from the rewarding activity and decreases flow. However, studies on flow proneness highlight no relation or very weak relation with intelligence in two large samples (Ullén et al., 2012), showing that although flow is related to cognitive processes, it is only weakly associated with cognitive ability. In general, cognitive studies tend to confirm the skill-demands compatibility hypothesis in the generation of flow (Payne et al., 2011; Schiefele and Raabe, 2011; Harris et al., 2017). Moreover, flow has been found to be positively related to an intuitive approach to decision making (Kuhnle and Sinclair, 2011). Consistently, flow seems to be disassociated from sense of agency or the impression of being the author of one's own actions (Vuorre and Metcalfe, 2016). Indeed, sense of agency is partially influenced by metacognitive, complex judgments of authorship over the action (Synofzik et al., 2008), which are more influenced by overall evaluation of one's own control over the task, while flow appears to be associated with positive assessment and enjoyment of the overall experience. In other words, the reporting of having experienced an optimal experience is not related to feel more or less to be the author of one's own actions. Neuropsychological data also showed that flow is associated with sense of control (Ulrich et al., 2014, see *Physiology and Flow*). Further, it was found that cognitive flexibility (Moore, 2013) and mindfulness predicted flow (Kee and John Wang, 2008; Moore, 2013). Studies on flow involving creative activities highlighted that flow was not affected by cognitive load (Cseh et al., 2016). Rather, flow experience could help banish or reduce unwanted cognitive processes (e.g., intrusive thoughts, rumination), for example in cancer patients (Reynolds and Prior, 2006).

Cognitive Aspects of Flow-Related Processes in Specific Contexts

The most popular field of research with regards to flow and cognitive processes are studies related to learning. Ortner et al. (2014) analyzed the effects of computerized adaptive testing (CAT) vs. computerized fixed item testing (FIT) on Students' motivation and flow using a matrices non-verbal computer-based test assessing reasoning on the basis of figural items. The CAT version adapts to the learner's online performance selecting items on the basis of the learner's previous response, while the FIT version features fixed items increasing in difficulty. Contrary to hypotheses, fixed item testing obtained superior ratings of motivation and no differences between the conditions were found for flow. In a study by Konradt and Sulz (2001), most of the participants entered flow while using a hypermedia learning system, independently of task condition (scanning or browsing the contents); importantly, however, flow was not associated with improved learning. Diaz and Silveira (2013) analyzed flow experiences in high school music students attending a summer music camp; the highest ranked flow-inducing activities showed strong associations between attention and enjoyment. Another study (Winberg and Hedman, 2008) compared guiding/open instructions during a learning task and considered their effects on flow components. Guiding instructions correlated with high levels of "challenge," "enjoyment," and "concentration" and low levels of "perception of control," while the opposite happened for the other condition. However, Pearce et al. (2005) found that a "process" (rather than a state) model of flow more adequately explains students' outcomes, in that skills may change over time during learning (e.g., growing). In this sense, flow should probably be measured more times than just once after or during the learning process. Schweinle et al. (2008) employed experience sampling methods to analyze flow following 12 class lessons. They found that individual affect was influenced by the interaction

of challenge and skill while social affect and efficacy were more impacted by perceived skill than by challenge (see *Emotion and Flow*). This is consistent with studies attempting to integrate flow with social-cognitive theory, namely, the idea of behavior resulting from cognitive processes and external/environmental influences (Lee and LaRose, 2007; Rodríguez-Sánchez et al., 2011a). These studies found that high self-efficacy, or the belief about one's own abilities to perform a given action, may be a predictor of optimal experience (see *Motivation and Flow*).

Another important field of flow research is sports. For example, Swann et al. (2017) employed interviews to explore the characteristics of clutch performances (i.e., performance under pressure) in professional athletes. They found that clutch performances are different from flow, in that they are characterized by heightened awareness, deliberate concentration and intense effort. Also, an "inductive" qualitative research study on golfers (Swann et al., 2015a), or in other words, a methodology that did not intend to confirm flow characteristics as described by traditional theory but instead intended to capture the experience of the participants as described by them, suggested that flow was self-aware, observable and characterized by altered cognitive and kinesthetic perceptions.

Finally, flow has been found to be positively related to transportation and spatial presence while watching movies (Wissmath et al., 2009). Transportation has been defined as the "process where all mental systems and capacities become focused on events in the narrative" (Green and Brock, 2000, p. 701), with high involvement and absorption of the user in the movie he or she is watching, while sense of presence consists in the sensation of "being" inside a real or virtual environment, related to the impression of being able to enact one's own intentions (Triberti and Riva, 2015).

TABLE 8 | Behavior.

Authors	
Bakker et al. (2011)	Liu and Shiue (2014)
Bassi et al. (2012)	MacDonald et al. (2006)
Bassi et al. (2007)	Marin and Bhattacharya (2013)
Baumann and Scheffer (2011)	Mesurado et al. (2016)
Bressler and Bodzin (2016)	Min et al. (2015)
Brinthaupt and Shin (2001)	Niu and Chang (2014)
Busch et al. (2013)	Pearce et al. (2005)
Byrne et al. (2003)	Pratt et al. (2016)
Cheok et al. (2011)	Schüler (2007)
Culbertson et al. (2015)	Schüler and Brunner (2009)
Dawoud et al. (2015)	Schüler and Nakamura (2013)
Demerouti (2006)	Schüler et al. (2010)
Drengner et al. (2008)	Seddon et al. (2008)
Eisenberger et al. (2005)	Shernoff et al. (2003)
Engeser and Rheinberg (2008)	Swann et al. (2017)
Graham (2008)	Swann et al. (2015a)
Griffiths (2008)	Swann et al. (2015b)
Guizzo and Cadinu (2016)	Szymanski and Henning (2007)
Harris et al. (2017)	Thornton and Gilbert (2011)
Heller et al. (2015)	Urmston and Hewison (2014)
Hong et al. (2013)	Valenzuela and Codina (2014)
Hsu et al. (2013)	Wrigley and Emmerson (2013)
Keller et al. (2011b)	
Konradt and Sulz (2001)	
Added by the experts:	
Aubé et al. (2014)	Kuo and Ho (2010)
Delle Fave et al. (2003)	Zubair and Kamal (2015a)
Jackson et al. (2001)	Zubair and Kamal (2015b)
Added from the EFRN publication list:	
Cseh et al. (2015)	

Studies included dealt with flow and different forms of behavior such as performance (e.g., in-role/extra-role performance, physical, athletic, creative, or cognitive performance), risk taking, consumption behavior, online behavior and addiction, as well as variables that are closely related to performance and motivate high performance such as engagement, commitment, and persistence.

Behavior

The category *Behavior and Flow* included studies that dealt with flow and different forms of behavior such as performance (e.g., in-role/extra-role performance, physical, athletic, creative, or cognitive performance), risk taking, consumption behavior, online behavior, and addiction, as well as variables that are closely related to performance and motivate high performance such as engagement, commitment, and persistence. Expert ratings revealed that 46 articles have met these inclusion criteria. Another six articles were included by our experts and one from the ERFN publication list, although they were not found in the literature search. The final list of articles that were integrated into this section is set out in **Table 8**.

Within this category, the following subtopics could be identified: (1) The relationship between flow and different kinds of performance in different contexts, (2) variables that are related to high performance such as engagement and commitment, and (3) other forms of behavior such as risk taking, consumption behavior, online behavior, and addiction.

Performance

Most studies dealing with flow and behavior address the topic of performance, and they show a positive relationship between flow and performance in most cases (e.g., Demerouti, 2006; Engeser and Rheinberg, 2008; Min et al., 2015: productivity in design process). For work-related performance, it was found that flow at work is positively related with in-role (Demerouti, 2006) and extra-role performance (Eisenberger et al., 2005; Demerouti, 2006). Baumann and Scheffer (2011) additionally found that the flow achievement motive is positively associated with work efficiency according to multisource feedback. The positive effects of flow on performance could also be shown at the team-level (Aubé et al., 2014). Likewise, Kuo and Ho (2010) found that flow has positive effects on employee-reliability and paying attention to customers' needs.

Besides work-related performance, several other studies deal with the topic of flow and athletic and physical performance (e.g., Bailis, 2001; Jackson et al., 2001): Most studies find a positive relation between flow and physical performance (Schüler and Brunner, 2009; Bakker et al., 2011), including performance under pressure (Swann et al., 2017). Similarly, training and preparation appear to have a positive effect on flow and mediate effects on performance (Schüler and Brunner, 2009; Swann et al., 2015b). Swann et al. (2015a) also find that flow is related to changes in the behavior of golfers

(such as playing faster, staying calm, and showing a confident body language).

In terms of performance at school and/or cognitive performance in general, flow was found to be positively related to exam performance (Schüler, 2007), cognitive performance (Engeser and Rheinberg, 2008; Harris et al., 2017) and goal progress (Schüler et al., 2010). The achievement flow motive also predicts academic success (Busch et al., 2013). Guizzo and Cadinu (2016) find that low levels of flow are associated with decreased cognitive performance in an attention to response task. Furthermore, studies suggest that practice and learning in general are positively related to flow experience (Brinthaupt and Shin, 2001; Pearce et al., 2005; Marin and Bhattacharya, 2013; Valenzuela and Codina, 2014; Heller et al., 2015; Bressler and Bodzin, 2016) and that flow is positively associated with reengagement in a task (Keller et al., 2011b; Pratt et al., 2016). Another study found that flow and learning retention in gaming were also positively associated (Hong et al., 2013). Flow also presented positive effects on performance in online games (Thornton and Gilbert, 2011). Overall, there seems to be a positive relation between flow and enhanced performance (for an overview see Landhäußer and Keller, 2012). However, two studies did not find a positive association between flow and performance (Konradt and Sulz, 2001; Culbertson et al., 2015). The former authors, however, suggest that the students in their investigation experienced flow and therefore felt self-confident and were not open to learn for a following quiz (for more explanations, see Culbertson et al., 2015). Several studies find a positive relationship between flow experiences and enhanced creativity or engagement in creative tasks (Byrne et al., 2003; Griffiths, 2008; Cseh et al., 2015; Dawoud et al., 2015; Zubair and Kamal, 2015a,b), especially in the field of music (MacDonald et al., 2006; Wrigley and Emmerson, 2013).

Variables That Are Related to High Performance

With respect to variables that are related to high performance, flow seems to be positively related with student engagement in the classroom (Shernoff et al., 2003; Mesurado et al., 2016) and with learning engagement (Bassi et al., 2007). Furthermore, several studies have found a positive relation between the fact of "being active" and flow (Bassi et al., 2012: engagement in meaningful rehabilitation activities; Drengner et al., 2008; Graham, 2008; Dawoud et al., 2015). Another study by Seddon et al. (2008) finds while investigating a 6-year online collaboration (working together in an online setting) that flow and engagement in that collaboration were positively related.

Other Forms of Behavior

With respect to other forms of behavior, Schüler and Nakamura (2013) found that risk behavior and flow were positively associated but only for inexperienced climbers; the relationship is mediated by self-efficacy beliefs. In line with that, Delle Fave et al. (2003) found that the opportunity to experience flow motivates climbers to take part in a risky expedition. Urmston and Hewison (2014) also find a positive relationship between flow and risk taking in learning. A study by Szymanski and Henning (2007) found that flow was negatively related to women's self-objectification behavior. Further studies on self-objectification behavior were not found. Furthermore, Niu and Chang (2014) found that flow is positively associated with unplanned buying and that it moderates the positive relationship between internet addiction and consumer behavior. Liu and Shiue (2014) found that flow fosters purchase intention in online games. Another study found that experiencing flow was positively related with engagement in a human-animal-interaction game (Cheok et al., 2011). Hsu et al. (2013) find that flow and e-loyalty are positively related.

Context Factors

The category *Context Factors and Flow* included studies that investigated different contexts and activities in which flow occurs (e.g., different kinds of work, study, sports etc.), as well as contextual characteristics/external circumstances that foster or hinder flow (e.g., differences in environmental characteristics, external demands and resources). Expert ratings revealed that 84 articles met these inclusion criteria. Another three articles were included by our experts and seven from the ERFN publication list, although they were not found in the literature search. The final list of articles that were integrated into this section is shown in **Table 9**.

In this category, the following subtopics were identified: (1) Flow in different contexts and activities and how they affect flow, (2) contextual factors and their relationships with flow, and (3) the fit of contextual factors with characteristics of the individual.

Flow in Different Contexts and Activities

Flow is always investigated during a certain activity in a certain context, and their variety in the identified studies is large: (a) work- or study-related activities such as work, learning (Peterson and Miller, 2004; Rathunde and Csikszentmihalyi, 2005; Wright et al., 2007; Ceja and Navarro, 2011; Stephanou, 2011; Demerouti et al., 2012; Ryu and Parsons, 2012; Debus et al., 2014; Escartin Solanelles et al., 2014; Hernandez et al., 2014), and teaching (Coleman, 2014), (b) leisure (Rodríguez-Sánchez et al., 2011b), (c) professional dancing (Hefferon and Ollis, 2006; Panebianco-Warrens, 2014), (d) music festivals (Jonson et al., 2015), (e) creative activities such as designing clothes (Min et al., 2015) and visiting arts courses or making art (Reynolds and Prior, 2006; Bass, 2007; Jones, 2013; van der Hoorn, 2015), (f) gaming (e.g., Ivory and Magee, 2009; Thin et al., 2011; Bressler and Bodzin, 2013, 2016) and several online activities (e.g., Guo and Poole, 2009; Faiola et al., 2013; Hsu et al., 2013; Meyer and Jones, 2013; Wang et al., 2015), (g) research activities (Hudock, 2015; Zha et al., 2015) and information technology use (Pilke, 2004), (h) sports (e.g., Koehn and Morris, 2014; Deol and Singh, 2016; training vs. competition; Swann et al., 2012, 2015a), (i) translation activities (Mirlohi et al., 2011), (j) psychological rehabilitation activities (e.g., Bassi et al., 2012; Nissen-Lie et al., 2015), (k) extreme contexts such as rituals (Lee, 2013) and extreme weather during climbing (Bassi and Delle Fave, 2010) and even (l) first-aid activities, whereby professionals experienced more flow than volunteers (Sartori and Delle Fave, 2014). This large list shows

TABLE 9 | Context factors.

Authors	Authors
Bakker (2005)	Llorens et al. (2013)
Bakker et al. (2011)	MacNeill and Cavanagh (2013)
Banfield and Burgess (2013)	Maeran and Cangiano (2013)
Bass (2007)	Magyaródi and Oláh (2015)
Bassi et al. (2012)	Marston (2013)
Bassi and Delle Fave (2012a)	Meyer et al. (2016)
Baumann et al. (2016)	Meyer and Jones (2013)
Belchior et al. (2012)	Min et al. (2015)
Bonaiuto et al. (2016)	Mirlohi et al. (2011)
Bressler and Bodzin (2013)	Nielsen and Cleal (2010)
Bressler and Bodzin (2016)	Nissen-Lie et al. (2015)
Ceja and Navarro (2009)	Panadero et al. (2014)
Cheok et al. (2011)	Panebianco-Warrens (2014)
Coleman (2014)	Peterson and Miller (2004)
Dawoud et al. (2015)	Pilke (2004)
Debus et al. (2014)	Rathunde and Csikszentmihalyi (2005)
Delle Fave and Bassi (2009)	Reynolds and Prior (2006)
Demerouti (2006)	Rha et al. (2005)
Deol and Singh (2016)	Rodríguez-Sánchez et al. (2011b)
Diaz and Silveira (2013)	Ryu and Parsons (2012)
Eisenberger et al. (2005)	Sartori and Delle Fave (2014)
Emanuel et al. (2016)	Sartori et al. (2014)
Engeser and Baumann (2016)	Schmierbach et al. (2012)
Engeser and Rheinberg (2008)	Sharitt (2010)
Escartin Solanelles et al. (2014)	Shernoff et al. (2003)
Faiola et al. (2013)	Shin (2006)
Freer (2009)	Smith et al. (2012)
Gnoth et al. (2000)	Steele and Fullagar (2009)
Guo and Poole (2009)	Stephanou (2011)
Hefferon and Ollis (2006)	Swann et al. (2015a)
Hernandez et al. (2014)	Swann et al. (2012)
Hong et al. (2013)	Thin et al. (2011)
Hsu et al. (2013)	Urmston and Hewison (2014)
Hudock (2015)	van der Hoorn (2015)
Ivory and Magee (2009)	van Schaik et al. (2012)
Jones (2013)	Harris et al. (2017)
Jonson et al. (2015)	Voiskounsky and Smyslova (2003)
Katuk et al. (2013)	Wang and Hsu (2014)
Keller and Bless (2008)	Wang et al. (2015)
Khan and Pearce (2015)	Winberg and Hedman (2008)
Koehn and Morris (2014)	Wrigley and Emmerson (2013)
Lee (2013)	Zha et al. (2015)
Added by the experts:	
Bassi and Delle Fave (2010)	
Demerouti et al. (2012)	
Mäkikangas et al. (2010)	
Added from the EFRN publication list:	
Ceja and Navarro (2012)	Vittersø et al. (2001)
Ceja and Navarro (2011)	Voiskounsky et al. (2005)
Cseh et al. (2016)	Wright et al. (2007)
Moneta (2012)	

Studies included investigated different contexts and activities in which flow occurs (e.g., different kinds of work, study, sports etc.), as well as contextual characteristics/external circumstances that foster or hinder flow (e.g., differences in environmental characteristics, external demands and resources).

that flow can occur in a large variety of activities and contexts (Diaz and Silveira, 2013).

Are there differences between activities in their likelihood to produce flow? In general, it was found that flow is higher during working-activities compared to (active and passive) leisure activities (Engeser and Baumann, 2016). For example, Bassi and Delle Fave (2012a) found that school teachers experienced more flow during work than during free-time (see: paradox of work; Csikszentmihalyi and LeFevre, 1989). The paradox of work states that although work is commonly associated as an unpleasant activity, individuals experience more flow—a pleasant state—during work than during free-time (Csikszentmihalyi and LeFevre, 1989). In contrast, MacNeill and Cavanagh (2013) found that school leaders experienced more flow in non-school contexts. Rodríguez-Sánchez et al. (2011b) found that the flow component enjoyment was higher during non-working activities whereas absorption was higher during working activities. Magyaródi and Oláh (2015) found that work, sports and creative activities were the most typical solitary activities and work and sports were the most typical social activities that foster flow. Of course, flow has also been investigated in social contexts (e.g., Ryu and Parsons, 2012). For a better overview, the authors of this scoping review decided to define "*interindividual factors*" as a separate category (see below). At work, planning, problem solving, and evaluative activities especially seem to foster flow (Nielsen and Cleal, 2010).

Contextual Factors and Their Relationships With Flow

The research explored in this scoping review shows that there are many contextual factors that are associated with flow at work. Maybe that is why Ceja and Navarro (2012) found in their study that there are many abrupt changes in experiencing flow at work; While flow is a self-reinforcing inner state of consciousness, contextual factors are external circumstances which cannot fully be controlled by an individual. A change of contextual factors can thus interrupt flow—and the more contextual factors exist that affect flow, the more likely are such sudden changes in flow. It was found that the motivating job characteristics of Hackman et al. (1975) are context factors that are positively associated with flow in the workplace (Demerouti, 2006; Maeran and Cangiano, 2013). In line with this, it was found that subjective relevance (Shernoff et al., 2003; Dawoud et al., 2015), importance (Rha et al., 2005; Engeser and Rheinberg, 2008), and meaningfulness (Banfield and Burgess, 2013; Hsu et al., 2013; Jonson et al., 2015; Bonaiuto et al., 2016) are positively associated with flow. All of these are concepts at the interface between person and context; if a context (e.g., a certain task or environment) aligns with the needs, values or motives of a person, it will become subjectively relevant, important and meaningful. Moreover, feedback and support are relevant precursors of flow (Bakker, 2005; Guo and Poole, 2009; Steele and Fullagar, 2009; Panadero et al., 2014; Swann et al., 2015a). Creative tasks (e.g., sketching: Cseh et al., 2016) or having the opportunity for creativity (Moneta, 2012) seems also to be positively associated with flow. Having a clear goal (Shin, 2006; Guo and Poole, 2009; van Schaik et al., 2012) and a clear role (Steele and Fullagar, 2009; Panadero et al., 2014) as well as having control (Shernoff et al., 2003) or autonomy (Bakker, 2005) are positively associated with flow. Furthermore, it was found that being prepared (Swann et al., 2012) and being recovered in the morning is positively associated with flow at work during the day (Debus et al., 2014). Smith et al. (2012) found that organizational safety climate is associated

with flow. In general, having enough resources is positively associated with flow at work (Mäkikangas et al., 2010); a study by Emanuel et al. (2016) found that job resources (e.g., support from supervisor and autonomy) are positively associated with the flow experience of journalists. In addition, an internal locus of control was found to be positively associated with freelance journalists' flow experience.

There are several factors of a game's design that seem to facilitate flow. In general, interactivity and playfulness are positively associated with flow (Rha et al., 2005; Voiskounsky et al., 2005; Cheok et al., 2011; Hong et al., 2013; Khan and Pearce, 2015) in gaming and in the working or learning context (Dawoud et al., 2015; Meyer et al., 2016), while one study found that the content is more important for flow than the interaction (Marston, 2013). Sharitt (2010) additionally found that a balance of difficulty was an important criterion for flow-associated game design. Lastly, instruction type is also relevant for flow: Winberg and Hedman (2008) found in an experimental design that guided instructions foster the flow components of enjoyment and concentration whereas free guiding instructions facilitate the flow component of control.

Fit of Contextual Factors With Characteristics of the Individual

Besides general context factors, the fit of the context to the individual (see also *Personality and Flow*) seems to particularly matter: Moneta (2012) found evidence that a person-environment-fit fosters flow. In this respect, the best investigated flow condition is the fit between challenges of the activity and skills of the person, i.e., the challenge skill balance (Gnoth et al., 2000; Eisenberger et al., 2005; Engeser and Rheinberg, 2008; Freer, 2009; Bassi et al., 2012; Belchior et al., 2012; Hsu et al., 2013; Harris et al., 2017; ease of use; Voiskounsky and Smyslova, 2003; Keller and Bless, 2008; Katuk et al., 2013; Llorens et al., 2013; Wrigley and Emmerson, 2013; Koehn and Morris, 2014; Sartori and Delle Fave, 2014; Sartori et al., 2014; Wang and Hsu, 2014). In line with this, Schmierbach et al. (2012) found that the possibility to personalize a game facilitates flow. A study from Baumann et al. (2016) found that a dynamic (i.e., varying demands) and not a static challenge-skill balance is best for flow. Similar results were found by Ceja and Navarro (2009) who state that flow experiences follow a complex dynamic. In general, and in association with the challenge-skill balance, having enough resources (Delle Fave and Bassi, 2009; Bakker et al., 2011) and risk or uncertainty (Urmston and Hewison, 2014) are associated with flow. Another example for a flow-promoting fit between the context and the individual was shown by Vittersø et al. (2001), who found that a fit between individual's preferred recreational mode and the recreational activity (e.g., being active or passive) was positively associated with flow.

Interindividual Factors

The category *Interindividual Factors and Flow* included studies that dealt with flow in social contexts, measured at the individual or collective level and as a social phenomenon (e.g., team flow, group flow, social flow etc.). Studies which looked at the effects of flow on more than one individual (e.g., small groups, social settings, networks, and other collectives) were also included. Expert ratings revealed that twelve articles met these inclusion criteria. Another article was included by our experts, although they were not found in the literature search. The final list of articles that were integrated into this section is shown in **Table 10**.

TABLE 10 | Interindividual factors.

Authors	
Bakker (2005)	Magyaródi and Oláh (2015)
Bakker et al. (2011)	Ryu and Parsons (2012)
Boyns and Appelrouth (2011)	Salanova et al. (2014)
Gute et al. (2008)	Smith et al. (2012)
Keeler et al. (2015)	van Schaik et al. (2012)
MacDonald et al. (2006)	Zumeta et al. (2016)
Added by the experts:	
Walker (2010)	

Studies included dealt with flow in social contexts, measured at the individual or collective level and as a social phenomenon (e.g., team flow, group flow, social flow etc.). Also included were studies which looked at the effects of flow on more than one individual (e.g., small groups, social settings, networks and other collectives).

Even though many human activities are done in social settings, the research on collective flow has not been vast, but the number of contributions is recently growing. As subtopics, we differentiate the experience of flow at the *individual level*, while being part of a social context (cf. Walker, 2010), from the experience of flow at the *collective level*, as if the collective has an experience of flow (cf. Sawyer, 2003).

Interpersonal Flow Studies at the Individual Level

Walker (2010) differentiates solitary flow experiences from social flow experiences, the latter varying on the degree of interdependence (ranging from co-active to highly interdependent). He found that participants in highly interdependent (sport) teams reported more joy than individuals performing less interdependently. Ryu and Parsons (2012) investigated social flow in the context of collaborative mobile learning and found that experiencing social flow is positively associated with the mobile learning experience. In addition, Bakker et al. (2011) studied team member flow experience among young soccer players. In short, the results indicate that social support and performance feedback from the coach are important facilitators of flow.

Magyaródi and Oláh (2015) found that for *interpersonal* flow experiences in social settings the level of perceived challenges should be high, as well as the level of cooperation, the immediateness/clarity of feedback, and the perceived level of skills. van Schaik et al. (2012) studied flow within an immersive virtual environment for collaborative learning. They found that the flow enablers challenge-skill match, goal clarity and feedback mediated the relationship between task constraints and learning experience. In the context of a group music composition task, MacDonald et al. (2006) found that the "no fear of failure" condition contributed to better flow. Moreover, they found that higher levels of flow related to a higher quality level of the output. In music teaching, Bakker (2005) found a crossover of the teacher's experience of flow to students

through contagion. In addition, Keeler et al. (2015) found that group singing reduces stress and fosters social flow at the individual level.

In the context of work, Smith et al. (2012) found that flow moderates the effect of leadership styles on job satisfaction and organizational commitment and partially mediates the effect on safety climate. Gute et al. (2008) found through the analysis of existing interview reports from highly creative persons that parents who foster *both* integration (e.g., providing emotional support) and its opposite, differentiation, (e.g., stimulation to work on personal goals) cultivate environments for creativity and flow. Using Csikszentmihalyi's flow theory, Boyns and Appelrouth (2011) investigated the suspension of activity in public isolation and found that for most participants, "non-doing" leads to counterparts of the flow characteristics (e.g., boredom and anxiety).

Interpersonal Flow Studies at the Collective Level

Pioneering research in this perspective is the work of Keith Sawyer who defined group flow as *a collective state that occurs when a group is performing at the peak of its abilities* (Sawyer, 2003, p. 167). In this line, Salanova et al. (2014) found that collective efficacy beliefs predict collective flow over time, and that the two constructs are reciprocally related. Also, Zumeta et al. (2016) investigated *shared flow* during positive collective tambours/drummer (Tamborrada) gatherings. They found that positive collective gatherings stimulate shared flow experiences and in turn promote personal wellbeing and social cohesion.

Cultural Factors

Culture can be seen both as an antecedent and as a consequence of flow experience. On the one hand, culture directs the individual toward actions, behaviors and activities that can more or less favor the experience of flow activities (Delle Fave et al., 2011); on the other hand, flow affects the actions of individuals, their decision-making processes, their focus of attention and their focus of behavior on certain purposes, which cause elements of culture (Inghilleri et al., 2014). Considering this premise in the category *Cultural Factors and Flow*, studies were included that did cross-cultural investigations or dealt with individualism or collectivism, culture and the construction of the self, social identity, or special artifacts (e.g., Manga). Additionally, studies that addressed specific countries were also included here. Expert ratings revealed that 13 articles met these inclusion criteria. Another three articles were included by our experts, although they were not found in the literature search. The final list of articles that were integrated into this section is depicted in **Table 11**.

To understand the interaction between flow and culture, there are two main frameworks of research: the cross-cultural perspective, focusing on a comparison of flow experience between different cultures, and the cultural perspective, focusing on the role of flow in the diffusion or the maintenance of specific relevant cultural phenomena.

TABLE 11 | Cultural factors.

Authors	
Asakawa and Csikszentmihalyi (2010)	Lee (2013)
Brown and Westman (2008)	Liu et al. (2015)
Busch et al. (2013)	Mao et al. (2016)
Delle Fave and Bassi (2009)	Mesurado et al. (2016)
Garces-Bacsal (2016)	Niu and Chang (2014)
Guizzo and Cadinu (2016)	Tanaka and Ishida (2015)
Jonson et al. (2015)	
Added by the experts:	
Asakawa (2010)	
Coatsworth et al. (2005)	
Montijo and Mouton (2016)	

Studies included did cross-cultural investigations on flow. Also included were studies that dealt with individualism or collectivism, culture and the construction of the self, social identity, or special artifacts (e.g., Manga). Additionally, studies that addressed specific countries were also included here.

Cross-Cultural Perspective

Even if flow has been recognized as a universally valued subjective state (Asakawa, 2010; Delle Fave et al., 2011; Csikszentmihalyi and Wong, 2014), several studies collect data about cross-cultural differences in the flow experience (e.g., Garces-Bacsal, 2016). Results in this field seem not to be proposing a unique view about which kind of culture gives more opportunity to its members to experience flow. Despite studies finding higher frequency and intensity of flow in Western societies compared to non-Western ones (Asakawa, 2010; Liu et al., 2015; Mesurado et al., 2016), Western individuals seem to have a lower propensity to experience flow in meaningful social activities, related to future goals and linked to personal growth (Coatsworth et al., 2005; Asakawa and Csikszentmihalyi, 2010; Montijo and Mouton, 2016). Group activities involved with flow are associated with higher reports of social identification in collectivistic societies than in individualistic ones (Mao et al., 2016). Data shows that flow experience is more intense within the members of cultures characterized by a good balance between the values of both autonomy and relatedness (Busch et al., 2013).

Cultural Perspective

Flow seems to be involved in the spread and the maintenance over time of several specific cultural phenomena. Flow experience represents a useful concept to reach a deep knowledge of youth behavioral trends (Niu and Chang, 2014) and it seems to be involved in several leisure activities that are characteristic of different cultural environments (Jonson et al., 2015; Tanaka and Ishida, 2015). Furthermore, flow correlates with extrinsic and intrinsic religious orientations (Brown and Westman, 2008). An Italian study (Guizzo and Cadinu, 2016) demonstrated that flow disruption can depend on the degree to which people rely on society beauty ideals typically promoted by Western media. Further, flow can play a key role exerting influence on the quality of the migration experience (Delle Fave and Bassi, 2009; Lee, 2013). Despite the implication that flow can foster positive cultural and societal phenomena (Delle Fave and Bassi, 2009; Lee, 2013; Jonson et al., 2015), its amoral character can also lead to dysfunctional ones (i.e., Niu and Chang, 2014). Evidence in this

area of interest are still scarce and further research is needed to clarify and validate results.

GENERAL DISCUSSION

With this Scoping Review, we aimed to (1) present a framework to structure flow research and (2) provide a systematic overview on empirical flow research of the years 2000–2016. In this general discussion, we summarize the results of this review, outline central points of discussion and describe strengths and weaknesses identified in the literature. Following this, we address our final aim: (3) to discuss the implications of our review for future research.

Framework to Structure Flow Research

Firstly, we provided a framework to structure flow research. Secondly, this was then used to collate and summarize the existing literature in the field. Thirdly, based on the first and second, we are able to discuss implications for future research.

The framework distinguishes between individual, interindividual, contextual and cultural levels. Most research has been done on the individual level, with Personality (40 studies; **Table 3**), Motivation (54 studies; **Table 4**), Emotion (49 studies, **Table 6**), Cognition (26 studies; **Table 7**), and Behavior (53 studies; **Table 8**) being the largest categories. On the individual level, the Physiology of flow (21 studies; **Table 5**) is the least studied category; however, in recent years there is a growing trend of research being conducted in this area. There are 94 context level studies (**Table 9**). In comparison, research on flow at the interindividual (13 studies; **Table 10**) and cultural level is underrepresented (16 studies; **Table 11**).

In a Nutshell: Discussion of Findings Within the Categories

Personality

The personality studies on flow were divided into four categories: autotelic personality, dispositional proneness to experience flow, flow and motive-fitting situations and other motives and personality traits. Several dimensions seem to characterize the concept of autotelic personality which are related to flow. However, there is still no widely agreed upon definition of the autotelic personality. Studies on individual differences in flow experiences depend on both situational variables, e.g., the environmental opportunities to engage in flow promoting activities, and personality traits (i.e., openness to experience, extraversion, and conscientiousness). Situational factors seem to have a stronger influence on flow experiences (Fullagar and Kelloway, 2009; Ullén et al., 2016). However, more research is needed to specify the relationship of dispositional and situational factors to predict flow experiences.

Achievement motives and other motives and personality traits, (i.e., optimism, autonomy, self-handicapping, self-control) also seem to be associated with flow experience. However, the variety and even inconsistency (e.g., shyness and mental toughness) of personality traits and motives associated with flow, make it difficult to draw overall conclusions. Relating personality traits and motives to fitting situations seems to be a more promising way to investigate the effects of personality traits and motives on flow in the future.

Motivation

Flow experience is historically linked to motivation (see e.g., Heutte et al., 2021). In line with this, results of this category showed that many motivational indicators, such as volition, engagement, goal orientation, achievement motive, interest, and intrinsic motivation are positively related to flow. Flow was also investigated in the context of self-determination, with results showing associations of flow with autonomous and controlled motivation. Results thus indicate that flow can be considered one of the major volitional theories. This is also in line with results of a meta-analysis by Fong et al. (2015), that highlights the links between flow antecedents (e.g., concentration, merging of action and awareness, and feedback) and sense of autonomy, one of the central components of self-determination. Finally, self-efficacy was an often investigated motivational concept, with results confirming a relationship between self-efficacy and flow. While first studies in this category were largely correlational, more recent studies have started to investigate models that integrate various motivational concepts (often from Bandura or Deci and Ryan's theories) as predictors of flow using structural equation models.

A new and promising challenge in the category *Motivation* concerns modeling research studies that investigate both collective motivational conditions and social dimensions of flow (see Salanova et al., 2014; Heutte et al., 2016). However, in order to fulfill this aim, this work requires construction and validation of multidimensional and short, specific measurement instruments for flow, which also include collective motivational dimensions of flow.

Physiology

Studies on the physiology of flow are yet in their infancy and results are scarce and inconsistent. While the first studies in this category were mostly correlational, more recent studies have started to investigate flow using experimental designs. Some studies regard flow as a predictor of certain physiological states. Others regard physiological states as predictors of flow. A clear physiological pattern of flow has not yet been identified, but this seems to be the next major task for research on the physiology of flow. Presumably, the physiological pattern during flow will not be represented by a single physiological indicator, but rather by a combination of several different physiological indicators. Current developments of machine learning may help to identify such a pattern. Once a physiological pattern of flow is identified, this will help flow research to find a deeper understanding of the flow concept. Flow can then be measured continuously during an activity, without the need to interrupt people. Accordingly, the dynamics of flow over time can be assessed, as well as the variations of flow intensity. Still, it is unlikely that there will be just the one flow-characteristic pattern; rather the physiology of flow depends on the particular activity that one is doing, with people in flow showing the optimal physiological activation to meet task demands (see Peifer, 2012). Building upon this, the

second future research question is how context conditions, such as characteristics of the task (e.g., difficulty) or conditions at the interface between context and person, (e.g., task relevance) moderate the typical physiology of flow.

Emotion

Studies under the topic of emotion and flow cover a wide range of concepts and variables related to affect, wellbeing, or specific feelings like enjoyment. In general, results show a clear association between flow and positive emotional states. There is clearly a predominant focus on the study of *positive* affect, with only few studies analyzing the relationship between negative affect and flow, so more research is needed here. The majority of the studies investigated the role of flow as a predictor of different emotional aspects, showing that the reversed relationship is less studied. Flow and related emotional aspects have been studied mainly from an individual or subjective perspective, with social components of flow and emotion becoming an emergent research issue. Studies under this topic shed light on the importance of understanding the emotional functioning of flow experience to improve its positive outcomes in individuals' lives. Results of the various studies show a large spectrum of practical implications in different areas, such as sports, educational contexts, the video game industry, organizational areas, general health, or quality of life.

Cognition

Cognition studies on flow are extremely broad and touch on very different topics. Most of these look at flow in specific fields and include some cognitive variables but without a main focus on them and also without deeper discussion of the cognitive aspect of flow. "Attention" appears in several "cognition and flow" studies, but how flow and attention exactly are linked is not sufficiently explained. For example, some studies point to attention skills as a necessary precondition for obtaining flow, whilst other studies find that sometimes, people with poor attention skills can still find flow in, for example, activities where they have high levels of interest and engagement. More research is needed to understand the relation of flow with cognitive processes. This research could also help both deepening and widening some of the research questions that have emerged from the reviewed studies, relating, for example, to the disassociation between sense of control and sense of agency in flow experiences, or the understanding of the exact role of awareness in optimal experience.

Behavior

Overall, many effects of flow on behavioral outcomes were shown. Most studies in this category dealt with performance-related outcomes and found positive association between the two. However, one has to be careful when interpreting direction of the effects: Most studies in this category are correlational only and therefore it is not possible to deduce the direction of effects. Landhäußer and Keller (2012) argue that flow, on the one hand, has a direct positive effect on performance, because individuals in flow are highly concentrated. On the other hand, individuals have a higher motivation to re-engage in a task when flow was experienced resulting in higher performance through practice (Landhäußer and Keller, 2012). Accordingly, there is a clear need for longitudinal studies and for identifying moderators and mediators in the relationship between flow and performance in order to specify the direction of effects. Other studies looking at behavioral outcomes such as customer-oriented behavior and (online) consumption-behavior hold interesting implications for organizations, advertisement and therapy, though again more longitudinal and experimental research should be conducted to reach more solid conclusions and to start designing useful interventions to increase performance and wellbeing.

Contextual Factors

In summary, flow occurs in many different contexts and activities, and there are many contextual factors that promote flow. A fit between contextual factors (e.g., demands) and individual characteristics (e.g., skills; see also section on personality and flow) seems to play a particularly important role in the emergence of flow. However, this category contains many articles, as it includes all environmental factors which may affect flow experience. It is presumably the broadest category within this review. While we have at least distinguished the social environment as a sub-category within the contextual level, future frameworks could further distinguish different environmental factors, such as factors on the task level, the social/organizational level (for work settings) and factors at the interface of the individual with the task and the organization. A framework which has recently tried to implement such a structure is the three spheres framework of flow antecedents (Peifer and Wolters, 2021). In addition, it could be useful to differentiate direct interaction from more indirect social influence such as organizational climate.

Interindividual Factors

Overall, studies in this category were yet quite scarce, but we could see a growing tendency to measure, conceptualize and investigate interindividual factors of flow. This is evidenced by a growing number of studies published in more recent years within the timeframe of our review. Furthermore, within the EFRN, we see a growing number of conference contributions and EFRN members starting to investigate flow in social contexts. We conclude that there is increasing awareness of interaction effects among people in relation to flow experiences. When reviewing the existing literature, we found that the research on interpersonal flow lacks a broad conceptualization and is instead limited to individual flow experiences while being part of a collective (e.g., dyad, group). A clear challenge of future flow research is to differentiate individual flow in social contexts from social flow as a social phenomenon with potentially different qualities than individual flow. A recent suggestion to differentiate flow and team flow was made by Peifer et al. (2021), suggesting that flow and team flow share the central components of individual flow, while team flow-specific components are added. In their studies, van den Hout et al. (2018) bridge individual experiences of flow with collective

experiences of flow. In their conceptualization of team flow, they differentiate individual experiences of flow while being part of a team dynamic, with experiences of flow at the team level, where the team dynamic (or team process) itself, as a coherent unit, is *flowing*. When all members that are part of the team dynamic are experiencing flow while executing their personal tasks/roles for the team, and the collective itself is flowing a unique experience emerges, which they refer to as *full team flow*, that is originated by seven prerequisites and four experiential characteristics (van den Hout et al., 2019; van den Hout and Davis, 2021).

Future directions include studying interindividual flow through the grounded theory approach (see Csikszentmihalyi, 1975), conceptual cross-fertilization with social and organizational psychology, and developing reliable self-reported and behavioral measures of the phenomenon, experimentation and longitudinal studies. Social flow and its emotional features appear as an emergent issue in flow studies. However, finding a measure for assessing interindividual flow as a group phenomenon without passing through aggregation of self-reported individual data is a major methodological challenge for future research of this topic.

Cultural Factors

Culture and Flow represents an important theoretical perspective and several theoretical and empirical contributions in this field have been collected recently in specific scientific books (i.e., Delle Fave et al., 2011; Csikszentmihalyi and Wong, 2014; Inghilleri et al., 2014). Despite this, we notice a general lack of published empirical articles dealing with flow in the cultural context, even if existing research shows its underlying relevance for investigating flow-fostering activities. Furthermore, flow has the potential to interact significantly with cultural phenomena of different nature, both positive and negative for human beings. Thus, we suggest that future research should put additional emphasis on the effects of culture on flow and vice versa.

Overarching Aspects for Future Research and Limitations of This Review

After having discussed the specific open research questions for each category, we would now like to outline general aspects for future research, which we could identify as overarching topics and as limitations of this review. In particular, these concern (1) definitional and operational issues, (2) methodological issues and the resulting problems of causal conclusions regarding antecedents and consequences of flow, as well as (3) the time frame of this scoping review.

Definitional and Operational Issues

Many studies worked with different definitions and operationalization of flow experience so one must be careful when comparing results. For example, some studies (e.g., Baumann and Scheffer, 2011; Oertig et al., 2014) used the Flow Short Scale (Rheinberg et al., 2003). Others used the Practice Flow Inventory (Heller et al., 2015), Jacksons' and Eklunds' (2002) Dispositional Flow Scale-2 (Sinnamon et al., 2012) the Flow State Scale-2 (Wrigley and Emmerson, 2013) or the EduFlow model (Heutte et al., 2016). While beyond the scope of this review, for future research, there is a need to find a common definition and operationalization of the flow concept, including a common measure of flow which is used in future research to enhance the comparability of results. The EFRN has started to fulfill this aim by agreeing on a definition of flow (see section "Introduction"), and members of the EFRN have suggested models to aggregate components of flow and team flow (e.g., van den Hout et al., 2018; Heutte et al., 2021; Peifer and Engeser, 2021; Peifer et al., 2021). The next steps will be to discuss and agree on models and respective measurements.

Methodological Issues

In general, while conducting the review, the authors found many correlative studies, and causal interpretation of such data is not possible. Many of the reported studies suggest a causal interpretation of their results based on theoretical assumptions. However, this is problematic, as different theoretical assumptions also seem possible. In conclusion, antecedents and consequences of flow are not yet as clear as they should be, considering the immense amount of studies which have been conducted. While this is beyond the scope of this review, future reviews should focus on a systematic look at the methods behind the studies. Here, we want to emphasize that what is needed in the future is mainly longitudinal and experimental studies.

Another methodological aspect which we found as an overall topic is that most of the research was conducted with (young) adults; there is a lack of flow research on children as well as adolescent and elderly populations. In general, there is a need for studies testing more complex models to understand multiple relations between variables.

Time Frame and Inclusion Criteria of This Scoping Review

Our Scoping Review provides a systematic overview on flow research between the years 2000 and 2016. A task force of flow research from the EFRN united their expertise in order to provide a sound scientific summary and discussion of flow research in these years and implications for future research. The work on this scoping research started in November 2015, during the EFRN meeting in Braga, Portugal. The literature search was conducted in 2016 and updated in 2017 in order to cover all articles until the end of the year 2016. The process of writing and revising the article took a long time and another update of the literature search would have exceeded the word limit of a journal article, particularly as flow research has been further increasing in more recent years.

Furthermore, we set strong exclusion criteria by only allowing studies that mentioned "*Csikszentmihalyi*" and that were listed in specific search platforms. We selected the most relevant platforms for our literature search, thereby excluding other platforms (e.g., CINAHL, ProQuest, SocIndex, and SocAbs). Therefore, it is entirely possible that not all relevant flow studies are included in our review. As experts were allowed to add additional studies they considered relevant, we hope that in the final analysis we have identified the majority of relevant studies. Furthermore, we only

included studies that were published in the English language, and there are certainly interesting results published in other languages that are not covered here.

While the time frame as well as the strong exclusion criteria are clear limitations of this review, we still believe that the provided overview will help to stimulate and direct future flow research.

CONCLUSION

Flow research between 2000 and 2016 has made huge progress in understanding flow. Our review provides a framework to cluster flow research and gives a systematic overview about existing studies and their findings in the field. While much research has been done in the past, our review derives future lines of research to foster scientific progress in flow research.

AUTHOR CONTRIBUTIONS

CP: project coordinator, introduction and discussion. GW: project coordinator, literature research, discussion, behavior, and context factors. ST: professional advice during the process. GW and LH: personality. JHe and GW: motivation. CP and JT: physiology. TF, DT, and CF: emotion. ST and FA: cognition. JHo and MŠ: interindividual factors. LP: cultural factors. LC: review of parts of the manuscript. All authors: categorization and selection of abstracts.

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