Evaluating Employee Positive Functioning and Performance:

A Positive Work and Organizations Approach

By

Scott I. Donaldson

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of the requirements for the degree of Doctor of Philosophy in Psychology

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Approval of the Dissertation Committee

This dissertation has been duly read, reviewed, and critiqued by the Committee listed below, which hereby approves the manuscript of Scott I. Donaldson as fulfilling the scope and quality requirements for meriting the degree of Doctor of Philosophy in Psychology, concentration in Evaluation and Applied Research Methods, co-concentration in Positive Organizational Psychology.

Dr. Tarek Azzam, Chair Associate Professor University of California, Santa Barbara

Dr. Tiffany Berry, Member

Full Research Professor Claremont Graduate University

Dr. Jeffrey Yip, Member

Assistant Professor of Management Simon Fraser University

ABSTRACT

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A Positive Work and Organizations (PWO) approach uses scientific methods to improve the understanding of individual, team, and organizational well-being and performance (Warren, et al., 2017). One area of inquiry within the PWO approach involves designing and evaluating positive psychology interventions (PPIs) at work. The current research used a multi-phase exploratory sequential mixed method design to evaluate the effectiveness of PPIs at work using process evaluation, and tested a framework of employee positive functioning expanding on Seligman's PERMA Theory of Well-Being (Seligman, 2011).

Four related studies were carried out examining the fidelity, quality of implementation, and effectiveness of 22 PPIs at work, and testing the validity of a new Employee Positive Functioning (EPF) scale with more than 1,000 full-time employees. The ability of the EPF Scale to predict important work outcomes was also examined.

Taken together, these studies show that PPIs implemented at work can be effective at improving employee well-being and organizational performance. They also show that the EPF scale exhibited convergent, discriminant, criterion, predictive, and incremental forms of validity with other well-being and performance measures, as well as measurement invariance across job functions. In addition, the EPF scale was predictive of important work outcomes, such as turnover intentions, job-related affective well-being, and individual, team, and organizational adaptivity, proactivity, and organizational proficiency. It is recommended that organizations consider using the validated EPF scale to determine the specific needs of their workforce, and to use this needs assessment to help tailor positive psychology interventions to be more effective in work settings. The benefits of multicomponent PPIs and the theoretical and practical implications of this study for the design and evaluation of future PPIs at work are discussed.

DEDICATION

I would first and foremost like to thank all of my immediate family members — Dad, Mom, Candice, Russell, and Diamond — who inspired me along my educational journey. My Dad has played a major role in developing my character, from coaching all my sports teams to mentoring me through a PhD program. I would personally like to thank him for instilling in me grit, integrity, and the ability to think big. My Mom taught me how to be compassionate, considerate, and loving towards others, which has served me well in my interpersonal relationships. My brother Russell and I always pushed each other growing up, and I am grateful for our close relationship. Thanks to my older sister Candice for always handling my questions about getting older. I apologize for my inquisitive nature. Finally, thanks to Diamond - my late childhood dog - for always casting a nonjudgmental bark throughout my life. I hope I made you all proud!

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CHAPTER 1

INTRODUCTION

"Life, liberty, and the pursuit of happiness" is the American credo set forth by Thomas Jefferson and the Committee of Five nearly 250 years ago, referring to unalienable human rights towards well-being, given by our creator and protected by the government. However, the concept dates back millennia to Socrates, Plato, and the Aristotelian view in *Nicomachean Ethics*, which argued that well-being (vivere bene) is the pursuit of excellence, virtue, and self-realization (Ryan & Deci, 2001; Waterman, 2008). Thus, it could be argued that positive psychology has long been relevant not only in the fabric of American society, but also in intellectual discussions of the world's greatest thinkers.

The modern field of psychology built a research tradition on the medical disease model, focusing on human deficits, such as depression and anxiety, as well as effective ways to cope with mental illness. At the turn of the 21st century, Seligman and Csikszentmihalyi (2000) argued for a broader understanding of human behavior and co-pioneered the field of positive psychology, defined as "the science of positive subjective experience (e.g., well-being, contentment, flow, pleasure, and hope), positive character traits (e.g., grit, wisdom, resilience, and creativity), and positive institutions (i.e., organizations, communities, and societies that promote citizenship and civic responsibility)" (p. 6). There now exists thousands of peerreviewed journal articles on positive psychology, many higher education certificate programs, and attention from mainstream media. Donaldson and Ko (2010) suggested the field of positive psychology is only going to grow in terms of popularity, research, and scholarship in the new millennium.

The Workplace of Tomorrow

Contemporary organizations face a volatile, uncertain, complex, and ambiguous workplace (Bennett & Lemonine, 2014). The advent of robots, artificial intelligence, and machine learning presents dynamic management and leadership challenges that are constantly redefining employee success in the changing workplace. In addition to an uncertain workplace, employees are working increasingly longer hours (46.7 hours a week; Saad, 2014), making them at-risk for impaired physical, emotional, and social well-being. Mckee (2017, para. 4) suggested "two-thirds of employees in the United States are bored, detached or jaded and ready to sabotage plans, projects and other people," and Willis Towers Watson (2017) found that "one-fifth of employees expect to still be working at age 70" (p. 2). Thus, arduous job demands and diminishing personal resources are pushing American workers beyond their limits.

In order to combat these issues, employee wellness programs are proliferating the American workplace. It is estimated that by 2021, \$11.3 billion dollars will be invested on employee well-being initiatives, including health care programs and interventions designed to improve employee health and work outcomes (Agarwal, Bersin, Lahiri, Schwartz, & Volini, 2018). The emerging science of Positive Work and Organizations (PWO) is one approach dedicated to improving employee positive functioning and performance. Donaldson, Lee, and Donaldson (2019) conducted the first meta-analysis on the relationship between PPIs at work and organizational effectiveness, including five positive psychology theory types (i.e., psychological capital, job crafting, strengths, well-being, and gratitude). They found small to moderate positive effects on work outcomes, which were slightly stronger for improving undesirable work outcomes, such as turnover intentions and burnout. However, the theoretical

and practical mechanisms for why and under what conditions these interventions were effective are yet to be explored.

Evaluating Positive Psychology Interventions at Work

There exists an opportunity to use evaluation science as a tool to further understand PPIs at work. Meyers, van Woerkom, and Bakker (2013) defined a PPI at work as an intentional activity or method that identifies, builds, and/or broadens any aspects of the three pillars (i.e., positive subjective experience, positive traits, positive institutions) as part of or as a by-product (at the individual, team, or organizational level) of an organizational intervention. Hendriks et al. (2019) suggested PPIs should improve positive feelings, behaviors, and cognitions, while also using theoretical mechanisms to improve well-being. In their meta-analysis and systematic review, Donaldson et al., (2019) expanded Meyers et al. (2013) definition of PPIs at work to include any intervention that explicitly utilizes the theory and scholarship of PWO to guide, plan, design, and/or implement the intervention under consideration. For a comprehensive review of PPIs at work including definitions used to define PWO theory and scholarship, please consult Donaldson et al.'s (2019) meta-analysis published in the *International Journal of Applied Positive Psychology*.

Next, an important distinction should be made between single component positive psychology interventions (SPPIs) and multi-component positive psychology interventions (MPPIs) reviewed in the extant literature (cf. Donaldson Lee, & Donaldson, 2019a, b). Whereas SPPIs target one theoretical mechanism of positive psychology (e.g., gratitude), MPPIs target two or more theoretical pathways (e.g., PERMA model). Hendriks, Dijkstra, Hassankhan, Jong, and Bohlmeijer (2019) suggested that MPPIs should "contain a variety of evidence-based individual exercises and target two or more theoretically relevant hedonic and eudaimonic well-

being components that are conducted within an integral program" (p. 3). Rusk, Vella-Brodrick, and Waters (2018) reviewed a wealth of research that demonstrated the effectiveness of a multicomponent systems approach to psychological change. Thus, Phase One of this dissertation sought to extend Donaldson and colleagues work by using a process evaluation strategy to evaluate SPPIs versus MPPIs at work. Process evaluation provides a framework to assess the relationship between the role of positive psychology theory, quality of intervention implementation, and impact on work outcomes (Moore et al., 2015).

Capturing Employee Positive Functioning with PERMA

As a result of evaluating PPIs at work, an important measurement opportunity emerged to expand on an existing multidimensional model of well-being. Several multidimensional positive psychology frameworks aim to measure positive functioning and inform the design of MPPIs, including the Positive Activity Model (PAM), the Synergistic Change Model (SCM), and Five Domains of Positive Functioning (DPF-5), among many others (see Chapter 2 for comprehensive literature review). Furthermore, Jayawickreme, Forgeard, and Seligman (2012) proposed *The Engine of Well-Being Framework* to integrate well-being models into one meaningful multidimensional typology, including inputs, processes, and outcomes of well-being (see Jayawickreme et al., 2012, p. 336, for entire framework). Seligman even developed and validated his own widely known theory of well-being called PERMA (i.e., positive emotions, engagement, positive relationships, meaning, accomplishment) defined as an outcome in the *The Engine of Well-being Framework*.

While there are numerous positive psychology models and an integrative framework, there is scant research that captures the multi-dimensional nature of well-being at work (Kun, Balogh, & Krasz, 2017). *The Engine Framework* outlines important domains that span across the various inputs, processes, and outcomes of well-being. However, as Seligman (2011) pointed out, there is no measurement model that exhausts each of the stages of the *Engine Framework*, and there has been no attempt to validate and design such frameworks in the workplace. Seligman's (2011) PERMA was an initial attempt to scientifically decompose the multidimensional nature of well-being. However, Jayawickreme et al. (2012) suggested that PERMA is not an exhaustive measurement strategy for well-being. As such, the current research attempted to provide a comprehensive measure of well-being at work, expanding on the PERMA model with four additional theory-driven constructs – positive mindset, positive economic security, positive physical health, and positive physical work environment - called employee positive functioning (EPF). The resulting nine dimensional measure of EPF adds an employeedriven model to a growing literature on multicomponent positive psychology frameworks (Hendriks et al., 2019).

The Current Study

The current research used an exploratory sequential mixed methods design (Creswell & Plano Clark, 2011). Creswell and Plano Clark suggested an exploratory sequential mixed methods design is useful when a qualitative method can help inform a second, quantitative method. Specifically, exploration is needed when there are no available quantitative measures or instruments. Phase One of this dissertation used process evaluation to explore why and under what conditions MPPIs were more or less effective than SPPIs. Phase One explored positive psychology theories, intervention activities, dose, and contexts in which these interventions were implemented.

Findings from Phase One helped inform the development of a novel, multi-dimensional framework which expanded on Seligman's Theory of Well-Being. Beyond the five pillars of

PERMA, this study tested the predictive validity of four new pillars on work outcomes – positive economic security, positive mindset, positive physical health, and positive physical work environment. Phase Two findings helped develop a validated scale of EPF that can be used to design and evaluate future PPIs in the workplace. Two hypotheses were explored in Phase One:

Hypothesis 1. Multicomponent positive psychology interventions at work will have a higher ratio of significant work outcomes to null work outcomes measured at posttest compared to single component positive psychology interventions.

Hypothesis 2. Characteristics of the process evaluation, such as dose, reach, and research design, will vary based on whether or not interventions used MPPIs or SPPIs.

Phase Two developed and validated the EPF scale, testing for convergent, discriminant, incremental forms of validity, and measurement invariance. The first hypothesis was that the EPF scale would be positively correlated with other similar measures of well-being in the positive psychology literature, including the Satisfaction with Life Scale (SWLS; Diener, 1985), and PsyCap Questionnaire Short Form (PCQ; Luthans, Yousseff, & Avolio, 2007). These two scales have been shown to predict both important employee and organizational outcomes, as well as estimate population well-being (Avey, Reichard, Luthans, & Mhatre, 2011; Kobau, Sniezek, Zack, Lucas, & Burns, 2010). In addition to examining the relatedness of the various well-being measures, it was important to know if the EPF scale contributed unique variance to measures of well-being. The following hypotheses were tested:

Hypothesis 3. Scores on the EPF scale will be positively related with the SWLS and PCQ Short Form.

Hypothesis 4. Scores on the EPF scale will be negatively related with the Job Stress Scale (JSS; Lambert et al., 2006).

Avey et al. (2011) developed a two-dimensional typology of employee attitudes, which is meant to serve as a framework for human resource managers in most workplace situations. For example, they included desirable attitudes, behaviors, and performance, and undesirable attitudes, behaviors, and performance. This framework was used to select employee work outcomes (see Inclusion Criteria for Well-Being Measures and Workplace Outcomes), including Organizational Citizenship Behavior (OCB-C; Spector, Bauer, & Fox, 2010), Positive Work Role Behaviors (Griffin, Neal, & Parker, 2007), and Job-Related Affective Well-Being (JAWS; Van Katwky, Fox, Spector, & Kelloway, 2000). In addition, along with establishing convergent and discriminant validity with related well-being and performance measures, was the need to demonstrate the incremental and predictive validity of the EPF scale. Thus, it was hypothesized that the four new dimensions would predict unique variance above and beyond the five pillars of the PERMA model, and the EPF scale would predict unique variance above and beyond PCQ and SWLS.

Hypothesis 5. Scores on the EPF scale will be positively related to positive work outcomes, such as OCB, JAWS, and Positive Work Role Performance.
Hypothesis 6. Scores on the EPF scale will be negatively related to negative work outcomes, including Turnover Intentions (TIS-6; Roodt & Bothma, 2013).
Hypothesis 7. Beyond the five PERMA pillars, each of the four additional EPF pillars (i.e., positive economic security, positive health, positive mindset, and positive physical work environment) will predict unique variance in both positive and negative work outcomes.

Hypothesis 8. Scores on the EPF scale will significantly predict turnover intentions and positive work role performance above and beyond PCQ and SWLS.

Hypothesis 9. Scores on the EPF scale will not vary based on job function.

CHAPTER 2

LITERATURE REVIEW OF PHASE ONE

Positive Work and Organizations (PWO)

Scholars in the fields of management, leadership, human resources, and organizational psychology, among many others apply the PWO perspective to their research and practice (Donaldson & Dollwet, 2013). This multidisciplinary approach encompasses several interrelated research identities, such as positive organizational behavior (POB), positive organizational psychology (POP), and positive organizational scholarship (POS). Positive organizational behavior (POB) was developed by Fred Luthans and seeks to develop and measure human resource strengths that improve organizational performance (Luthans, 2002). The central topic in POB is psychological capital, which is comprised of hope, self-efficacy, optimism, and resilience. Positive organizational scholarship (POS) is focused on "positive outcomes, processes, and attributes of organizations and their members" (Cameron, Dutton, & Quinn, 2003, p. 3). Example topics in POS include appreciative inquiry, positive deviance, and peak performance. Lastly, POP is defined as the "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 & Ko, 2010, p. 178). Donaldson and Ko (2010) reviewed POP research and found three of the most frequent topics included positive leadership, positive organizational development, and positive psychology at work.

While all three research streams are focused on investigating employee and organizational flourishing, there are subtle methodological differences that make their research perspectives unique. Whereas POB is primarily concerned with individual psychological capacities and their relationship with work performance, POS tends to investigate positive elements of organizations (Bakker & Schaufeli, 2008). Donaldson and Ko (2010) also pointed out that POS studies are usually conducted at the organizational level with qualitative research methods, while POB studies tend to be conducted at the individual level with survey research. Donaldson and Ko (2010) originally proposed that POP serve as an umbrella term for POS and POB. More recently, Warren, Donaldson, and Luthans (2017) suggested PWO best encapsulates POP, POB, and POS, especially because there is an *International Positive Psychology Association* division dedicated to the science of PWO (see IPPA, Positive Work and Organizations Division, 2019).

Brief Overview of Organizational Development Interventions

Positive psychology interventions in the workplace are thought of as an extension of traditional organizational development interventions (ODIs). Beckhard (2000) defined ODIs as "an effort which is planned, organization wide and managed from the top to increase organization effectiveness and health through planned interventions in the organization's processes, using behavioral science knowledge" (p. 20). Organizational development interventions have been classified intro three categories: human processual (HP), technostructural (TS), and multifaceted designs (MF; Friedlander & Brown, 1974). Human processual approaches include interventions that are targeted at the psychological and interpersonal aspects of work. For example, counseling/coaching interventions help advise employees how to deal with interpersonal problems in the workplace. Other examples include

team building activities (e.g., to help build cohesion in work teams) and survey feedback (e.g., assess workplace climate). Technostructural interventions aim to redesign work roles and tasks, as well as design sociotechnical systems. The goal of these interventions is to engage employees on the technical and social needs of the workplace. Finally, MF interventions combine aspects of both HP and TS interventions. These interventions may include both survey feedback and job enrichment.

Nicholas (1982) examined the impact of ODIs on hard criteria measures at work, including absenteeism, profits, and work effectiveness, among many more. He found that, overall, TS interventions were relatively ineffective at producing organizational outcomes, whereas HP interventions were more successful. Human processual interventions were particularly effective for salaried, white collar employees and managers, while being less effective for blue collar workers. Multifaceted interventions were the most effective. These findings were also replicated in a meta-analysis examining the relationship between ODIs and job satisfaction (Neuman, Edwards, & Raju, 1989). Across 126 studies, Neuman et al. (1989) found the overall effect on satisfaction and other attitudes to be moderate, however, the largest effects were once again seen with the managerial, white collar positions in response to HP interventions.

Other ODI reviews have also demonstrated weak to moderate effects on work outcomes. For example, Salas, Rozell, Mullen, and Driskell (1999) meta-analyzed the effects of team building interventions on performance. They found nonsignificant, negligible effects where magnitude of these interventions was r = .007. Grover and Furnham (2016) reviewed coaching interventions and found there was not enough primary data or methodological rigor to investigate the impact of coaching on work outcomes. Further, Richardson and Rothstein (2008) meta-

analyzed the effects of occupational stress management interventions on psychological outcomes, and found that while cognitive-behavioral and relaxation interventions had the largest impact on psychological outcomes variables, there were only small effects on work outcomes (e.g., job satisfaction, motivation, role ambiguity, etc.). Finally, Virgili (2015) conducted a meta-analysis on the effects of mindfulness-based interventions on psychological distress in working adults, and found a robust medium-large effect. However, Virgili's review failed to describe mechanisms for why mindfulness worked, and contained several other limitations. For example, his review did not look at health or work outcomes, and had selection-bias in the experimental group, meaning participants were able to decide whether or not they wanted to receive a mindfulness intervention.

Critical synthesis. Both ODIs and PPIs are designed to improve employee health, wellbeing, and organizational effectiveness. However, Schueller and Parks (2014) suggested PPIs should have a unique psychological pathway apart from traditional ODIs. Whereas the main emphasis of ODIs is to repair problems that occur in the workplace, such as burnout and stress (Richardson & Rothstein, 2008), PPIs at work target positive qualities of the employee experience (e.g., flow at work, peak performance, positive deviance). Fredrickson (1998, 2001, 2009) suggested there is functional importance of promoting positive psychological pathways in the workplace. Whereas problem-focused interventions support a reduction in survivalpromoting action (e.g., fight or flight response), PPIs promote psychological thought-action repertoires that can be used as resources at a later time. Overall, the ODI meta-analyses reviewed suggested only weak relationships with work outcomes. There were moderator effects of successful interventions, including cognitive and stress management interventions on psychological work outcomes, and HP interventions with managerial workers. Largely, reviews demonstrated limited success of ODIs to date. While this may be true, Donaldson et al.'s (2019) meta-analysis of PPIs at work demonstrated a robust small-medium effect on work outcomes. Specifically, strengths-based and PsyCap interventions demonstrated medium-large individual effects on work outcomes. While the small study sample (N=22) should be interpreted with caution, these findings suggest that PPIs at work may operate on a different psychological pathway than ODIs, and be effective at improving work outcomes.

Applying Evaluation Science to Complex Interventions

Evaluation "involves making judgments about the merit, value, significance, credibility, and utility of whatever is being evaluated..." (Patton, 2018, p. 185; Scriven, 1991). Evaluation science is thought of as a systematic inquiry into the effectiveness of interventions aimed at changing the world we live in. Evaluation has commonly been described as a transdiscipline, rather than a traditional discipline and profession. In particular, Scriven (2003) argued that evaluation belongs to an elite group of disciplines (e.g., like statistics, design, and logic) that are better described as a transdiscipline. These transdisciplines are notable because they supply tools for other disciplines while retaining an autonomous structure and research effort of their own. There are multiple applications of evaluation practice including the improvement of public health and healthcare, education, psychology and mental health, international development, community development, human resources, and organizational development among others (Donaldson & Picciotto, 2016).

Phase One used a process evaluation approach to evaluate SPPIs versus MPPIs at work. The purpose of using process evaluation was to understand the interplay between intervention design and quality of implementation. The Medical Research Counsil (MRC) developed guidelines for the process evaluation of complex interventions (Moore et al., 2015; see Figure 1),

which were used to guide Phase One of this dissertation. They provide strategies for how to evaluate contextual factors, implementation, mechanisms of impact, and outcomes of complex interventions. For example, contextual factors in Phase One included the five positive psychology theories reviewed in Donaldson et al. (2019): PsyCap, job crafting, strengths, wellbeing, and gratitude. Implementation included characteristics such as reach, dose, randomizations strategy, and research design used in PPIs at work.

Furthermore, Phase One analyzed interventions based on the number of theoretical components involved in the intervention design. Rusk et al. (2018) suggested interventions that are multicomponent are more effective at explaining psychological outcomes than single component interventions. Rusk and colleagues use complexity theory to outline three dynamic processes that may occur as a result of MPPIs: relapse, spill-over, and synergy. Relapse occurs when there is not enough momentum in the complex system to initiate change. For example, the intervention effects of single component theories, such as gratitude, found no effects in one study at a three and six month follow up (Seligman, Steen, Park, & Peterson, 2005). Rusk and colleagues argued that singular theories for isolated changes are less likely to result in outcomes to the psycho-social system than dynamic systems change. Spill-over refers to positive emotions may spill-over and improve positive relationships as a consequence of MPPIs. Finally, synergy occurs when several aspects of the intervention interact to create a new, stable pattern of behavior.

Figure 1. MRC guidelines for process evaluation



Transition between phase one and phase two

Phase One mapped the process implementation of 22 well-studied PPIs at work, using a single versus multicomponent analytic lens. Findings demonstrated a stark difference between the effectiveness of SPPIs versus MPPIs. More specifically, within MPPIs at work, well-being interventions had the highest ratio of significant to null work outcomes measured at posttest (i.e., 8:1). Further examination of the well-being models used in these interventions included the PERMA model, CREW, and Working for Wellness Program. Seligman's (2011) PERMA theory of well-being is one of the most widely validated and applied multidimensional well-being models in the positive psychology literature. Findings from Phase One lead to a content analysis of PERMA model, which eventually set the stage for a new measurement model building on PERMA in Phase Two. The goal of the new positive functioning framework is to serve as a novel MPPI that can be used for future interventions in the workplace. Prior to reviewing the literature that was used to develop the new model, it is important to review the theoretical foundation of positive functioning.

Literature Review of Phase Two

Theoretical Foundation of Positive Functioning

Throughout the epochs of history, human well-being has been a central topic in philosophy, government, science, and mainstream media, among many others (Jayawickreme et al., 2012). Contemporary scholars in the humanities and social sciences have categorized theories of well-being into three main subtypes: Liking theories, Wanting theories, and Needing theories (Angner, 2006; Parfit, 1984; Dolan, Peasgood, & White, 2008). Liking theories of wellbeing focus on subjective feelings of human happiness (Diener, Suh, Lucas, & Smith, 1999). The most widely cited measure in positive psychology is subjective well-being (SWB), which incorporates both mood and cognitive evaluation about how well life is going (Kashdan, Biswas-Diener, & King, 2008). Wanting theories suggest that people derive well-being from fulfilling idealized preferences, such as making money. Kahneman (1999) recommended that this type of well-being should be defined in terms of observed choices that follow positive reinforcement patterns (e.g., behavioral economics, market driven approaches to understanding well-being). Finally, Needing theories fall in line with Eudaimonic conceptions of well-being, dating all the way to Nichomachean Ethics (350 BC; Waterman et al., 2011). Eudaimonic theories of wellbeing define human flourishing as striving for the best of human potential. Eudaimonic theories of well-being tend to be more theory-driven and focused on positive functioning of individuals. Seminal examples include Maslow's Hierarchy of Needs (Maslow 1954, 1971), Ryff's Psychological Well-Being (Ryff, 1989), and Ryan and Deci's (2001) Self-Determination theory.

From the positive psychology movement, a number of frameworks have emerged that aim to further understand positive functioning. One of the original frameworks was the Values in Action Character Strengths Framework (VIA; Peterson & Seligman, 2004). This inventory was designed to measure trait-like qualities, such as perseverance, humility, and empathy. The VIA character strengths have been tested in strengths-based interventions, which demonstrated a link

to improved employee well-being, leadership, and coaching outcomes (Mackie, 2014; Quinlan et al., 2012). Layous, Sheldon, and Lyubomirsky (2013) proposed the Positive-Activity Model (PAM), which explains how PPIs interact with positive activities (e.g., positive emotions, positive thoughts, positive behaviors, and need satisfaction), activity features (e.g., dosage, variety), and person features (e.g., motivation, personality) to make people happier. Sheldon et al. (2010) found that people who engaged in positive activities experienced greater well-being than people who focused on their life circumstances.

Rusk and Waters (2015) developed a psycho-social systems approach to well-being that analyzes the role of environmental and biological factors towards improving well-being. Their approach incorporates environmental, historical, and neurological factors that contribute to wellbeing. Rusk and Waters (2013) also used a co-term analysis to identify five domains of wellbeing (DPF-5): attention and awareness, comprehension and coping, emotions, goals and habits, and virtues and relationships (p. 146). Another framework is the Questionnaire for Eudaimonic Well-Being (QEWB; Waterman et al., 2010). This scale was developed to assess well-being in a manner consistent with eudaemonist philosophy. It includes six dimensions of Eudaimonic wellbeing: perceived development in one's best potentials, a sense of purpose and meaning in life, investment of significant effort in pursuit of excellence, intense involvement in activities, and enjoyment of activities as personally expressive. Waterman et al. (2010) found support for psychometric validity of the QEWB as an instrument for measuring well-being.

In order to reconcile the major theories of well-being into one typology, Jayawickreme et al. (2012) developed the *Engine of Well-Being*. This framework organizes well-being around inputs, processes, and outcomes, which serves as a "prologue to any adequate theory of well-being" (p. 337). Input variables include exogenous and endogenous predictors of well-being,

such as income, education, and health. Process variables are subjective states that influence the choices one makes. Examples of process variables include positive emotions, cognitive evaluation, and engagement. Outcome variables are intrinsically motivating and should satisfy three conditions: contribute to life well-lived, many people pursue it for its own sake–not merely to get any of the other elements, and independent of the other outcomes (Jayawickreme et al., 2012).

Along with the Engine Framework, Seligman's created his own Well-Being Theory called PERMA. Seligman (2002) originally claimed that "happiness" is composed of three elements: positive emotion, engagement, and meaning, however, he equated this with a Liking theory of well-being that was largely subjective and incomplete. After further analysis, Seligman (2011) revised his original theory by adding positive relationships and accomplishment, and redefining the endpoint of his theory as "well-being" rather than happiness. While Seligman's updated theory of well-being (i.e., PERMA) is not exhaustive, it is meant to serve as a multi-dimensional, eudaimonic framework that represents the general construct of well-being.

Critical synthesis. Each of the well-being frameworks mentioned above was developed by experts in the field of positive psychology, and serves various roles (i.e., input, process, outcome) on the *Engine of Well-Being* (Jayawickreme et al., 2012). The VIA focuses on measurable character strengths that align with inputs of well-being. Seligman's PERMA model is focused on well-being outcomes rather than inputs and processes. The PAM is focused on external PPIs that can influence well-being but no other elements included in the *Engine of Well-Being*. Rusk and Waters (2013) psycho-social functioning model focuses on environmental, historical, and biological factors crucial to positive functioning; however, each sub-domain fails to provide specific operationalizations on each construct. Thus, the lack of a quantitative and

operationally specific model makes it difficult to empirically measure individual positive functioning. Finally, Jayawickreme et al. (2012) *Engine of Well-Being* is dynamic but lacks important measures of well-being, such as economic security, mindset, and health.

Theoretical Rationale for Four New Dimensions

Building on Seligman's Theory of Well-Being (i.e., PERMA), there is a theoretical rationale for adding, positive economic security, positive physical health, positive mindset, and positive physical work environment. First, Jayawickreme et al. (2012) and others mentioned the importance of income as a domain at the input level, however, there is no subjective measure of economic security. Second, physical health is an important input for well-being, but there is also no subjective level of measurement that exists to evaluate an individual's perception of their own physical health in the PERMA model. Third, the process component of the model includes internal states, such as self-control, positive affect, and cognitive evaluation. Yet, it does not include a future-oriented, developable measure of positive mindset, which is integral to influence individual choice (Dweck, 2006). Finally, there is no mention of the role the physical environment plays on employee optimal functioning and performance. Thus, the predictive validity of these four new dimensions on work performance was explored.

Seligman (2008) suggested *positive health* is characterized by excellent status on biological, subjective, and functional measures, which can predict higher quality of life, better health prognosis, and lower health care cost. Positive health is not the mere absence of illness, but instead comprised of health assets that are cost saving and lifesaving. Several constructs in the positive psychology and PWO literature attempt to define and measure aspects of a *positive mindset* without explicit consideration. Some of these constructs include positive psychological capital and growth mindset. Numerous studies have found a connection between PsyCap and

important work outcomes, such as well-being, job performance, and job satisfaction (Avey, Luthans, Smith, & Palmer, 2010; Peterson, Luthans, Avolio, Walumbwa, & Zhang, 2011). Further, Caniels, Semijn, and Renders (2018) found a relationship between employees with a growth mindset and attitude toward developing in the workplace. The third additional pillar is *positive economic security*, which includes perceptions about personal and family resources, as well as job security and medical spending. While Diener and Seligman (2004) and behavioral economist (Easterlin, 2003) have provided varying accounts on the relationship between income and happiness, they both agree that economic security is crucial to well-being. Finally, in the employee context, the *positive physical work environment* is an important predictor of wellbeing. Hartig, Korpela, Evans and Garling (1997) suggested abundance of natural light, access to nature, assurance of physiological safety, and the physical organization of work all influence employee mental health. Thus, the measure of EPF developed for the current study is composed of nine dimensions that encompass all levels of the *Engine of Well-Being*.

Expanding Seligman's Theory of Well-Being

This section provides a background of the literature on EPF, as well as operationalizations that were used for each construct. It begins by reviewing literature on the five existing components of the PERMA model, and then providing a rationale and review of the literature on four additional pillars: positive physical health, positive economic security, positive mindset, and positive physical work environment.

Positive Emotions

Cacioppo and Gardner (1999) suggested emotions occur on a spectrum between positive and negative valence, and low and high arousal. Whereas negative emotions narrow attention and focus (e.g., fear creates the urge to escape), positive emotions broaden thought-action repertoires (e.g., joy creates the urge to play), and can increase personal and social resources (Frederickson, 1998, 2001). There is also research that suggests positive and negative emotions can be experienced simultaneously; for example, horror films are both scary and exhilarating (Bagozzi, 2012). Frederickson's broaden-and-build theory of positive emotions (1998, 2001, 2009) suggested positive emotions are a signal for optimal functioning in the present, however, positive emotions over an extended period of time have the potential to produce individual optimal functioning across the entire lifespan.

Organizational research has begun to recognize the importance of positive emotions in the workplace (Cameron & Spreitzer, 2012). For example, at the individual level, positive emotions have been found to improve creativity at work, and emotions such as pride and empathy have effects on personal accomplishment in the workplace (Amabile, Barsade, Mueller, & Staw, 2005; Zapf & Holz, 2006). In addition, positive emotions associated with character strengths, such as resilience and hope, have been found to impact employee attitudes. For example, Staw, Sutton, and Pellod (1994) assessed the relationship between positive emotions and job outcomes with 272 employees. They found that positive emotions at Time 1 were linked to supervisor evaluations and improvements in pay at Time 2. Positive emotions also predicted social support from supervisors and coworkers at Time 2. While there is no extant literature on positive emotions on the intrapersonal level at work, Vacharkulksemsuk and Fredrickson (2013) suggested positive emotions can impact teams and unlock beneficial ways of thinking at the organizational level.

Operationalization. Measures of positive emotion range from very negative to very positive, and low to high levels of arousal (Cacioppo & Gardner, 1999). For example, feeling of

love and joy are positive emotions, whereas high levels of anxiety and anger are operationalized as negative emotions. Further, these feelings can range from low arousal (e.g., content, calm, etc.) to high arousal (e.g., elated, explosive, etc.). The positive lens in employee positive functioning prescribes that positive emotions are elicited in the context of individual development that facilitates virtuous future-oriented growth and goal-directed work behaviors. We do not include positive emotions that result from self-destructive work behaviors, such as experiencing joy from sabotaging a colleagues' plans or engaging in other unethical work-related behavior.

Positive Engagement

Engagement has been explored across a variety of domains, including the organizational context, academia, and elder populations. Measures of engagement have focused on optimal experiences such as flow, described as a "sense that one's skills are adequate to cope with the challenges at hand, in a goal-directed, rule-bound action system that provides clear clues as to how one is performing" (Csikszentmihalyi, 1990, p. 71). Other scholars have proposed that engaged employees are physically, cognitively, and emotionally involved in their work, and experience a sense of meaning (Kahn, 1990). Schaufeli and Bakker (2004) conceptualize work engagement as the opposite of burnout. Unlike burned out employees who are exhausted, cynical, and ready to sabotage plans, engaged employees are energetic and connected with their work activities. Work engagement and burnout are different and thus measured independently.

"Engagement is a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption. Rather than a momentary and specific state, engagement refers to a more persistent and pervasive affective-cognitive state that is not focused on any particular object, event, individual, or behavior. Vigor is characterized by

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. Absorption, is characterized by being fully concentrated and happily engrossed in one's work, whereby time passes quickly and one has difficulties with detaching oneself from work" (see Schaufeli, Salanova, Gonzalez-Roma, & Bakker, 2002).

The Jobs Demands-Resources model (JD-R) undergirds Schaufeli's (2012) perspective of work engagement. The JD-R model proposes that job and personal resources drive work engagement. Job resources refer to physical, social, or organizational aspects of the job (e.g., feedback, social support, etc.), and personal resources refer to individuals' ability to control and impact their work environment (Knight, Patterson, & Dawson, 2017).

Research has associated work engagement with employee well-being and performance (Christian, Garza, & Slaughter, 2011; Halbesleben, 2010). For example, Knight et al. (2017) conducted a meta-analysis on the relationship between work engagement interventions and work performance, and found a small positive significant effect on all three subcomponents of work engagement (i.e., vigor, dedication, and absorption). Kim, Kolb, and Kim (2013) reviewed 20 empirical studies on work engagement, and found 11 reported a direct or indirect relationship between work engagement and performance. Interventions that focus on improving job demands and (job and personal) resources serve as great tools for managers looking to get a *competitive edge*. Wrzesniewski and Dutton (2001) created "job crafting interventions," suggesting that employees who design and have control over the characteristics of their work (a) create an

optimal fit between work demands and personal strengths and (b) experience personal growth, well-being, and work engagement (Bakker et al., 2016; Demerouti & Bakker, 2014).

Van Wingerden, Derks, and Bakker (2017) published a study on the longitudinal impacts of job crafting on in-role performance (i.e., outcomes and behaviors that directly serve the goals of the organization). They found that a job crafting intervention improved in-role performance up to one year after the intervention was administered. Similarly, a study of full-time managers at a manufacturing company also found that a job crafting intervention significantly increased work performance. In particular, *cognitive job crafting* (i.e., changing the cognitive task boundaries of work; Wrzesniewski & Dutton, 2001) was found to have the biggest effect on work performance compared to task and relational job crafting. In addition, Van Wingerden, Bakker, and Derks (2016) combined a personal resources intervention and job crafting intervention for primary school teachers and found the combined effect improved in-role performance (above and beyond either approach alone), demonstrating that increasing personal resources can lead to the achievement of work-related goals.

These studies suggest that organizational leadership and managers should offer interventions that target personal and job resources (e.g., job crafting interventions) in order to achieve desirable work outcomes (e.g., engagement). This is not least due to positive psychological interventions' ability to catalyze employee growth, work engagement, and ultimately the bottom line.

Operationalization. Schaufeli and Bakker (2004) defined work engagement as the opposite of burnout. Unlike burned out employees who are exhausted, cynical, and ready to sabotage plans, engaged employees are energetic and connected with their work activities. Work engagement and burnout are conceptually different and thus measured independently. We

include both Schaufeli and Bakker's definition of work engagement and Csikszentmihalyi's (1990) concept of flow in our definition of positive work engagement. Positive work engagement is characterized by employees with high levels of absorption, interest, and involvement in their work, as well as a feeling that their knowledge, skills, and abilities match the job demands.

Positive Psychosocial Work Relationships

Social relationships are central to the human mind and survival (Tooby & Cosmides, 1992). In particular, dyadic relationships served as focal social groups for humans in the environment of evolutionally adaptedness (EEA), providing the template for modern society (Caporael, 1997). Warren, Donaldson, and Lee (2017) proposed a positive psychological lens in relationships, which opines new pathways for knowing, relating, and understanding how positive relationships help people and organizations flourish. For example, a wealth of research demonstrates that relationships are a strong predictor of well-being such that people live longer, are more cooperative, and have stronger immune systems (Barak, 2006; Diener & Biwas-Diener, 2008; Pressman & Cohen, 2005). Seligman (2011) even suggested positive relationships are above and beyond a single predictor of well-being and should be considered an intrinsic criterion.

Work relationships refer to feeling supported, connected, and valued by others in the organization, which can be found in coworker, coachee, and mentoring relationships among more (Yip, Ehrhardt, Black, & Walker, 2018). The first concepts in management and PWO to systematically investigate the quality of relationships were leader-member exchange (LMX) and high-quality connections (HQC's; Dutton, 2003b; Graen & Uhl-Bien, 1995). Leader-member exchange investigates what is transferred between a leader and their subordinate, manager, etc. Research has demonstrated that LMX is associated with improved job performance. Stephens,

Heaphy, and Dutton (2012) define HQCs as short-term dyadic interactions that are positive in terms of subjective experience and structural features of the connections. High-quality connections have been linked to improved health benefits, such as cardiovascular neuroendocrine, and immune system health (Heaphy & Dutton, 2008). They have also been found to help employees recover from illness and loss (Ragins & Verbos, 2007). While the LMX and HQC's have been shown to be predictive of desirable work outcomes, there are still concerns regarding their measurement and efficacy towards assessing quality of relationships.

The positive (PEA) and negative (NEA) emotional attractors built on the work on LMX and HQC's to measure a psychophysiological state of sustained change in relationships (Boyatzis, 2008: Boyatzis, Rochford, & Taylor, 2015). Individuals who score high on the PEA are open to new ideas, people around them, and moral concerns. There are three dimensions of the PEA and NEA: 1) positive versus negative affect, 2) arousal of parasympathetic versus sympathetic nervous system, and 3) activation of default mode network activation versus task positive network activation. Whereas the NEA serves a survival function, the PEA allows the person to create, build, and adapt (Boyatzis, Melvin, & Blaize, 2006). The PEA and NEA aspects of relationships are defined by shared vision, shared compassion, and shared mood.

People that experience shared vision move in sync with each other and have a common sense of purpose. Shared vision has been shown to predict leadership, engagement, and citizenship behaviors (Boyatzis et al., 2015). Shared compassion provides the emotional glue in dyadic or team relationships, and is shown to predict engagement, including absorption and vigor. While shared positive mood has shown the least differential impact on work outcomes, there are still connections to improved in-role behavior and engagement for middle level managers. *Operationalization.* Positive psychosocial characteristics include perceptions of social cohesion in the work environment that promote personally valued strengths and growth between diverse individuals and job demands, coworkers, work teams, managers, and their organization (Piasentin & Chapman, 2007). Employees in positive work environments perceive they are treated fairly, equitably, in a socially just manner, and feel they are valued for being their authentic self (Warren, Donaldson, Lee, & Donaldson, 2019). Work environments that share both positive physical and psychosocial elements provide employees the opportunity to flourish.

Positive Meaning

Meaning refers to having a sense of purpose in one's life, and a feeling that your life matters. Martela and Steger (2016) suggested meaning has three facets: life has value and significance, broader purpose in life, and one's life being coherent and making sense. Life is coherent when we are able to recognize patterns, establish predictability, and feel that 'one's experiences or life itself makes sense' (Heintzelman & King, 2014, p. 154). Purpose refers to having a sense of core goals, aims and direction in life, which serve to motivate future-oriented behaviors. Significance focuses on value, worth, and importance, and is inherently a value-laden concept. Research has shown that meaning in life is an important contributor to well-being (Heintzelman & King, 2014; Steger, 2012).

Meaning at work refers to the amount of significance people perceive to exist in their workplace (Rosso, Dekas, & Wrzesniewski, 2010). There have been a variety of terms that refer to meaning in the workplace, some of which include work meaningfulness, work meaning, and meaning of work (Steger, 2012). Seminal research on meaning at work came from the Job Characteristics Model (Hackman & Oldham, 1976), which proposed a set of job qualities, meditators between job characteristics and outcomes, and valued personal and work outcomes. A
similar construct to meaning at work is calling at work. Dobrow and Tosti-Kharas (2011) define calling as "a consuming, meaningful passion people experience toward a domain" (p. 1005). People who experience a calling feel that they were destined for that type of work, whereas people with a work or career orientation do it for the money or to climb the organizational ladder. There are three criteria to calling: 1) it is directed toward a particular domain, 2) people "have it" or "don't have it", and 3) calling can refer to other domains besides work, such as an occupation, volunteer effort, etc. (Dobrow & Tosti-Kharas, 2011). Research findings have associated calling with job satisfaction (Peterson, Park, Hall, & Seligman, 2009), better health, zest, and career outcomes.

Personal growth initiative (PGI), a construct operationalized by Robitschek (1998), is defined as "an active, intentional engagement in the process of personal growth" (p. 184). These changes can take place in one's behavior or cognition, but PGI – as its definition suggests – is both purposeful and conscious. PGI has been linked to significant individual and organizational benefits and serves as an antecedent of optimal performance and well-being (Robitschek, 1998). Individuals with high levels of PGI demonstrate higher life satisfaction (Stevic & Ward, 2008), greater psychological well-being (Robitschek & Keyes, 2009), reduced sick-leave (Straume & Vitterso, 2015), and increased active engagement (Simmons & Nelson, n.d.). Moreover, employees high in PGI are more likely to be ready for self-change, utilize external resources in addition to their own personal knowledge to support their growth, and express their intention to change (De Jager-van Straaten, Jorgensen, Hill, & Nel, 2016; Robitschek, et al., 2012).

While PGI shares similarities with other positive psychology constructs like grit and goal-setting, personal growth is distinct from the aforementioned concepts. First, unlike grit (the continued effort to achieve long-term objectives through adversity (Duckworth, Peterson,

Matthews, & Kelly, 2007), personal growth initiative focuses on utilizing skills to intentionally change (Robitschek et al., 2012). Furthermore, PGI is distinct from goal setting such that its main objective is personal growth rather than goal setting in general (Klockner & Hicks, 2008). Personal growth initiative goes beyond setting goals to also include planning and intentionally acting on achieving these goals (Robitschek et al., 2012).

Operationalization. Positive meaning refers to a sense of individually valued purpose and significance in the workplace (Martela & Steger, 2016). Positive meaning at work is characterized by perceptions of pursuing a meaningful career, self-discovery at work, and work that serves a contribution to the greater good. Positive meaning is also present when individual values align with the mission and vision of the organization.

Positive Accomplishment

Kun, Balogh, and Krasz (2017) described the essence of accomplishment with seven words, "I did it, and I did it well" (p. 57). The accomplishment aspect of PERMA signifies that an individual is leading a productive life and can look back with a sense of accomplishment (Seligman, 2011). However, accomplishment is somewhat nuanced and subjective, depending on whom you ask. Smith (2015) identified and reviewed several forms of motivations, including extrinsic, intrinsic, physiological, and achievement. For example, Butler and Kern (2016) described a mother who raised a successful family, yet never received any award for her effort. On the other hand, institutions such as the Olympics and Nobel Prize recognize and acknowledge superior performance every few years.

In her psychology of achievement, Duckworth (2016) used four main variables: talent, effort, skill, and achievement. *Talent* is the rate of change in skill per unit effort (Duckworth, Eichstaedt, & Ungar, 2015), which basically means talent is how quickly your *skills* improve

when you invest effort. *Effort* on the other hand builds skill, and makes skill productive. Thus, Duckworth (2016) argued that when two individuals have identical circumstances the two things that produce *achievement* are talent and effort, and effort counts twice as much. Duckworth (2016) acknowledges that her equations do not factor in external circumstances and are just focused on the psychology of achievement. Moreover, self-determination theory (SDT; Deci & Ryan, 2001) suggested competence is a core human need, and involves a sense of working toward goals and having efficacy toward completing tasks. Research on achievement motivation found that high levels of achievement motivation in business leaders was directly related to economic growth, and it is possible to increase achievement motivation in a short period of time (McClelland & Winter, 1969).

Operationalization. Positive accomplishment is defined as a perceived evaluation of one's achievements at work (e.g., skills, abilities, awards, promotions, etc.), especially as they pertain to achieving work-related goals that promote mastery and development towards one's work organization or career aspirations (Seligman, 2011). Positive accomplishments are personal achievements that we craft for ourselves, and come with the feeling of acknowledging the experience of engaging and prototyping new ways to develop skills that help us in pursuit of mastering our craft.

Four Additional Pillars: Positive Physical Health, Positive Economic Security, Positive Mindset, and Positive Physical Work Environment

Positive Physical Health

Seligman et al. (n.d.) suggested a new topic in positive psychology called positive health, defined as "well-being above and beyond the absence of disease" (p. 1). Positive health focuses on measuring health assets by determining factors that predict health above conventional risk factors. Health assets can lead to a variety of positive health outcomes: lower health care

expenditure, better prognosis when illness does strike, higher quality of life, etc. The theoretical framework of Seligman and colleagues includes three classes of health assets including biological, subjective, and functional. Biological health assets include measures such as heart rate variability and level of high-density lipoproteins (HDL), both of which are objectively measured. Subjective health assets include psychological components such as positive emotions, optimism, meaning, etc. Lastly, functional health assets include relationships, such as close family and friends and aspects of functional performance, such as adequate physical fitness (e.g., able to run a mile without health consequences).

Positive health is related to other approaches concerned with promoting good health (e.g., disease prevention, health promotion, and wellness), but has important conceptual distinctions. For example, unlike disease prevention, positive health does not stop at just illness. Instead, positive health suggests factors such as subjective well-being and exercise are important for their own sake and in combination to reduce illness. In addition, positive health is a scientific, empirical investigation into what health assets truly matter with a goal of providing a framework to build an evidence to support the key tenets.

Operationalization. Positive physical health at work refers to perceived biological, functional, and psychological health assets that promote health outcomes (Seligman, 2008). Biological health assets include self-reported medical records, such as heart rate health and BMI, suggesting the importance of being mindful and reflective of one's own health history and health habits. Functional assets include self-reported physical fitness at work, such as the ability to walk a flight of stairs without being winded, or the ability to walk to and from lunch. Psychological health assets include self-reported health-related locus of control as it applies to one's physical health (Wallston, 2005), and self-reported absence of distressing physical symptoms.

Positive Economic Security

In the 1970's, behavioral economists Richard Easterlin and Daniel Kahneman spawned a wealth of research on the economics of happiness and well-being. They discovered what is now known as the "Easterlin Paradox," or notion that life satisfaction rises with income but with diminishing returns. Scholars in the field of positive psychology have also investigated the impact of income on happiness. Like the Easterlin Paradox, Diener and Seligman (2004) found that individuals who are well-off financially are on average happier than poor people. However, differences in income make the most dramatic impact on well-being at varying levels of poverty, presumably as it relates to meeting basic needs. Also, cultural factors influence the relationship between income and happiness. For example, Diener (2005) found that the Maasai of Africa have no cash income but do have their livestock which meet their basic needs. On the other hand, many homeless people in California most likely have greater incomes than the Maasai, yet on average are not nearly as happy. Homeless individuals are comparably much worse off than people around them, demonstrating the importance of context when assessing people's well-being.

The International Committee of The Red Cross (ICRC) defined economic security as the ability of individuals, households, or communities to cover their essential needs sustainably and with dignity. The ICRC focuses on key livelihood outcomes, such as income, living conditions, and food consumption among others (ICRC, 2015). Hacker (2008) suggested there are three features of human psychology that elicit perceptions of economic security: loss aversion, evaluating economic contingencies, and personal and familial capacities for private risk buffering. Loss aversion is a sensitivity individuals experience towards losses rather than gains in their economic standings. Evaluating economic contingencies refers to cognitive or

informational difficulties individuals face when confronted with serious risks. The last feature is the buffer of personal and family resources, such as wealth, credit access, and social networks (Ligon & Schechter, 2003). The basic concern about economic security is that uncertain economic prospects will leave people worse off. This belief is based on the assumption that individuals fear economic losses, and when they experience such losses, they also suffer in terms of their well-being.

Operationalization. Positive economic security is defined as an individuals' perception of four dimensions crucial to their economic security: income stability, job security, medical spending shocks, and buffers of financial wealth (Hacker et al., 2014). In addition, the positive approach to these four dimensions moderates the pursuit of developmental opportunities, human growth, and/or meaning at work. The aim is to highlight and pinpoint how one's perception of their overall economic situation impacts, hinders, or facilitates goal-oriented behaviors in the context of their lives at work.

Positive Mindset

Do you look at the glass half empty or half full? This age-old question has been used to evaluate whether someone has a positive or negative mindset. However, what it means to have a positive mindset is often conflated with positive thinking. Whereas traditional positive thinking is concerned with cognitive (thought-based) reframing to combat common cognitive distortions, positive mindset emphasizes what makes people thrive. In that sense it goes a bit further from changing thought patterns away from negative experiences towards focusing on optimal behaviors and performance (Scott, 2018). There are several constructs in the positive psychology and PWO literature that attempt to define and measure aspects of a positive mindset, including positive psychological capital (PsyCap), growth mindset, positive thinking, and prospection.

Psychological capital (PsyCap) is defined as a "state-like" like construct that is malleable, open to development, and designed for optimal human resource practices. It consists of four major components: confidence (self-efficacy) to succeed at challenging work tasks, positive attributions about the future (optimism) of the company, redirecting paths toward work goals (hope), and bouncing back from adverse situations in the workplace (resilience; Luthans et al., 2007, p. 3). Psychological capital is conceptualized as a higher order factor (i.e., combination of all four individual components) that can enhance job satisfaction and productivity. For example, resilient employees that bounce back are also self-efficacious and motivated to overcome problems. Thus, when employees have opportunities to develop PsyCap, the organization can benefit from both improving the well-being of the employees and benefiting the bottom line.

Dweck (2006) defined growth mindset as a proclivity toward viewing talents, aptitudes, interests, and temperaments as developable rather than fixed qualities. Whereas someone with a fixed mindset believes qualities (e.g., intelligence) are fixed in stone, an individual with a growth mindset believes these basic qualities can be cultivated through effort. The growth mindset is grounded on the motivational model of achievement (Dweck & Leggett, 1988), which is characterized by the drive to excel. A recent meta-analysis on growth mindset interventions in adolescent populations demonstrated a positive relationship with academic achievement, especially for high-risk students (Sisk, Burgoyne, Sun, Butler, & MacNamara, 2018). Another study conducted by Caniels et al. (2018) found that transformational leadership moderated the relationship between proactive personality and work engagement, but only when a growth mindset was present. In addition, Heslin and Keating (2017) found that leaders' growth mindsets helped them engage in the approach, action, and reflection phases of experiential learning. Thus,

research demonstrates that employees with a growth mindset are eager to continuously develop in the workplace (Caniels et al., 2016).

Duckworth (2013) quoted a famous excerpt from Grammy award-winning actor Will Smith:

The only thing that I see that is distinctly different about me is I'm not afraid to die on a treadmill. I will not be outworked, period. You might have more talent than me, you might be smarter than me, you might be sexier than me, you might be all of those thingsyou got it on me in nine categories. But if we get on the treadmill together, there's two things: You're getting off first, or I'm going to die. It's really that simple... (p. 1)

The famous quote exemplifies exactly what the paragon of a gritty person looks like, sustained effort and stamina over long periods of time and passion to accomplish superordinate goals. Further, the idea that "hard work pays off" has been around for thousands of years; however, the construct grit distinguishes itself by "effort and interest over years despite failure, adversity, and plateaus in progress" (Duckworth, Peterson, Matthews, & Kelly, 2007, p. 1088). Grit is defined by passion and perseverance toward especially long-term goals (Duckworth et al., 2007). Grit predicts teacher effectiveness, academic performance at elite universities, retention of cadets at West Point, and final ranking in a national spelling bee among many other domains of achievement (Duckworth et al., 2007, 2009, 2011). Duckworth et al. (2007) opined that gritty individuals approach achievement as a marathon, with the advantage being stamina. In Duckworth and colleagues work interviewing investment bankers, journalists, and academics they began to hypothesize that grit was an essential ingredient to achievement (Duckworth et al., 2007). When they asked these professionals what separated the highest achievers from their peers more often than not grit or a close synonym was cited. Thus, results from these studies

indicated that talent was not enough to produce achievement in the most exceptional cases, and it was actually those who were not appraised as gifted but stayed committed over the long haul that ended up achieving the most (Duckworth et al., 2007, 2009, 2011).

Seligman, Railton, Baumeister, and Sripada (2013) published a foundational article on prospective psychology. They defined prospection as a representation of possible futures. This is in contrast to much of human psychology that determines human behaviors from experiences in the past. Instead, prospection involves imagining and evaluating possible future states and taking action to realize those potentials.

Operationalization. Positive mindset is an open, developable "future-oriented" construct characterized by prospection, growth mindset, and a proclivity towards persevering in the face of setbacks, especially over long periods of time (Duckworth et al., 2007; Dweck, 2006; Luthans et al., 2007). Further, the "positive" aspect of a positive mindset includes the aim to maximize human potential and development at work.

Positive Physical Work Environment

Marine biologist, Wallace Nichols, published a national bestseller called *Blue Mind* (Nichols, 2019). Based on neuroscientific findings, he suggested being in or near water has remarkable effects on our health and well-being. Further, the appeal of the environment is not just limited to the human species. The Jane Goodall Institute UK (2019) documented "Waterfall Displays" where chimpanzees appear to sit and stare at waterfalls for an extended period of time. Videographer Bill Wallauer recalls,

"He relaxed, then turned to the falls and stared at it for many minutes. It was one of those times that I would give body parts to know what was going through a chimp's mind. Dr

Goodall and I have seen several events in which the participants seemed to ponder or consider the natural event to which they were reacting."

The match between individuals and their work environment, known as PE fit, is welldocumented in the organizational psychology literature (Kristof-Brown, Zimmerman, & Johnson, 2005). The four subtypes of PE fit include: person-job fit (PJ fit), person-organization fit (PO fit), person-group fit (PG fit), and person-supervisor fit (PS fit). Kristof-Brown et al. (2005) demonstrated a relationship between PE fit and work outcomes, such as turnover, performance, job search, and work attitudes. More recently, Chuang, Shen, and Judge (2016) developed a multidimensional Perceived Person-Environment Fit Scale (PPEFS) that was predictive of work outcomes above and beyond existing measures. Research in positive psychology is now investigating how positive features of the work environment can impact organizational life (Bellini, Fornara, & Bonaiuto, 2015).

Seminal works by Altman (1971) and Oldham and Rotchford (1983) found that environmental characteristics of the workplace, such as noise, light, and physical space can negatively impacted employee productivity. Korpela and Hartig (1996) defined restorativeness as the capacity of the work environment "to offer a concrete and available means of reducing suffering and enhancing effectiveness" (p. 176). Bellini et al. (2015) situates the concept of restorativeness within the JD-R model in positive psychology. Job demands may include work pressure, stress, and a poor physical environment (Bakker & Demerouti, 2007), whereas job resources are physical, psychological, and organizational aspects that help achieve work goals and reduce job demands (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). Bellini et al. (2015) found that perceived restorativeness improved job satisfaction and work engagement in a sample of 123 office workers of an Italian town. Several studies have also found that access to

nature reduces stress, facilitates recovery from illness, and improves mental health (Hartig et al., 1997; Kaplan, 1995; Ulrich, 1984). Thus, it is evident the restorative qualities of the workplace are crucial to employee well-being and performance.

Operationalization. Positive work environment includes physical, restorative factors that promote the ability to maximize our best selves at work. Positive physical work environments are characterized by spatiotemporal elements that improve the experience of work, such as an abundance of natural light, access to nature, assurance of physiological safety, and organization in the physical arrangement of the workplace (Hartig et al., 1997). Employees in positive physical work environments perceive that their physical job resources reduce job demands and improve the quality of the workplace. These types of workplaces provide employees with a restorative environment where they can recover from the depletion of energy, and have the opportunity to flourish.

Addressing Measurement Concerns with the PERMA Model

There are measurement concerns between the PERMA model and other well-being frameworks in the literature. Goodman, Disabato, Kashdan, and Kauffman (2018) suggested that PERMA and subjective well-being (SWB) may be synonymous. The authors argue for multiple methods of measurement in their methodological approach for testing and developing well-being models, including approaches such as exploratory factor analysis (EFA), exploratory structural equation modeling (ESEM), person-centric, and latent analyses. They compared several higher order statistical models showing the redundancy between PERMA and SWB, and suggested future research should use novel statistical techniques to further understand well-being. Longo, Coyne, and Joseph (2017) and Coffey, Wray-Lake, Mashek, and Branand (2016) found support for a bifactor model of well-being, suggesting a higher-order factor structure of well-being.

The current research tested several of these concerns and suggestions for future directions. In line with Goodman et al. (2018), Seligman (2011), Butler and Kern (2016), among others, EPF was tested with nine lower-order and one higher-order general factor. Thus, the theory-based assumption is that EPF is hierarchical in nature, with lower-order dimensions that individually impact higher-order positive functioning. Further, based Jayawickreme's et al.'s (2012) suggestion, the items were adapted and reshaped from the PERMA profiler (e.g., several were poorly worded, double barreled, etc.). Second, the PERMA model was expanded by adding a *positive lens* on each pillar, and adding four new dimensions called *positive mindset, positive lens* integrates Aristotle's philosophy of eudaimonic well-being, which suggests that well-being is an orientation toward growth and/or developmental opportunities in the workplace (Waterman et

al., 2010). This is juxtaposed with hedonic conceptions of subjective well-being that content wellbeing is the presence of pleasure and absence of pain (Kraut, 1979).

Conceptualization of Employee Positive Functioning

Employee positive functioning (EPF) represents the range of psychosocial factors that promote human flourishing in the workplace. Building on positive psychology, the definition of EPF is based on Seligman's PERMA (i.e., positive emotion, engagement, relationships, meaning, and achievement) model, and the expectation that EPF is related to important work outcomes, such as job satisfaction and performance. In addition, building on the work of Seligman (2011), a positive lens was included on each dimension of PERMA and four new pillars were proposed: positive economic security, positive mindset, positive physical health, and positive physical work environment.

Aristotelian philosophy and Waterman et al.'s (2010) conceptualization of eudaimonic well-being helped define the *positive lens at work* (in Employee Positive Functioning) as an orientation toward growth and/or developmental opportunities, self-discovery, purpose and meaning, and intense involvement in personally valued activities with the goal of maximizing human potential at work. This framework applies the positive lens to nine dimensions of EPF: positive emotions, positive engagement, positive relationships, positive meaning, positive accomplishment, positive physical health, positive economic security, positive mindset, and positive physical work environment. It is important to define the epistemological commitments and definitions of positive functioning under which this framework is oriented.

Hedonic subjective well-being is defined as the subjective evaluation of one's life both affectively and cognitively, in terms of the presence of pleasure and absence of pain (Kraut, 1979). For example, hedonic well-being is most commonly measured using subjective well-being (SWB),

and the Satisfaction with Life Scale and Positive and Negative Affect Schedule (SWLS; Diener, 1985; PANAS; Watson, Clark, & Tellegen, 1988). The purpose of hedonic approaches are to allow individuals to give their subjective assessments of well-being, rather than "experts" imposing value judgments on what constitutes the life worth living (Kjell, 2011).

On the other hand, eudaimonic well-being acknowledges that not all desires a person values necessarily bring about well-being. This type of well-being consists of realizing one's daimon or true nature (Diener et al., 1999; Ryan & Deci, 2001), defined as the extent to which individuals are "doing well" rather than just feeling good (Diener et al., 1999). For example, an individual may harm other people, yet be highly engaged with positive emotions such as joy, and low on negative affect such as anxiety, scoring high on hedonic subjective well-being. Thus, unlike pleasure seeking behaviors that may infringe on the well-being of the individual and others, the eudemonic perspective contends that subjective happiness should not be conflated with well-being. Waterman et al. (2010) constructed a eudaimonic well-being measure (QEWB; The Questionnarie for Eudaimonic Well-Being) measure that consists of six dimensions: self-discovery, perceived development of one's best potentials, a sense of purpose and meaning in life, investment of significant effort in pursuit of excellence, intense involvement in activities, and enjoyment of activities as personally expressive. Eudaimonic well-being is "a distinctive subjective state, that is seen arising from particular sources, that is, the pursuit of virtue, excellence, and/or selfrealization" (Waterman et al., 2010, p. 239).

CHAPTER 3 – PHASE ONE: STUDY ONE

Method

Purpose

The purpose of Study 1 was to evaluate 22 PPIs at work using a process evaluation approach with SPPIs and MPPIs at work. Process evaluation is an evaluative strategy to assess whether or not characteristics of intervention implementation are having the desired impact on intervention outcomes (Moore et al., 2013). Study 1 evaluated positive psychology theories, intervention activities, dose, research design and work outcomes measured at posttest. The findings have implications for enhancing the effectiveness of future interventions as well as providing valuable information to practitioners looking to implement a PPI in their work organization.

Search Strategy¹

Before process evaluation was used to assess PPI's at work, Study 1 used Donaldson et al.'s (2019) search strategy and inclusion criteria to identify relevant intervention studies. Donaldson and colleagues research methods are provided below.

Donaldson et al. (2019) developed an initial list of search terms using the *Oxford Handbook of Positive Organizational Scholarship* to (Cameron & Spreitzer, 2012). Based on central themes outlined in the volume and prior work from Meyers, et al. (2013), broad search terms were created to capture positive interventions at work. The first search terms consisted of ''positive organizational behavior,'' ''positive organizational scholarship,'' and ''positive psychology.'' The second search terms included combinations of ''intervention,'' ''work* (workplace),'' ''organization* (organizational),'' ''employee,''''manager,'' ''training,'' and ''group intervention.'' Those search terms were then entered into three electronic databases: PsycINFO, PsycArticles, and ISI Web of Science.

¹ A comprehensive review of the search strategy, inclusion criteria, and coding procedures can be found in Donaldson et al. (2019) and Donaldson et al. (2019)

After investigating online databases, specific constructs (e.g., psychological capital, job crafting, & strengths theory) were searched based on their representation in the POP, POS, and POB literature (Cameron & Spreitzer, 2012). The *Journal of Happiness Studies* and *European Journal of Work and Organizational Psychology* were also examined because they are known to be major outlets for publishing positive interventions at work. Lastly, to combat the threat of publication bias two announcements were sent to the *Academy of Management* Listserv and the International Positive Psychology Association's, *Positive Work and Organization Newsletter* for any unpublished data on positive interventions at work. Study 1 adapted this literature search from Donaldson and colleagues to identify relevant papers.

Inclusion Criteria

Donaldson et al.'s (2019) inclusion criteria were as follows:

- Positive psychology intervention is defined using Donaldson and Ko's (2010), and Warren, Donaldson, and Luthans's (2017) review of POP, POS, and POB, and/or explicitly in line within the theoretical tradition of PWO. If the intervention included a majority of POP, POS, and POB with smaller elements of traditional organizational behavior, it was included in the analysis.
- Studies were included if they (a) implemented an experimental or quasi experimental intervention in an organizational setting (e.g., with employees, managers, teachers, nurses, staff members, etc.), (b) and included pre- and post- test measures at, (c) the individual, team, or organizational level (Meyers et al., 2013).
- Peer-reviewed journal articles (in English), unpublished articles, working papers, and dissertations published in between the years 2000 and 2018 were included in the analysis.

Results

Multicomponent Positive Psychology Interventions at Work

Psychological capital interventions. There were four psychological capital interventions that targeted the four components of PsyCap (i.e., hope, resilience, self-efficacy, and optimism). For example, Williams, Kern, and Waters (2016, 2017) had participants learn resilience through the ABCDE model, and used hope to dispute negative thinking patterns. Yuan (2015) incorporated goal-setting training using SMART goals in his hope intervention activity, and expressive writing to teach self-efficacy. Zhang (2014) used Luthans et al. (2006) microintervention model to design the intervention activities. See Table A1 for a complete list of process evaluation findings.

The dosage of PsyCap interventions varied from a 30-minute structured reading platform to a four-week training. The majority of the interventions used trained facilitators to deliver the intervention. In terms of reach for the intervention group, three of the four studies had approximately 50 employees, whereas Zhang et al.'s (2014) intervention had 105 employees. Two of the four PsyCap interventions included randomization, and work outcomes measures varied from job performance to organizational virtuousness. Beside Williams et al. (2016) interventions study, which found two null outcomes at posttest, the other three PsyCap interventions had a majority of significant work outcomes at posttest (Williams et al., 2017; Yuan, 2015; Zhang, 2014). Please see Table A2 for a summary table of positive psychology theory and work outcomes.

Psychological capital + job crafting interventions. Two interventions combined PsyCap and job crafting to design intervention activities (van Wingerden, Bakker, & Derks, 2016, 2017). Both of these studies sequenced the PsyCap intervention before the job crafting intervention to stimulate thinking around increasing personal and job resources (Bakker & Demerouti, 2014). Both interventions had multisession trainings over a five- and six-week period, respectively.

Neither study used random assignment but five of the six work outcomes measured were significant at posttest between the intervention group and control group. Some of these measures included work engagement, in-role performance, and PsyCap.

Well-being interventions. Well-being interventions included three models; PERMA-based program, CREW, and Working for Wellness Program. The overarching aim of these interventions was to promote respectful interaction in the workplace, teambuilding, and cultivating best self at work. Each intervention delivered five or more intervention activities to program participants. The length of well-being intervention varied from two weeks to weekly sessions for six months. Out of all the PPIs at work reviewed in Phase Two, Laschinger et al.'s (2012) well-being intervention included the largest intervention group (165 animal shelter staff). Two out of the three interventions used randomization, and there were eight significant work outcomes compared one null finding.

Single Component Positive Psychology Interventions at Work

Gratitude interventions. There were five gratitude interventions that were each designed in different ways to make employees recount grateful aspects of their work. Two interventions used the count-your-blessings model and had participants recall good things that happened to them at work (Kaplan et al., 2014; Winslow et al., 2014). Grant and Gino (2010) had a simple intervention activity, which included a thank you announcement from the Director of annual giving in a fundraising department. On the other hand, Harty, Gustafsson, Björkdahl, and Möller, (2016) conducted a 10-week gratitude intervention that included five biweekly sessions. These sessions had employees identify grateful aspects of their work and create illustrations around pleasure, meaning, and strength as they relate to gratitude. Two out of the five interventions used random assignment and the overall ratio of significant to null work outcomes at posttest between the

intervention group and control group was 2:3. Some of the work outcomes included job stress, turnover intent, and job satisfaction.

Job crafting interventions. The job demands-resources model was used in each of the four job crafting interventions, which had employees analyze their job tasks, demands, and resources, as well as craft a personal action plan according to their specific job. Van Wingerden, Bakker, and Derks (2017) used a six-step job crafting procedure in their study to help employees understand the interaction between their job and personality characteristics. Beside a three-hour training found in Demerouti et al., 2017, the other three job crafting interventions were three weeks or longer. Interestingly, none of the job crafting interventions used randomization and participants either volunteered or were assigned to condition based on location. The ratio of significant to null work outcomes was 1:3 in job crafting interventions, exhibiting the poorest ratio out of all six positive psychology theories.

Strengths interventions. The intervention activities in the four strengths interventions were aimed at strengths-based assessment, development, and use. Mackie (2014) used the Realise2 inventory to help employees discover and improve upon their strengths. Harzer and Ruch (2016) had participants learn about their four highest character strengths, and think of ways they could develop these strengths through daily tasks and activities. Williams (2010) used a group discussion format to encourage a strengths dialogue in the performance-appraisal process. The dose of each strength intervention varied from a half-day day to six, 90-min coaching sessions (Mackie 2014; Meyers & van Woerkom, 2017). Three out of the four strengths interventions did not use random assignment in their research design, and the ratio of significant to null work outcomes was 2:3.

Discussion

Positive Work and Organizations has grown considerably since Donaldson and Ko's (2010) systematic review of POP nearly a decade ago. In addition to a wealth of primary studies, there now exist several research syntheses and a recent meta-analysis that connected PPIs to desirable work outcomes (Avey, Reichard, Luthans, & Mhatre, 2011; Bolier et al., 2013; Donaldson et al., 2019; Gilbert, Foulk, & Bono, 2018; Knight et al., 2017; Rudolph, Katz, Lavigne, & Zacher, 2017; Sin & Lyubomirsky, 2009). Study 1 in Phase One was designed to evaluate the effectiveness of 22 well-studied PPI's at work using process evaluation and differentiate between SPPIs and MPPIs at work. Process evaluation offers a lens to assess the quality of intervention implementation, including how intervention activities, dosage, and other practical features impacted work outcomes. Two hypotheses were explored: (1) multicomponent positive psychology interventions at work will have a higher ratio of significant work outcomes to null work outcomes at posttest than single component positive psychology interventions, and (2) characteristics of the process evaluation, such as dose, reach, and research design, will vary based on MPPIs versus SPPIs.

Overall, findings revealed the ratio of significant to null work outcomes measured at posttest was 38:41 across all intervention studies. However, the ratio varied dramatically between SPPIs versus MPPIs, as well as positive psychology theory chosen in the intervention design. Multicomponent positive psychology interventions had a 20 to 5 (4:1) ratio of significant to null work outcomes, whereas SPPIs had 18:36 (1:2), supporting *Hypothesis 1*. On average, MPPIs reached 68 participants in the treatment group compared to 42 participants in SPPIs. Further, MPPIs used random assignment in four out nine studies, whereas SPPIs used random assignment in three out of 13 studies. The process evaluation in Phase One showed that interventions with multiple intervention activities impacted practical characteristics of the intervention, and subsequently impacted work outcomes (*Hypothesis 2*). Specifically, well-being interventions had

the highest ratio of significant to null work outcomes (8:1), whereas job crafting interventions demonstrated the lowest ratio (1:3).

PsyCap interventions implemented activities on hope, optimism, self-efficacy, and resilience across all four studies. Meta-analytic findings suggest PsyCap is an effective way to improve work outcomes, including job satisfaction and organizational commitment (Avey et al., 2011; Donaldson et al., 2019). It is interesting to note that Williams et al. (2016) and Williams et al. (2017) used the exact same intervention procedure and measures, yet PsyCap and organizational virtuousness were found to be null in Williams et al.'s (2016) intervention. One explanation could be the lack of random assignment and self-selection bias in the research designs. Further, the two PsyCap interventions that did use random assignment found that all work outcomes were significant, including job performance, SWLS, and work productivity (Yuan, 2015; Zhang, 2014).

The two intervention that used job crafting in addition to PsyCap found five significant findings to one null finding (van Wingerden et al., 2016, 2017). Some of the work outcomes included work engagement, in-role performance, and job crafting. Similar to Williams et al. (2016, 2017), van Wingerden et al. (2016, 2017) did not use random assignment in their intervention design. However, van Wingerden et al. (2016) argued that combing PsyCap and job crafting would create the "best of both worlds" in terms of improved work outcomes (van Wingerden et al., 2017, p. 55). In addition, the PsyCap and job crafting interventions were twice as long (3 weeks versus 6 weeks) as the PsyCap interventions.

Of the three well-being interventions, the PERMA-based program had no null findings and was the only well-being intervention to use random assignment (Laschinger et al., 2012; Neumeier et al., 2017; Page & Vella-Brodrick, 2013). Interestingly, the PERMA-based intervention was the

shortest in duration (only two weeks) compared to six weeks and six months in the other two interventions, respectively. It should be noted that Laschinger and colleagues CREW program and Page and Vella-Brodrick's (2013) Working for Wellness Program only had one null finding each in comparison to three significant findings. Thus, the well-being interventions represented the highest significant to null ratio found across all positive psychology theories (8:1). It is possible that the quantity of (>5) intervention activities in all three studies was able to create a lasting impact on work outcomes. Rusk et al. (2018) described the tipping tray analogy where multi-domain interventions possess enough marbles to tip the seesaw in the direction of desired change.

It was found that gratitude interventions had an overall ratio of 2:3 significant to null work outcomes. Notably, the interventions that used random assignment had a 5:3 ratio of significant to null work outcomes (Grant & Gino, 2010; Kaplan et al., 2014). Winslow et al.'s (2017) intervention found seven null work outcomes, such as job stress, gratitude, and job satisfaction. One explanation for these poor findings could be that participants were assigned to condition, lack of random assignment, and the low number of employees in the intervention group (i.e., 28). Beside Harty et al.'s (2016) multisession gratitude intervention, the other three interventions used very simple intervention activities, such as recalling good events throughout the workday. Kern et al. (2019) contents that systems informed positive psychology that is dynamic and multi-causal will result in longer lasting psychology behavior change. Thus, it could be that the isolated focus on just gratitude alone led to an intervention effect that failed to produce meaningful work outcomes.

None of the four job crafting interventions used randomization in their research design, and had an overall ratio of 1:3 significant to null work outcomes. While the four interventions had activities that targeted several components of job resources and demands, job crafting interventions

demonstrated the poorest significant to null ratio of all positive psychology theories. Van den Heuvel, Demerouti, and Peeters (2015) measured nine out of nine null work outcomes at posttest. Presumably, the lack of randomization, self-selection into the intervention group, and single training day contributed to the null effects. In fact, all four job crafting interventions had less than 45 participant in the control group, suggesting issues around statistical power. Finally, strengths interventions resembled a similar pattern to job crafting interventions with three out of four studies lacking random assignment, including self-selection into the intervention group (Makie, 2014; Meyers & van Woerkom, 2017; Williams, 2010). Harzer and Ruch's (2016) strengths intervention included the largest number of participants in the intervention group (i.e., 83) and used random assignment, resulting in significant findings for calling at work and global life satisfaction.

Implications

Study 1 established what we know about PPIs at work through a process evaluation lens. It evaluated single component and multicomponent positive psychology theories applied to interventions in the work setting, and practical characteristics that have facilitated their success or null findings. From Phase One, it is evident that the Positive Work and Organizations (PWO) literature has developed a unique value proposition in the workplace, cultivating employee and organizational effectiveness in many instances. It is also apparent that process evaluation offers a unique insight when factoring in research design and implementation in the discussion of intervention effectiveness.

An important takeaway from Phase One was the comparison of single component versus multi-component intervention studies. Kern et al. (2019) argued for a systems perspective to positive psychology, accounting for the dynamic and multi-causal nature of human phenomena. Furthermore, there has been a wealth of research conducted on the efficacy of SPPIs (34 versus 5

interventions studies in Bolier et al., 2013). However, Rusk et al. (2018) proposed the Synergistic Change Model, which suggested long-term benefits (i.e., spillover effects) are more probable from MPPIs than SPPIs. Further, Phase Two took the opportunity to build on one particular MPPI, and address Seligman and colleagues call to revise the PERMA model. It was hoped that this new model of EPF would harness several dimensions targeted in MPPIs at work and be used in the design and evaluation of future interventions.

CHAPTER 4 – PHASE TWO: STUDY TWO Method

Item Development

Study Two followed DeVellis' (2017) guidelines on scale development, which consisted of generating an item pool, determining the format for measurement, initial item pool review by subject matter experts (SMEs), and inclusion of validation items. Thus, the first step was to generate a large item bank based on the first five pillars of PERMA, and extant literature on the additional four dimensions (Butler & Kern, 2016). This initial item pool consisted of 86 Likert-type items (see Appendix B). The goal was to create a comprehensive set of items that closely resembled each construct, encompassing all known previous scales and newly adapted items. Four subject matter experts (SMEs) then evaluated the items for face validity. This narrowed down the item bank to 78 items, which were then ready for further content validation. All items in the EPF item bank were phrased as declarative statements and measured on a 1 = Strongly Disagree to 7 = Strongly Agree response set (see Appendix B). Further, psychometric literature has demonstrated that reverse-coded items tend to form their own factor structure in statistical analyses, and are confusing to survey respondents (DeVellis, 2017). Thus, all negatively worded items were excluded for the final version of the EPF scale (see Appendix C).

Results

Content Validation

Twelve SMEs were invited to review and evaluate the 78-item bank based on their expertise in the area of PWO. The response rate was 75% (9/12). Each participant was given a measure overview and instructions for rating the importance of each the item. For example, each participant was asked to "provide feedback on the definitions and construct validity of EPF (please use track changes), and rank the items in the item bank." They were also told that these sample survey items were attempting to assess how employees experience the nine dimensions in a "typical workday." See Appendix C for definitions and the final item bank. Item information consisted of the dimensions/sub-dimensions of EPF, items included in that dimension/sub-dimension, response set used, scale or adapted scale, and a blank column for their ranked value for each item (1 = Very Important to 5 = Not Very Important to include in the final EPF instrument.

Items were evaluated on each construct using intraclass correlation (ICC) and descriptive statistics. Intraclass correlation is widely used to evaluate interrater, test-retest, and intra-rater reliability (Koo & Li, 2016). There are different types of ICC models depending on the rating format. For Study 2, a Two-Way Random-Effects Model specified selected raters of interest (i.e., SMEs) as a fixed factor. This model assumes reliability statistics can be generalized to raters in the population who possess similar expert characteristics. In terms of descriptive statistics, the average rank for each item was computed, and items that had a mean rating above 2 were examined for further review (DeVellis, 2017). Intraclass correlation is a measure of absolute agreement rather than consistency. Consistency is measured by linear relationships between raters, whereas absolute agreement measures how close raters are in terms of their scores. The ICC coefficients ranged from .36 to .94, indicating considerable variability in agreement for which items should be

included in the final item bank. While Ko and Li (2016) contend that there are no standard values for an acceptable ICC, they suggest values less than 0.5 are considered poor reliability. Further, descriptive statistics also revealed 18 items that had a mean rank above two. A research team of three SMEs and one leading scholar in survey design (AB) reviewed the problematic items. After consensus was reached among the team, the content validated item bank consisted of 58-items.

The next phase included survey development with the new 58 item pool. The goal by the end of the validation studies (i.e., Study 2 and Study 3) was to have approximately three to four items on each construct for the CFA in Study 4. Table 1 demonstrates the flow between item development, content validation, and the final survey instrument in Study 4. Five SMEs pilot tested the initial instrument before it was administered via Qualtrics in Study 3.

Scales	Item Development	Content Validation	Factor Analyses	
Positive Emotions	4	4	3	
Positive Engagement	6	4	3	
Positive Psychosocial				
Work Relationships	10	6	4	
Positive Meaning	12	10	3	
Positive Accomplishment	6	4	3	
Positive Mindset	18	12	3	
Positive Physical Health	6	5	4	
Positive Economic Security	9	7	3	
Positive Physical Work				
Environment	7	6	3	
N	78	58	29	

 Table 1. Scale Development

CHAPTER 5: PHASE TWO: STUDY THREE

Method

Purpose

An exploratory factor analysis (EFA) was performed to explore the underlying

dimensionality of the prospective EPF items. In utilizing EFA, only items possessing satisfactory loadings (>.32) and marginal cross-loadings (<.40) were included in the final measure (Yong & Pearce, 2013). Then, a confirmatory factor analysis was used in Study 4 to validate the dimensionality of the revised measure. Brown (2012) and DeVellis (2017) suggest CFA is a great complement to EFA to because CFA allows the researcher to test how well hypothesized factors fit the data.

Participants and Procedure

A Qualtrics survey was administered to a sample of 350 full-time employees on MTurk, a crowdsourcing website where participants complete surveys for monetary compensation. To be eligible for the study, MTurk respondents had to either be in a management job function or have full time employment status (35+ hours per week). Participants surveyed via MTurk are shown to be demographically diverse (Buhrmester, Kwang, & Gosling, 2016; Goodman, Cryder, & Cheema, 2013) and responses are found to be as reliable and valid as responses from other traditional recruiting methods (Azzam & Jacobson, 2013; Harman & Azzam, 2018; Jacobson, Whyte, & Azzam, 2018; Rand, 2012). The survey included the 58 prospective EPF scale items from the content validated item bank.

Using best practice recommendations by Brown (2012) and DeVellis (2017), approximately 350 participants were recruited for this study. To be eligible for the study, participants had to be employed, reside in the United States, be able to read and write in English, and also earn at least a 95% approval rating on past MTurk tasks. After clicking on the link to the web-based survey, participants were presented with an electronic consent form. After consenting to participate, respondents were asked to think about their "typical" experience at work. They were then given a random order of the items from each construct on the EPF scale, with items in random order within construct. Harrison and McLaughlin (1996) suggested grouping items by construct improves convergent and discriminant validity. The survey ended with a series of demographic questions, such as ethnicity, age, educational attainment, job function, job industry, and income. All respondents were debriefed following completion of the survey. Study protocols were approved by the IRB.

Measures

Below is a list of the measures used to assess EPF in Study 3. These items were adapted and modified from validated scales in the PWO literature and beyond. Please see Appendix C for a complete list of the items and validated scales in the final instrument. All items were rated on a 7point Likert-type scale (*Strongly Disagree/Strongly Agree*).

Positive emotions. Positive emotions were examined using four items measured on a 7point Likert type scale (*Strongly Disagree/Strongly Agree*). These items were adapted from the Workplace PERMA Profiler and SPANE scale (see Appendix C; Kern, 2014). Respondents were asked how often they felt various positive emotions. For example, sample items included, "I feel joy in a typical workday," and "Overall, I feel enthusiastic about my work."

Positive engagement. Positive engagement included two subdimensions: absorption, and vigor. *Absorption* was examined using items such as "I typically become absorbed while I am working on something that challenges my abilities?" and "I lose track of time while doing something I enjoy at work." An example item assessing *vigor* included, "I can work for very long periods of time on something that improves my job skills." These items were adapted from the Workplace PERMA Profiler and Utrecht Work Engagement Scale (UWES-9; Kern, 2014; Schaufeli & Bakker, 2004).

Positive relationships. Positive relationships included two sub-dimensions. The Workplace PERMA Profiler (including ONS and WHO-QOL 100 scale items) includes the sub-dimensions *giving* and *perceived.*. Example items included "I can receive support from coworkers if I need it" and "I feel appreciated by my coworkers."

Positive meaning. Positive meaning was measured using the Workplace PERMA Profiler and the Work and Meaning Inventory (WAMI). The Workplace PERMA Profiler assessed three sub-dimensions of positive meaning, including *worth, transcendent,* and *direction*. An example *worth* item included "In general, I feel the work I do is worthwhile," and a transcendent item included "My work is meaningful." The last sub-dimension on the Workplace PERMA Profiler was *direction*, which included an item such as "I generally feel that I have a sense of direction in my work." The WAMI assesses positive meaning through three sub-dimensions (i.e., positive meaning, meaning-making, and greater good motivations). *Positive meaning* items included "I have found a meaningful career," and "I have a good sense of what makes my job meaningful." To measure *meaning-making* items included "I view my work as contributing to my personal growth," and "My work helps me make sense of the world around me." The last sub-dimension was *greater good motivations*, which included items such as "I know my work makes a positive difference in the world, and "The work I do serves a greater purpose."

Positive accomplishment. Positive accomplishment was measured using two subdimensions (i.e., *goals* and *prove performance goals*) from the Workplace PERMA Profiler, Contextual Achievement Motivation Scale (CAMS), and Work Domain Goal Orientation Instrument. The Workplace PERMA Profiler assessed the *goals* sub-dimensions using a sevenpoint Likert type scale (*Strongly Agree/Strongly Disagree*). Example items on each sub-dimension

included "I am making progress towards accomplishing my work-related goals," and "I am generally satisfied with my performance at work," respectively.

Positive mindset. Positive mindset included four sub-dimensions (i.e., *psychological capital, GRIT, growth mindset, and prospection*) examined using a seven-point Likert type agreement scale (*Strongly Disagree/Strongly Agree*). Psychological capital (PsyCap) included the four sub-dimensions self-efficacy, hope, resilience, and optimism. The PsyCap Short Form (PCQ) asked questions on each dimension, such as "I feel confident in representing my work in a meeting with management," "I can think of many ways to reach my current work goals," "I usually take stressful things at work in stride," and "I always look on the bright side of things regarding my job." *GRIT* was measured using the Short Grit Scale (GRIT-S) on a seven-point Likert type scale (*Strongly Agree/Strongly Disagree*), including statements such as, "Setbacks don't discourage me at work," and "I am a hard worker in my job." The Mindset Test included questions such as, "I am able to change how much talent I have toward my work." The last sub-dimension of positive mindset is *prospection*, which used the Future Time Perspective Scale (FTP) to ask questions like, "I expect I will set many new goals at work," and "My future is filled with growth opportunities at work."

Positive physical health. Positive health and its three sub-dimensions (i.e., *biological, functional, and psychological*) were measured on a seven-point Likert type agreement scale (*Strongly Disagree/Strongly Agree*). Items that assessed *biological* aspects of positive health included, "I typically feel physically healthy at work," and "I am rarely sick at work." The functional sub-dimension of positive physical health presented statements such as, "I can overcome sources of physical distress (e.g., insomnia, speech impediments, injuries, vision issues,

etc.)." The last *psychological* sub-dimension included items from the Multidimensional Health Locus of Control Scale such as, "I feel in control of my physical health."

Positive economic security. Positive economic security items were based on the Economic Security Index (ESI). The four sub-dimensions of positive economic security included *income, job security, medical spending*, and *financial savings*. For example, a sample *income* statement read, "My current income affords me stability." *Job security* items included questions such as, "I feel confident I will have a job in 1 year from now," and "If I lost my job I would have no problem finding other work." To measure *medical spending* questions included, "I believe my current financial situation can buffer against major out-of-pocket medical expenses," or "Losing several months from work due to serious illness would not affect my economic security." Finally, an example *financial savings* item asked "In the event of a financial emergency, I have adequate savings."

Positive work environment. Positive work environment included *physical* and *psychosocial* factors that promote employee best selves at work. Hartig, Evans, Korpela, and Garling (1997) suggested positive physical work environments include abundance of natural light, access to nature, and assurance of physiological safety. An example item is, "My physical work environment (e.g., office space) allows me to focus on my work." Positive psychosocial characteristics of the workplace include social cohesion and growth between diverse individuals and job demand (Piasentin & Chapman, 2007). Some example items were "My coworkers bring out my best self," and "My coworkers and I have similar values in terms of how we approach our work."

Result

First, inter-item correlations, item variances, items means, and coefficients of internal subscales were examined. Consistent with Butler and Kern (2016) and the recommendations of other scholars (Carlson et al., 2011; Marsh, 1996), only positively worded items were used to avoid a method-induced bias of reverse-coded items. Traditionally, reverse-coded items load onto a single factor that results in an artifact of the method rather than a unique construct. In addition, the goal of positive psychology is to understand human flourishing, not merely the absence of such. The EFA was conducted using SPSS Version 25 and then replicated using the psych package in R Version 3.3.5 (Revelle, 2015).

Missing Data Analysis

Preliminary data cleaning was performed to remove participants who did not complete the majority of the survey (i.e., above 67% completion). Thus, 33 cases were deleted who failed to complete a majority of the 58-item instrument, and one case who did not give informed consent. Next, DeSimone, Harms, and DeSimone (2015) best practice recommendations for data screening was used, and participants were screened for extreme response times (measured in seconds), evidence of longstring, invariant responding, and incorrect answers on two bogus items. Bogus items contain content that is "either obvious or ridiculous" (DeSimone et al., 2015, p. 173). The two items from Study 3 included "I have 17 fingers on my left hand" and "I was born on planet earth." Three participants were excluded from the analysis based on incorrect responses to the bogus items, and 12 cases were deleted based on a response time of under 120 seconds (i.e., less than 2 minutes to complete a 58-item survey). One case was deleted due to invariant responding (i.e., 6-14 of the same numeric responses in a row). The final survey sample consisted of 301 participants.

Survey Demographics

All participants were compensated \$.60 for completing the survey, which took an average of six minutes to complete. The average age of participants was 38 years old with 51% female (n = 153) and 49% male (n = 146). Two participants did not report their sex. Most respondents reported having a Bachelor's degree (48.8%, n = 147), followed by Associate (32.9%, n = 99), Master (12.6%, n = 38), and Doctorate (3%, n = 9) degrees. Eight people did not report their educational attainment. Of participants who reported their work industry, healthcare (16%, n = 16), software & IT services (15%, n = 15), and banking & financial services (14%, n = 14) were the most represented. Other industries included education, government, manufacturing, and non-profit, among others. Most respondents reported that their job function was operations (20%, n = 20), administrative (16%, n = 16), and information technology (15%, n = 15). Other job functions included arts & design, marketing, sales & business development, and accounting & finance.

Exploratory Factor Analysis

The dimensionality of EPF was examined using an EFA procedure. Principal axis factoring of the 58-items using an oblique rotation extracted the underlying factor structure (DeVellis, 2017). Factor extraction was guided by analysis of a scree plot, parallel analysis, factors with Eigenvalues greater than .70 (New Kaiser Rule; Braeken & van Assen, 2017), and theoretical expertise. Next, the EFA matrix of communalities were assessed. Items with a communality less than .50 were removed (Meyers et al., 2013). Loadings on the extracted factors using the rotated pattern matrix were then examined. Only items possessing high loadings (> .32) on only one factor were retained.

Before the first round of EFA, a parallel analysis was conducted (Horn, 1965) with ordinary least squares estimation and an oblique rotation. Parallel analysis uses a Monte Carlo simulation based on a fixed number of variables and cases to help determine the best number of factors to retain (Ledesma & Valero-More, 2007). A factor is considered significant when the eigenvalue is bigger than the mean of factors obtained from random uncorrelated data. Based on analysis of a scree plot with simulated and actual data, the suggested number of factors was approximately eight. Additivity was then tested to make sure none of the items were multicollinear (i.e., correlations >.85). For the first round of EFA, a nine-factor solution emerged with five items possessing marginally high-cross loadings (i.e., >.30) and one item with a low factor loading coefficient (.21). The high cross-loading items were on positive meaning, positive mindset, and positive economic security. The items on positive meaning included "My work contributes to my personal growth," and "I have found a meaningful career." The marginally high cross-loading items on positive mindset was "I can improve the level of talent I currently possess in my job." Two items on positive economic security also had high cross-loadings, including "My job affords me a stable income," and "If I lost my job I would have no problem finding other work." Finally, the two items on positive work environment loaded onto separate factors in the first round of EFA. After removing cross-loadings items a second EFA was conducted to review the updated dimensionality.

The second round of EFA produced an updated pattern matrix, consisting of a 27-item scale with one unacceptable loading (.19) and cross-loading (.48). As such, those two items were deleted from the final instrument. The end result was a nine-factor solution with three to four items on each subscale, besides the positive work environment factor which had two items. Principal axis factoring with direct oblique rotation ($\Delta = 0$) was used to perform the analysis. The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) for the 27-item scale was .95, which is a statistic that indicates the proportion of variance in your variables that might be caused by

underlying factors. High values (close to 1.0) generally indicate that a factor analysis may be useful for your data. If the value is less than 0.50, the results of the factor analysis probably won't be very useful (Leard Statistics, 2019). All communalities were above .50. Examination of the scree plot using the new Kaiser cutoff (>.70) revealed 9 factors that explained 73% of the variance. Table 2 shows the factor loadings of the 27-item measure after the final round of EFA.

	Factor									
Item	PE	PEN	PREL	PMEAN	PACCOM	PMIND	PPHealth	PECON	PWE	
PE_2	0.82									
PE_1	0.76									
PE_4	0.65									
PEN_A_2		0.97								
PEN_A_3		0.80								
PEN_A_1		0.56								
PREL_P_1			0.83							
PREL_G_1			0.79							
PREL_SC_2			0.79							
PWE_PS_3			0.51							
PMEAN_T_1				0.87						
PMEAN_GG_2				0.83						
PMEAN_PM_3				0.81						
PACCOM_G_2					0.80					
PACCOM_P_2					0.57					
PACCOM_G_1					0.34					
PMIND_GM_1						0.55				
PMIND_P_1						0.66				
PMIND_P_2						0.58				
PPHealth_2							0.64			
PPHealth_1							0.86			
PPHealth_5							0.66			
PECON_MS_1								0.85		
PECON_FS_1								0.96		
PECON_I_2								0.50		
PWE_P_2									0.85	
PWE_P_3									0.71	

Table 2. Factor Loadings of 27 EPF Items in the Final EFA Model in Study 3

Note. PE = positive emotion; PEN_A = positive engagement (absorption); PREL_G = positive relationships (giving); PREL_P = positive relationships (perceived); PREL_SC = positive relationships (shared vision); PWE_PS = positive work environment (psychosocial); PMEAN_T_1 = positive meaning (transcendent); PMEAN_PM_3 = positive meaning (positive meaning); PMEAN_GG_2 = positive meaning (greater good motivations); PACCOM_G_1, G_2 = positive accomplishment (goals); PACCOM_P_2 = positive accomplishment (performance goal); PMIND_GM_1 = positive mindset (growth mindset); PMIND_P_1, P_2 = positive mindset (prospection); PPHEALTH = positive physical health; PECON_MS_1 = positive economic security (medical

spending); PECON_FS_1 = positive economic security (financial savings); PECON_I_2 = positive economic security (income); PWE_P_1 , P_2 = positive physical work environment.²

The updated pattern matrix for the 27-item EPF scale had excellent reliability ($\alpha = .94$). The reliabilities for each subscale ranged from acceptable (>.70) to excellent (>.90; Cronbach, 1970): positive emotions ($\alpha = .93$), positive engagement ($\alpha = .88$), positive relationships ($\alpha = .90$), positive meaning($\alpha = .91$), positive accomplishment ($\alpha = .81$), positive mindset ($\alpha = .86$), positive physical health ($\alpha = .85$), positive economic security ($\alpha = .84$), and positive physical work environment ($\alpha = .76$).

Discussion

The results demonstrated that a nine-factor solution to the EPF scale fit the hypothesized model well. Further, there were three themes that emerged from the EFA that deserve further theoretical validation. First, one item from PWE had a stronger loading coefficient with the PREL factor, leaving two items on PWE. The psychosocial items on PWE loaded more strongly with positive relationships than with the other positive physical work environment items. Consistent with Warren et al. (2017), positive relationships are an integral aspect of the work environment, including the promotion of personally valued strengths between coworkers, work teams, etc. Thus, from a theoretical and empirical perspective, psychosocial relationships). This new factor included dimensions of both relationships with valued coworker and mentors, as well as perceptions of a socially cohesive work environment. The remaining factor for the physical aspects

² Please see Appendix D for a list of key acronyms
(e.g., physiological safety, access to nature, etc.) of the work environment is called positive physical work environment (PPWE). Unfortunately, this left only two items to factor analyze for the positive physical work environment factor. Thus, further content validation was needed to add more items before the CFA in Study 4.

Another interesting finding from round one of the EFA procedure occurred within the PECON factor. Two subfactors formed that included medical spending, financial security, and income, on one hand, and job security on the other hand. It appeared that answering specific items about the perceptions of one's job was different than referring to other aspects economic behavior. In order to have a construct that represented multiple subdimensions of employee economic behavior, income, medical spending, and financial savings were included in the final instrument. This factor still includes employee perceptions of their income, while also including other relevant economic factors, such as medical spending and financial savings.

There was a similar trend within the positive mindset factor. Originally, positive mindset was operationalized to include elements of PsyCap, grit, growth mindset, and prospection. However, the EFA results showed that PsyCap formed its own factor apart from grit, growth mindset, and prospection. This makes sense from a theoretical perspective since PsyCap is a state-like, developable construct consisting of resilience, hope, self-efficacy, and optimism. The other three elements of positive mindset from the definition (i.e., grit, growth mindset, and prospection), on the other hand, have in common a focus on a long-term vision of a positive future. Thus, while PsyCap and positive mindset should be positively related, Study 3 suggests they may form two separate factors. One is focused on state-like positive states, whereas the other is focused on long-term prospects in the workplace.

The end result of Study 3 was a 27-item instrument that contained nine factors: positive

emotions, positive engagement, positive psychosocial relationships, positive meaning, positive accomplishment, positive mindset, positive economic security, positive physical health, and positive physical work environment. The next step was to further validate the psychometric properties of the EPF scale using 3-4 items on each construct in a CFA to maintain internal consistency, while also testing for convergent, discriminant, and criterion forms of validity. Before the CFA in Study 4, three SMEs created two additional items on the PWE factor, and the factor name was changed to positive physical work environment.

CHAPTER 6: PHASE TWO: STUDY FOUR

Method³

Inclusion Criteria for Well-Being Measures and Workplace Outcomes

Using the multidimensional typology of desirable and undesirable work outcomes (Avey et al., 2011), a criterion measures pool was developed. The pool was separated into four sections: positive and negative well-being measures, and positive and negative performance measures. A literature review was performed on each on these four subsections, including PsychInfo, Web of Science, Ackerman, Warren, and Donaldson's (2018) systematic review of measurement scales, and work outcomes included in Donaldson et al.'s (2019) meta-analysis on PPIs at work. This produced an initial pool of more than 50 published scales. Next, several criteria were used to evaluate the utility of the scales: length of scale (<30 items), psychometric validation studies, and citation record. This resulted in two positive well-being measures, one negative well-being measures, three positive performance measures, and one negative performance measures (see Table 3).

³ Please see Appendix D for a list of key acronyms

The Job-related Affective Well-being Scale (JAWS) is designed to assess employee emotional reactions to their job. There is a wealth of research that supports the psychometric validity and scoring of the JAWS scale. Furthermore, it is a scale uniquely designed for the workplace with close to 700 citations via Google Scholar (Spector, Fox, Goh, & Bruursema, 2003; Van Katwyk, Fox, Spector, & Kelloway, 2000). The Satisfaction with Life Scale (SWLS) is one of the most widely implemented well-being scales in the positive psychology literature (Diener, 1985). With close to 23,000 citations on Google Scholar, SWLS has been validated not only at the population level in the U.S. but also in international populations. The major strength of SWLS is that is consists of only five Likert-type items. Finally, the last positive well-being measure was PsyCap. Psychological Capital is a seminal construct in the PWO literature with close to 3,000 citations. In addition to psychometric support for the PsyCap instrument (Luthans et al., 2007), a meta-analysis demonstrated a link to key organizational outcomes (e.g., job satisfaction, organizational commitment, and psychological well-being; Avey et al., 2011). There were several reasons for not including the remaining positive well-being instruments outlined in Table 3. The major reasons either were a low citation count, and thus unfamiliarity with the stability of the instrument, or a lack of workplace validation.

In terms of negative well-being measures, the Institute for Safety, Compensations, and Recovery Research's review of workplace stress evaluation tools were reviewed. The Job Stress Scale (JSS) was elected because of its simple five-item response set. The Workplace Stress Scale (WSS) had no psychometric validation and the Patient Health Questionnaire (PCQ-9) did not have a scale adapted to the workplace.

Organizational Citizenship Behavior (OCB) has long been an important aspect of human behavior at work. Employees who are altruistic, conscientious, and courteous have a major impact

on organizational performance (Organ, 1988). The father of OCB, Dennis Organ, has been cited over 10,300 times since his seminal paper was published. The OCB-C 10-item short version of the OCB checklist is short, yet psychometrically sound (Spector et al., 2010). Griffin et al. (2007) developed a new model of work role performance, including proficiency, adaptivity, and proactivity at the individual, team, and organizational level. Unlike job satisfaction that doesn't account for interdependent and uncertain contexts, positive work role performance (PWRP) is an important theoretical extension of job performance in the VUCA (volatile, uncertain, complex, and ambiguous) world (Bennett & Lemoine, 2014). Griffin et al.'s (2007) new model of positive work role performance has been cited nearly 1,600 times in the past decade.

Finally, the Turnover Intentions Scale (TIS-6) was chosen over the Maslach Burnout Inventory (MBI) due to scale length (six items versus 20+), convenience, and need for a license to administer the MBI.

Positive well-being measures	Author(s)				
PsyCap short form (PCQ)	Luthans et al. (2007)				
Satisfaction with life scale (SWLS)	Diener et al. (1985)				
Daniels five-factor measure of affective well-being (D-FAW)	Russell and Daniels, 2018				
Psychological wellbeing scale (PWB)	Ryff and Keyes (1995)				
The questionnaire for eudaimonic well-being (QEWB)	Waterman et al. (2010)				
Thriving at work scale (TWS)	Porath et al. (2012)				
Workplace related well-being scale (WWBS)	Orsila et al. (2011)				
Negative well-being measures	Author(s)				
Job stress scale (JSS)	Lambert et al. (2006)				
Patient health questionnaire (PHQ-9)	Spitzer et al. (2000)				
Workplace stress scale (WSS)	American Institute of Stress				
Positive performance measures	Author(s)				
Organizational citizenship behavior (OCB-C)	Spector et al. (2010)				
Positive work role performance (PWRP)	Griffin et al. (2007)				

Table 3. Final Criterion Measures Pool for Study 4

Job-related affective well-being scale (JAWS, Positive & Negative)

Van Katwyk et al. (2000)

Negative performance measures	Author(s)
Turnover intentions (TIS-6)	Roodt & Bothma (2013)
Maslach burnout inventory (MBI-GS)	Maslach et al.

Note. Bolded scales were used for the final instrument in Study 4.

Survey Procedure

The survey was divided into two sections. In the first part, every participant received the 29-item EPF scale and 27-item positive work role performance (PWRP) scale. This ensured that all respondents initially completed the main predictor variable (i.e., EPF Scale) and dependent variable (i.e., PWRP), which totaled 59 items. The PWRP scale was chosen as the main dependent variable because it is a comprehensive, validated scale that includes nine subscales at the individual, team, and organizational levels. Due to the large number of measures included in Study 4, three separate blocks of items were created. Participants were asked to complete only one of these blocks to avoid survey fatigue. The items were distributed to minimize carryover effects, and create an even balance between well-being and performance measures. Participants were randomly assigned in equal proportions to one of three blocks. Block One was the JAWS scale (i.e., 20-items on positive and negative well-being). Block Two was OCB (10-items on positive performance) and the JSS (5-items on negative well-being). Block Three was the TIS-6 (6-items on negative performance), SWLS (5-items on positive well-being), and PsyCap (8-items on positive wellbeing). The final survey ranged from 71-76 items for each participant with a near even balance between performance and well-being measures. Please see Appendix C for the final instrument.

Measures

Employee positive functioning scale. [29 items; All participants] The 29-item EPF scale was developed in Study 3.

Job-related affective well-being scale. [20 items; Block One] The JAWS scale was

measured using the 20-item short version created by Van Katwyk et al. (2000). The purpose is to understand the extent to which employees experience high pleasurable-high arousal (HPHA; e.g., energetic, excited), high pleasurable-low arousal (HPLA; e.g., at-ease, calm), low pleasurable-high arousal (LPHA; e.g., angry, anxious), and low pleasurable-low arousal (LPLA; e.g., bored, depressed) emotions in their jobs. Spector (2007) included instructions for scoring the 20-item short version JAWS scale, and aggregated positive emotions (i.e., HPHA and HPLA) and negative emotions (i.e., LPHA and LPLA) subscales. Van Katwyk (2000) supported the psychometric validity of the JAWS scale and subscales. The JAWS scales uses a five-point Likert-type scale from 1 (*Never*) to 5 (*Extremely Often*). Example items included "My job made me feel angry," and "My job made me feel fatigued."

Psychological capital. [8 items; Block Three] Luthans et al. (2007) developed the PCQ to measure a higher-order construct composed of optimism, resilience, hope, and self-efficacy. Eight items (two for each construct) were adapted from the PCQ. Example items included "I feel confident representing my work in a meeting with management," and "If I should find myself in a jam at work, I could think of many ways to get out of it." Luthans et al. (2007) found psychometric support for the PCQ instrument along with significant positive relationships with performance and job satisfaction.

Satisfaction with life. [5 items; Block Three] Diener et al. (1985) developed the SWLS to assess global cognitive judgments of one's life satisfaction. Respondents indicated their level of agreement on five Likert-type items, ranging from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). The SWLS has been to shown to have Cronbach alpha's in the excellent range (i.e., > .90). Sample items included "In most ways my life is close to my ideal," and "I am satisfied with my life."

Job stress scale. [5 items; Block Two] The JSS was measured using five Likert-type items

adapted from Crank, Regoli, Hewitt, and Culbertson (1995) and Lambert, Hogan, Camp, and Ventura (2006). Some items included "A lot of time my job makes me very frustrated or angry," and "When I'm at work I often feel tense or uptight." Lambert et al. (2006) reported a Cronbach alpha of .80 for JSS and satisfactory factor analytic fit statistics (e.g., root mean square error of approximation below .08).

Organizational citizenship behavior. [10 items; Block Two] Organizational Citizenship Behavior was measured using the 10-item short version of the Organizational Citizenship Behavior Checklist (OCB-C; Fox et al., 2007). The items in the OCB scale asked employees about how often they "Took time to advise, coach, or mentor a co-worker," and "Volunteered for extra work assignments." Bauer and Fox reported coefficient alphas above 80.

Positive work role performance. [27 items; All participants] Positive Work Role Performance was measured using the model of PWRP developed by Griffin et al. (2007). Griffin and colleagues confirmatory factor analysis revealed a nine-factor structure (i.e., each dimension at each level) fit best with excellent internal consistencies (α ranging from 83 - 93). Respondents reported their level of proficiency, proactivity, and adaptivity in the workplace on a 7-point Likerttype scale from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). A higher score indicated that respondents were more proficient, proactive, and adaptive in the workplace.

Turnover intentions scale. [6 items; Block Three] The TIS-6 was used to measure employee perceptions and attitudes toward turnover (Roodt & Bothma, 2013). The TIS-6 consisted of six Likert-type items ranging from either 1 (*Never*) to 5 (*Always*) or 1 (*Highly Unlikely*) to 5 (*Highly Likely*), in the case of reverse coded items. Roodt and Bothma (2013) conducted a study on a census-based sample (n = 2429) and found support for internal reliability ($\alpha = 0.80$) and criterion-predictive validity.

Results

Survey Demographics

To be eligible for the study, MTurk respondents had to indicate full time employment status (35+ hours per week) and have an MTurk approval rating greater than 95. These demographic characteristics were similar to what was found in Study 3. All participants were compensated \$.60 for completing the survey. The average age of participants was 39 years old with 54.8% female (n = 396) and 42.6% male (n = 308). Nineteen people either declined to state their gender or left that item blank. Most respondents reported having a Bachelor's degree (46.5%, n = 336), followed by Master (22%, n = 159), Bachelor (19.5%, n = 141), and Doctorate (2.4%, n = 159), Bachelor (19.5%, n = 141), and Doctorate (2.4%, n = 159), Bachelor (19.5%, n = 141), and Doctorate (2.4%, n = 159). = 17) degrees. Twenty-four people did not report their educational attainment. The most represented work industry was software and IT services (17%, n = 120), retail, wholesale, and distribution (13%, n = 92), and education (10.8%, n = 78). Other industries included government, manufacturing, and non-profit, among others. Most respondents reported that their job function was administrative (16.9%, n = 122), information technology (16.2%, n = 117), and management (15.5%, n = 112). Other job functions included arts and design, marketing, sales, and business development, and accounting & finance. Finally, the majority (i.e., 78.5%) of respondents reported an income below \$75,000 with \$25,000-\$49,999 representing the modal income category (32.6%, n = 236).

Preliminary Analyses

Similar to Study 3, preliminary data cleaning was performed to remove participants who did not complete the majority of the survey instrument (i.e., above 67% completion). Thus, 81 cases were removed who did not complete the EPF scale. Next, DeSimone et al. (2015) best practice recommendations for data screening were used. Three participants were excluded from the analysis based on incorrect responses to the bogus items, and two cases were deleted based on a

response time of under 120 seconds (i.e., approximately 2 minutes to complete a 58-item survey). One case was deleted due to invariant responding (i.e., 6-14 of the same responses in a row). The initial sample consisted of 837 participants, which was then narrowed down to 750 participants.

Before estimating a series of confirmatory factor analytic models (CFA) using maximum likelihood, normality tests were conducted, including calculation on Mahalonobis distance to identify multivariate outliers with p < .001 (Mahalanobis, 1936). The majority of items in the 29-item scale had skewness and kurtosis values <1.8 (absolute value), except PACCOM_2 (Kurtosis = 2.63), PACCOM_3 (Kurtosis = 2.56), and PMIND_1 (Kurtosis = 3.27). These items on accomplishment were kurtotic due to the preponderance of responses on the high end of the scale with relative few responses on the low end. Thus, the likelihood of having responses that were tail heavy (on the positive side of the distribution) was more likely. Results from the Mahalonobis distance test revealed 24 multivariate outliers, reducing the final sample in Study 4 to 727 participants. All analyses were conducted using the lavaan (Rosseel, 2012) and SemTools package (Jorgensen, Pornprasertmanit, Schoemann, & Rosseel, 2018) in R version 3.5.3, as well as SPSS Version 25. Maximum likelihood estimation with robust standard errors was used to conduct the analyses (Yuan & Bentler, 2000).

Confirmatory Factor Analysis

In order to evaluate the model fit of the 29-item EPF scale, Brown's (2015) guidelines for interpreting goodness-of-fit indices in CFA were used. Brown (2015) reviewed several types of fit indices, including absolute fit, incremental fit, and parsimonious fit. Absolute fit evaluates the assumption that the sample came from the population of interest. The most widely used absolute fit indicator is the Root Mean Square Error of Approximation (RMSEA), which is the extent to which a model fits reasonably well in a population. Wheaton, Muthen, Alwin, and Summers (1977)

suggested RMSEA values < .08 have achieved acceptable fit. Incremental fit indices evaluate the fit of the user-specified model in relation to a baseline ("null") model (Brown, 2015). Due to their satisfactory performance in Hu and Bentler (1999) simulations, Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), and Normed Fit Index were chosen (NFI; Bentler, 1990; Bentler & Bonett, 1980; Bollen, 1989b). Reasonably good fit is indicated by CFI, TLI, and NFI values >.90. Standardized Root Mean Square Residual (SRMR) values below <.06 indicate good fit. Parsimonious fit evaluates fit by incorporating a penalty function for poor model parsimony. A non-significant value with p >.05 indicates excellent fit. However, as sample size increases the likelihood of statistically significant departures from the hypothesized model also increases. Thus, target fit indices become harder to achieve. Marsh and Hocevar (1985) suggested a chi-square/df ratio <3.0 is an acceptable fit controlling for sample size. Finally, the improvement in model fit by using the Akaike's information criterion (AIC) of the nested model comparison was assessed (Kline, 2016).

In order to evaluate the best fitting solution based on theoretical consideration, four structural equation models with a nested model fit comparison were tested. The first-order model with nine correlated factors was used as the reference model based on theoretical and practical consideration. The first-order model demonstrated no evidence of Heywood cases because none of the modeled error variances were negative, and none of the R squared statistics were above one. In terms of modification indices, there were eight items on three separate constructs (i.e., PACCOM, PECON, and PPWE) that had correlated errors, which if included in the model, would significantly improve the model fit (i.e., by at least 15 chi-square points). Brown (2015) suggested that CFA validation studies may include correlated errors to account for method covariation. In this instance, items on each of these constructs were worded similarly, and thus prone to the shared method

effect. These eight error correlations were included in all four models.

First, a one-factor model was tested that allowed all items to load onto one single factor. From a theoretical perspective, this type of model would suggest no discriminant validity between the nine dimensions, and support one overall measure of EPF. This model included the eight correlated errors described earlier. The model showed poor fit with the data, $X^2(373) = 3936.46$, p< .01, $X^2/df = 10.55$, RMSEA = .115, 90% CI of RMSEA [.111, .118], SRMR = .083, CFI = .733, TLI = .709, AIC = 64,353.56.

The second model tested the 9-factor first-order solution, which specified all nine dimensions and allowed them to correlate. This model suggested EPF is composed of nine multidimensional factors that relate to each other, yet are not causally determined by a higher-order construct. The model showed a very good fit with the data, $X^2(337) = 984.554$, p < .01, $X^2/df = 2.92$, RMSEA = .051, 90% CI of RMSEA [.048, .055], SRMR = .047, CFI = .951, TLI = .942, AIC = 61,473.65.

Based on literature supporting a higher-order model of well-being (Coffey et al., 2016; Longo et al., 2017), two higher-order models were then tested. First, one higher-order construct was used to predict all nine lower-order constructs. Theoretically, this model assumes that EPF is one construct composed of nine lower-order dimensions. The model showed acceptable fit with the data, $X^2(364) = 1280.12$, p < .01, $X^2/df = 3.52$, RMSEA = .06, 90% CI of RMSEA [.05, .06], SRMR = .059, CFI = .931, TLI = .923, AIC = 61,715.22.

The bifactor model assumes that EPF is influenced by both nine lower-order constructs, and one general factor that loads onto each item. The bifactor model also showed acceptable fit with the data, $X^2(364) = 1345.62$, p < .01, $X^2/df = 3.69$, RMSEA = .061, 90% CI of RMSEA [.057, .064], SRMR = .055, CFI = .926, TLI = .918, AIC = 61,780.721. Additionally, Rodriguez, Reise, and Haviland (2016) found two statistics to be particularly useful for evaluating bifactor models: explained common variance (ECV) and percent of uncontaminated correlations (PUC). Explained common variance is an index of unidimensionality, which relates to the explanatory power of the general factor. The PUC indicates the percentage of correlations between the items that reflects the general factor. Even if the ECV is relatively modest, a high PUC indicates that the model will be unbiased when specifying a bifactor model. For model four, the ECV was .52 and the PUC was .92, supporting the use of a general factor in EPF. See Table 4 for fit indices of the four CFA models.

Model	X^2	df	р	RMSEA (90% CI)	SRMR	CFI	TLI	AIC
One factor	3936.463	373	<i>p</i> < .001	.115 (.111, .118)	0.083	0.733	0.709	64353.561
Bifactor	1345.62	364	<i>p</i> < .001	.061(.057, .064)	0.055	0.926	0.918	61780.721
Higher-			-					
order	1280.124	364	<i>p</i> < .001	.059 (.055, .062)	0.059	0.931	0.923	61715.223
First-order	984.554	337	<i>p</i> < .01	.051 (.048, .055)	0.047	0.951	0.942	61473.652
	17							

 Table 4. Fit Indices of the Four CFA Models

Note. N = 727.

The next step was to compare each of the four CFA models using a chi-square difference test. This test evaluated which models were significantly better fitting than subsequent models. As aforementioned, the first-order model was the comparison model based on theoretical and practical consideration. The findings from Table 5 showed the first-order model was statistically better fitting than the other three models. However, the higher-order model and bifactor model had adequate fit indices and were not statistically different from each other. The one-factor model had the poorest fit indices and significant chi-square difference test.

 Table 5. Nested Model Comparison

	df	AIC	BIC	Chi square difference
Nine-factor	337	61474	61923	СМ
Higher-order	364	61715	62041	295.57*** (higher-order vs. nine-factor)

Bifactor	364	61781	62107	65.5 (bifactor vs. higher-order)					
One-factor	373	64354	64638	2590.84*** (one-factor vs. bifactor)					
<i>Note.</i> CM = comparison model; *** = $p < .001$.									

To assess reliability of the EPF scale and its nine subscales, a variety of reliability statistics were used. The most common indicator of internal consistency is Cronbach's α (Cronbach, 1951), which is the mean of all possible split-half reliabilities in a scale. Guttman's λ_6 (G6). Revelle (2015) states that Guttman's λ_6 (G6) estimates reliability by the amount of variance explained by each item in the scale. McDonald's omega hierarchical ω h statistic calculates the general factor saturation when computing reliability. Revelle and Zinbarg (2009) suggested omega outperforms other measures of internal consistency, especially when taking into account the factor structure of the dataset. Overall, the EPF scale possessed acceptable to excellent internal consistency statistics (see Table 6). Positive accomplishment and positive physical work environment showed the lowest loadings (<.80), and demonstrated the need for further consideration.

	EPF									
	Scale	PE	PEN	PREL	PMEAN	PACCOM	PMIND	PECON	PPHEALTH	PPWE
Cronbach's α	0.94	0.93	0.83	0.88	0.91	0.76	0.83	0.83	0.82	0.66
Gutman's λ_6	0.96	0.90	0.77	0.88	0.88	0.71	0.79	0.79	0.79	0.59
ω _h	0.83	0.93	0.83	0.85	0.91	0.79	0.84	0.84	0.83	0.69
Minimum split half (β)	0.97	0.84	0.75	0.89	0.84	0.72	0.80	0.79	0.84	0.68
Maximum split half (λ_4)	0.84	0.82	0.73	0.87	0.79	0.63	0.65	0.77	0.79	0.61
Note. EPF = Employee Positive Functioning; ω_h = McDonald's omega hierarchical.										

Table 6. Internal Consistency Measures for the EPF Scale and Nine Subdimensions

Evaluating Convergent and Discriminant Validity

Table 7 shows correlations of the EPF and its subscales with SWLS, PCQ, and Job Stress Scale. The EPF scale and each of the nine dimensions had correlations above .30, supporting convergent validity of the scale (Cohen, 1988). Correlations between the nine subscales of the EPF were in the medium to large range (.32 to .73; Cohen, 1988) with the exception of the correlations between PECON and the other eight dimensions, which were all small to medium (between .24 and .43).

Hypothesis 3 proposed that the EPF scale would be positively related with other well-being measures, including the PCQ and SWLS. Findings supported a large, positive relationship between the EPF scale and SWLS, r(230) = .736, p < .05, as well as between the EPF scale and PCQ, r(230) = .710, p < .05. Further, *Hypothesis 4* was supported since the EPF scale was negatively related to the Job Stress Scale, r(206) = -.366, p < .05. Strong, positive relationships with SWLS and PCQ, and a medium, negative relationship with JSS supported convergent validity of the EPF scale (*Hypothesis 5*).

Table 7. Means, Standard Deviations, Correlations for EPF Scale and Well-Being

Variable	М	SD	Ν	1	2	3	4	5	6	7	8	9	10	11	12	13
1. EPF Scale	5.20	0.87	723	-												
2. PREL	5.41	1.04	723	0.722	-											
3. PMEAN	5.51	1.27	723	0.752	0.528	-										
4. PPWE	4.75	1.31	723	0.672	0.442	0.399	-									
5. PPHEALTH	5.38	1.03	723	0.649	0.392	0.340	0.344	-								
6. PECON	4.14	1.68	723	0.602	0.287	0.243	0.394	0.433	-							
7. PMIND	5.45	1.16	723	0.846	0.590	0.635	0.474	0.533	0.391	-						
8. PE	5.09	1.47	723	0.854	0.599	0.726	0.500	0.421	0.386	0.728	-					
9. PEN	5.44	1.05	723	0.645	0.459	0.511	0.308	0.322	0.192	0.490	0.566	-				
10. PACCOM	5.67	0.93	723	0.750	0.507	0.522	0.423	0.531	0.291	0.726	0.581	0.484	-			
11. SWLS	4.77	1.57	230	0.736	0.510	0.479	0.507	0.594	0.653	0.542	0.619	0.383	0.515	-		
12. PCQ	5.46	0.84	230	0.710	0.510	0.526	0.465	0.601	0.372	0.587	0.592	0.451	0.698		-	
13. JSS	2.61	0.89	206	-0.366	-0.290	-0.328	-0.191	-0.176	-0.031	-0.341	-0.363	-0.231	-0.411			-

Note. Correlation coefficients that are statistically significant are bolded (p < .05); SWLS = Satisfaction with Life Scale; PCQ = Psychological Capital Questionnaire; JSS = Job Stress Scale.

Similarly, the relationships between the EPF scale, SWLS, and PsyCap also demonstrated discriminant validity. Campbell and Fiske (1959) suggested correlations between constructs should be below .85 to demonstrate discriminant validity. In the current study, the correlations between EPF and SWLS (.736) and PCQ (.710) were large, but not large enough to argue they are

measuring the same thing.

Criterion Validity

To test *Hypothesis 6* and *Hypothesis 7*, a correlation matrix produced the relationship between the EPF scale and work performance measures (see Table 8). Overall, performance measures had medium to strong relationships with the EPF scale. Most notably, the EPF scale and JAWS-PE subscale had the strongest relationship, r(276) = .789, p < .05. There was also a strong, negative relationship between the EPF scale and TIS, r(230) = -.563, p < .05. The nine subdimensions of the PWRP scale (i.e., Iprof, Tprof, Oprof, Iadapt, Tadapt, Oadapt, Iproact, Tproact, Oproact) had medium to strong relationships with the EPF scale. This was trend was generally replicated across the nine dimensions of EPF. However, the relationship between PECON and performance measures generally demonstrated small to medium relationships. Additionally, PACCOM tended to have strong relationships with performance measures. Finally, all dimensions of the EPF scale and subscales had stable, negative relationships with TIS and JAWS-NE. This further supported the convergent validity of the scale. Table 8 supports the relationship between the EPF Scale and performance measures included in Study 4 (*Hypotheses 6* and 7).

	EPF Scale	PREL	PMEAN	PPWE	PPHEALTH	PECON	PMIND	PE	PEN	PACCOM
JAWS	0.283	0.114	0.224	0.273	0.054	0.249	0.154	0.321	0.226	0.147
JAWS_PE	0.789	0.558	0.639	0.482	0.503	0.406	0.696	0.820	0.504	0.605
JAWS_NE	-0.489	-0.434	-0.401	-0.194	-0.444	-0.144	-0.530	-0.480	-0.265	-0.447
OCB	0.395	0.341	0.271	0.292	0.174	0.197	0.320	0.377	0.236	0.226
TIS-6	-0.563	-0.446	-0.514	-0.335	-0.274	-0.243	-0.565	-0.614	-0.34	-0.432
Iprof	0.401	0.317	0.325	0.175	0.357	0.043	0.394	0.24	0.357	0.613
Tprof	0.518	0.512	0.365	0.263	0.446	0.172	0.477	0.349	0.370	0.588
Oprof	0.711	0.599	0.614	0.396	0.464	0.265	0.683	0.647	0.496	0.577
Iadapt	0.538	0.389	0.399	0.306	0.430	0.196	0.469	0.403	0.431	0.621

Table 8. Correlations between EPF Scale and Performance Measures

Tadapt	0.564	0.454	0.410	0.326	0.454	0.173	0.531	0.418	0.435	0.632
Oadapt	0.541	0.470	0.402	0.325	0.440	0.185	0.499	0.405	0.404	0.595
Iproact	0.518	0.347	0.375	0.342	0.343	0.234	0.436	0.429	0.391	0.525
Tproact	0.540	0.369	0.385	0.334	0.365	0.276	0.480	0.423	0.388	0.537
Oproact	0.539	0.371	0.364	0.362	0.363	0.335	0.473	0.427	0.297	0.510

Note. Statistically significant correlations are bolded (p < .05); JAWS = Job-related Affective Well-being Scale (PE = Positive Emotion Subscale; NE = Negative Emotion Subscale); OCB = Organizational Citizenship Behavior; I = Individual; T = Team; O = Organizational; Prof = Proficiency; Adapt = Adaptivity; Proact = Proactivity; TIS-6 = Turnover Intentions.

Criterion and Incremental Validity

To evaluate criterion and incremental validity of the EPF scale (*Hypothesis 7*), a series of hierarchical multiple regressions were run to determine if the four new dimensions improved the prediction of work outcomes above and beyond the original five pillars of PERMA. First, the impact of the five pillars on the negative emotion's subscale of JAWS (JAWS-NE) was tested. There was linearity as assessed by partial regression plots and a plot of studentized residuals against the predicted values. There was independence of residuals, as assessed by a Durbin-Watson statistic of 1.972. There was homoscedasticity, as assessed by visual inspection of a plot of studentized residuals versus unstandardized predicted values. There was no evidence of multicollinearity, as assessed by a variance inflation factor <10. There were two studentized deleted residuals greater than ± 3 standard deviations, no significant Cook's D leverage values greater than 0.2. The assumption of normality of residuals was met, as assessed by a Q-Q Plot. These tests were applied for all analyses assessing criterion and incremental validity, and only exceptions (if any) were noted. In addition, only outcome measures that were significantly predicted by the EPF measure were included.

The first model investigating the five pillars on JAWS-NE was statistically significant, $R^2 =$.289, F(5, 270) = 22.03, p < .05. The addition of four new keys to the prediction of JAWS-NE (see Table 9) led to a statistically significant increase in ΔR^2 of .070, $\Delta F(4, 266) = 7.18$, p < .05.

Specifically, PMIND (b = -2.14, SE = .75, p < .05) and PPHEALTH (b = -2.05, SE = .59, p < .05) were strong negative predictors of JAWS-NE, whereas PECON (b = .85, SE = .30, p < .05) was a small positive predictor of JAWS-NE. Positive physical work environment (b = -2.14, SE = .75, p < .05) had a marginally significant relationship with JAWS-NE.

	Mode	el 1	Mod	lel 2
Variable	В	SE	В	SE
Constant	44.38	3.10	46.19	3.18
PE	-1.56	0.52	-1.20	0.56
PEN	<u>0.92</u>	0.53	<u>0.91</u>	0.51
PREL	-1.61	0.53	-1.13	0.54
PMEAN	-0.16	0.52	-0.07	0.52
PACCOM	-1.83	0.63	-0.19	0.74
PMIND			-2.14	0.75
PECON			0.85	0.30
PPHEALTH			-2.05	0.59
PPWE			<u>0.69</u>	0.36
R^2	0.289		0.359	
ΔR^2			0.070	

Table 9. Incremental Validity of Four New Dimensions on JAWS-NE

Note. N = 276; Statistically significant model coefficients and model change statistics are bolded (p < .05). Marginally significant model coefficients and model change statistics are underlined (p < .08).

The impact of the five pillars on the turnover intentions scale (TIS-6) was then explored, which was statistically significant, $R^2 = .404$, F(5, 224) = 30.35, p < .05. The addition of four new dimensions to the prediction of JAWS-NE (see Table 9) led to a statistically significant increase in ΔR^2 of .07, $\Delta F(4, 220) = 3.58$, p < .05. Specifically, PMIND (b = -0.24, SE = .07, p < .05) was the only new predictor that was statistically significant. In addition, PE (b = -0.26, SE = .06, p <.05) was the only predictor that was statistically significant from the PERMA model across Model 1 and Model 2 (see Table 10).

	Moo	del 1	Mode	el 2
Variable	В	SE	В	SE
Constant	24.13	0.33	24.07	0.34
PE	-0.29	0.05	-0.26	0.06
PEN	0.09	0.06	0.09	0.05
PREL	-0.07	0.06	-0.09	0.06
PMEAN	-0.08	0.05	-0.05	0.05
PACCOM	-0.10	0.06	-0.02	0.07
PMIND			-0.24	0.07
PECON			0.03	0.03
PPHEALTH			0.08	0.05
PPWE			0.03	0.04
R^2	0.404		0.441	
ΔR^2			0.037	

Table 10. Incremental Validity of Four New Dimensions onTurnover Intentions

Note. N = 230; Statistically significant model coefficients and model change statistics are bolded (p < .05).

The next series of hierarchical multiple regressions tested the impact of the nine dimensions on individual, team, and organizational adaptivity. Model 1 showed that the first five pillars of PERMA were a significant predictor of individual adaptivity, $R^2 = .413$, F(5, 709) =99.73, p < .05 (see Table 10). The addition of four new dimensions to the prediction of individual adaptivity led to a statistically significant increase in ΔR^2 of .013, $\Delta F(4, 705) = 3.98$, p < .05. In particular, PEN (b = .14, SE = .03, p < .05) and PACCOM (b = .49, SE = .04, p < .05) were significant predictors in Model 1. However, in Model 2, PEN (b = .13, SE = .05, p < .05) and PPHEALTH (b = .12, SE = .05, p < .05) were the only two significant predictors.

	Mod	Model 2		
Variable	В	SE	В	SE
Constant	1.87	0.18	1.66	0.34

Table 11. Incremental Validity of Four New Dimensions on Individual

 Adaptivity

PE	-0.04	0.03	-0.04	0.06
PEN	0.14	0.03	0.13	0.05
PREL	0.05	0.03	0.04	0.06
PMEAN	0.04	0.03	0.05	0.05
PACCOM	0.49	0.04	0.47	0.07
PMIND			-0.05	0.07
PECON			-0.02	0.03
PPHEALTH			0.12	0.05
PPWE			0.02	0.04
<i>R</i> ²	0.413		0.425	
ΔR^2			0.013	

Note. N = 715; Statistically significant model coefficients and model change statistics are bolded (p < .05).

Findings from the impact of the EPF Scale on team adaptivity showed that the first five pillars of PERMA were a significant predictor of team adaptivity, $R^2 = .438$, F(5, 709) = 110.62, p < .05 (see Table 10). The addition of four new keys to the prediction of individual adaptivity led to a statistically significant increase in ΔR^2 of .021, $\Delta F(4, 705) = 6.91$, p < .05. Whereas in Model 1, PEN (b = .12, SE = .03, p < .05) and PREL (b = .13, SE = .03, p < .05) were significant predictors of team adaptivity, Model 2 showed that PE (b = -.06, SE = .03, p < .05), PEN (b = .11, SE = .03, p < .05), PACCOM (b = .38, SE = .04, p < .05), PECON (b = -.05, SE = .02, p < .05), and PPHEALTH (b = .13, SE = .03, p < .05) were significant predictors of team adaptivity.

The final hierarchical multiple regression examined the impact of the EPF scale on organizational adaptivity. As demonstrated in Table 12, the first five pillars of PERMA were a significant predictors of organizational adaptivity, $R^2 = .382$, F(5, 709) = 87.658, p < .05. The addition of four new dimensions to the prediction of individual adaptivity led to a statistically significant increase in ΔR^2 of .013, $\Delta F(4, 705) = 6.148$, p < .05. The findings from Model 1 showed that PEN (b = .10, SE = .03, p < .05), PREL (b = .09, SE = .03, p < .05), and PACCOM (b

= .44, SE = .03, p < .05) were significant predictors of organizational adaptivity. Model 2 showed that PEN (b = .09, SE = .03, p < .05), PACCOM (b = .36, SE = .04, p < .05), PECON (b = -.04, SE= .02, p < .05), and PPHEALTH (b = .13, SE = .03, p < .05) were significant predictors of organizational adaptivity when factoring in all nine keys of employee positive functioning. While the four additional keys had small, negligible effects on proactivity (except at the organizational level, see below), the results from proactivity and proficiency were nearly identical (Tables for proficiency available upon request).

	Model 1		Mod	el 2
Variable	В	SE	В	SE
Constant	2.24	0.18	2.02	0.19
PE	-0.03	0.03	-0.05	0.03
PEN	0.10	0.03	0.09	0.03
PREL	0.09	0.03	0.06	0.03
PMEAN	0.05	0.03	0.04	0.03
PACCOM	0.44	0.03	0.36	0.04
PMIND			0.04	0.04
PECON			-0.04	0.02
PPHEALTH			0.13	0.03
PPWE			0.04	0.02
R^2	0.382		0.403	
ΔR^2			0.020	

Table 12. Incremental Validity of Four New Dimensions on Organizational Adaptivity

Note. N = 715; Statistically significant model coefficients and model change statistics are bolded (p < .05).

Comparative Analysis of the EPF Scale versus SWLS and PCQ on Work Outcomes

To further explore the predictive validity of the EPF Scale and test *Hypothesis 8*, which aimed to compare EPF with SWLS and PCQ, a hierarchical multiple regression was used to conduct a comparative analysis on TIS-6, proactivity, and adaptivity. First, as demonstrated in Table 13, PCQ and SWLS were a significant predictors of turnover intentions, $R^2 = .250$, F(2, 227) = 37.96, p < .05. The addition of the EPF scale to the prediction of turnover intentions led to a statistically significant increase in ΔR^2 of .073, $\Delta F(1, 226) = 24.71$, p < .05. The findings from Model 1 showed that SWLS (b = -.14, SE = .04, p < .05) and PCQ (b = -.33, SE = .07, p < .05) were significant predictors of turnover intentions. Model 2 showed that when all three scales were included in the model, only EPF (b = -.46, SE = .09, p < .05) was a unique predictor of turnover intentions.

	Mode	el 1	Model 2		
Variable	В	SE	В	SE	
Constant	24.16	0.34	24.77	0.34	
SWLS	-0.14	0.04	-0.01	0.05	
PsyCap	-0.33	0.07	-0.12	0.08	
EPF Scale			-0.46	0.09	
R^2	0.250		0.315		
ΔR^2			0.073		

Table 13. Predictive Validity of EPF, PsyCap, and SWLS on Turnover Intentions

Note. N = 230; Statistically significant model coefficients and model change statistics are bolded (p < .05).

Hierarchical multiple regression was then used to conduct a comparative analysis on the impact of EPF on individual, team, and organizational adaptivity. Table 14 shows that EPF added unique variance at all three levels, as indicated by significant R squared improvements, ΔR^2 of .016, ΔR^2 of .041, ΔR^2 of .020, at the individual, team, and organizational level, respectively.

Table 14. Predictive Validity of EPF, PsyCap, and SWLS on Adaptivity

	Mod	el 1	Mode	el 2
Variable	В	SE	В	SE
Individual				
Constant	2.15	0.25	1.90	0.27
SWLS	-0.01	0.03	<u>-0.06</u>	<u>0.04</u>
PsyCap	0.66	0.06	0.58	0.06

EPF Scale			0.19	0.07
R^2 ΔR^2 Team	0.480		0.500 0.016	
Constant	2 80	0.25	2 12	0.26
Constant	2.00	0.23	2.42	0.20
SWLS	-0.03	0.03	-0.11	0.04
PsyCap	0.57	0.06	0.44	0.06
EPF Scale			0.28	0.07
R^2	0.385		0.419	
ΔR^2			0.041	
Organizational				
Constant	2.50	0.26	2.22	0.28
SWLS	-0.01	0.03	<u>-0.07</u>	<u>0.04</u>
PsyCap	0.61	0.06	0.51	0.07
EPF Scale			0.21	0.08
R^2	0 413		0 433	
	0.715		0.755	
ΔR^2			0.020	

Note. N = 715; Statistically significant model coefficients and model change statistics are bolded (p < .05). Marginally significant model coefficients and model change statistics are underlined (p < .08).

The last hierarchical multiple regression analysis examined the impact of the EPF scale on individual, team, and organizational proactivity (proficiency). Table 15 and 16 show that the EPF added unique variance at all three levels, as indicated by significant R squared improvements, ΔR^2 of .051, ΔR^2 of .030, ΔR^2 of .03 and ΔR^2 of .150, at the individual, team, and organizational level, respectively.

Table 15. Predictive Validity of EPF, PsyCap, and SWLS on

on Organizational Proficiency

8	0 0				
	Mod	Model 1		12	
Variable	В	SE	В	SE	
Organizational					

Constant	2.04	0.35	1.07	0.34
SWLS	<u>0.07</u>	0.04	-0.13	0.05
PsyCap	0.59	0.08	0.26	0.08
EPF Scale			0.72	0.09
<i>R</i> ²	0.332		0.479	
ΔR^2			0.150	

Note. N = 721; Statistically significant model coefficients and model change statistics are bolded (p < .05). Marginally significant model coefficients and model change statistics are underlined (p < .08).

	Mod	el 1	Mod	el 2
Variable	В	SE	В	SE
Individual				
Constant	2.17	0.42	1.46	0.45
SWLS	0.04	0.05	<u>-0.10</u>	<u>0.06</u>
PsyCap	0.59	0.09	0.41	0.10
EPF Scale			0.45	0.12
R^2	0.260		0.310	
ΔR^2			0.051	
Team	_			
Constant	1.44	0.41	<u>0.86</u>	<u>0.44</u>
SWLS	0.07	0.05	-0.04	0.06
PsyCap	0.68	0.09	0.53	0.10
EPF Scale			0.37	0.12
R^2	0.360		0.391	
ΔR^2			0.030	
Organizational				
Constant	1.89	0.45	1.32	0.49
SWLS	0.12	0.05	0.02	0.06
PsyCap	0.55	0.10	0.40	0.11
EPF Scale			0.36	0.13
R^2	0.281		0.309	
ΔR^2			0.030	

 Table 16. Predictive Validity of EPF, PsyCap, and SWLS on Proactivity

Note. N = 607; Statistically significant model coefficients and model change statistics are bolded (p < .05). Marginally significant model coefficients and model change statistics are underlined (p < .08).

Multi-Group Measurement Invariance Across Job Function

The goal of multi-group measurement invariance (MGMI) testing is to examine the stability of the factor structure across a variable of interest, such as time, method, or demographic characteristics (Meade & Lautenschlager, 2004). Statistical support for measurement invariance supports that participants interpreted the items and underlying factors in the same way. For this study, job function was explored which included eight categories: Accounting & Finance, Administrative, Arts & Design, Education, Engineering, Information Technology, Marketing, Sales, & Business Development, Operations, and Management. Support for Hypothesis 9, that scores on the EPF Scale will not vary based on job function, would conclude that employee job function does not impact how participants interpreted the nine dimensions of EPF. In order to retain sufficient statistical power for the analysis, job function was recoded into three categories: Business, IT, and Administrative. Business consisted of Management, Operations, and Marketing, Sales, and Business Development. IT consisted of Information Technology and Engineering, and Administrative was a standalone category. The purpose for aggregating variables in this fashion was to combine similar job functions, represent the majority of the sample, and retain sufficient sample size in each group to provide adequate statistical power for the analysis.

Kline (2016) outlines several steps for conducting MGMI. The first and least restrictive form of MGMI is configural invariance, which specifies that the number of factors is identical across job function. Metric invariance, assumes configural invariance, and specifies that the measures load onto their respective factor in a similar fashion. For example, the factor loadings of the nine dimensions of EPF would not differ across business, IT, or administrative job function. Finally, strong invariance was tested, which assumes configural and metric invariance, and hypothesizes equal intercepts across job function. This means that the baseline for each factor on the instrument would not be significantly different based on job function. Multi-group measurement invariance testing was conducted on the nine-factor and higher-order models, using the reference-group method (Little, Slegers, & Card, 2006).

In order to assess model fit, chi-square and CFI statistics were used. However, Meade, Johnson, and Brady (2008), as well as Kline (2016) have pointed out that chi-square can be overly sensitive in MGMI testing. Thus, CFI was used as a practical marker for support of *Hypothesis 9*. Meade et al. (2008) suggested that reductions in CFI change statistics should not exceed >.001. Tables 17 and 18 confirm support for configural, metric, and strong invariance of the employee positive functioning scale.

Tuble In Loner of the	" er n ey	0001	linetion				
Model	χ^2	df	р	<i>RMSEA</i> (90% CI)	SRMR	CFI	TLI
Business	813.465	337	<i>p</i> < .001	.051 (.046, .055)	0.047	0.951	0.941
Information Technology	539.351	337	<i>p</i> < .001	.062 (.052, .072)	0.059	0.921	0.905
Administrative	558.945	337	<i>p</i> < .001	.073 (.063, .084)	0.071	0.915	0.898
Note. $N = 545$; Busine	ss(n=26)	7); Inf	ormation Te	echnology ($n = 156$); A	dministra	ative (n	=
122).	-			· /			

 Table 17. Lower-Order CFA by Job Function

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Model	χ^2	df	р	$\Delta \chi^2$	Δdf	Δp	ΔCFI
Lower-Order							
Configural invariance	1793.5	1011	<i>p</i> < .001				
Metric invariance	1855.6	1051	<i>p</i> < .001	62.104	40	<i>p</i> < .05	0.002
Strong invariance	1923.8	1091	<i>p</i> < .001	68.277	40	<i>p</i> < .01	0.003
Higher-Order Configural	2000 5	1002	< 01				
invariance	2089.5	1092	p < .01	92 464	50	05	0.002
ivietric invariance	21/1.9	1148	<i>p</i> < .01	82.404	30	<i>p</i> < .05	0.003
Strong invariance $N_{ote} = 575$	2241.2	1186	<i>p</i> < .01	69.257	38	<i>p</i> < .01	0.003
1000.11 515							

Table 18. Multigroup CFA by Job Function for Higher- and Lower-Order Models

Discussion

The purpose of Study 4 was to validate the EPF scale with a sample of U.S. employees. While a chi-square nested comparison revealed the nine-factor model fit the data significantly better than the other three models, model fit statistics supported the nine-factor and the higher order models. A one factor model of EPF demonstrated an unacceptable to the data. These findings are consistent with the scales of general well-being (SGWB; Longo et al., 2017), and suggest EPF may be best represented by one higher order measure represented by nine lower order dimensions. To establish convergent and discriminant validity (*Hypothesis 3-4*), the EPF scale was correlated with other positive and negative well-being measures. *Hypothesis 3* and *4* were supported by strong, positive relationships between EPF, PCQ, and SWLS, and a medium, negative relationship between EPF and JSS. This finding builds on the work of Goodman et al. (2018) who suggested that satisfaction with life and PERMA were defined by the same higher-order factor of well-being. It should be noted that the sample sizes for PCQ, SWLS, and JSS were under 250 employees. Study 4 found psychometric support for a distinct construct with the addition of four new dimensions and validation in the work setting. One interesting finding was the relationship between PECON and the other factors in the EPF model. Whereas the vast majority of the nine interrelationships of EPF were medium to strong, PECON showed lower positive relationships. In spite of this, PECON and the overall EPF scale were strongly related, indicating the importance of perceptions of economic security on overall employee well-being (Diener, 2005). Please see Appendix D for a list of key acronyms.

In regard to evidence for criterion validity, the EPF scale had significant medium-strong relationships with performance measures. The most striking relationship was between the EPF scale and JAWS-PE (r = .79). Fredrickson (2003) argued that positive emotions create upward spirals in organizations, contributing to optimal organizational functioning. The EPF scale and positive work role performance also had strong relationships (all of which exceeded >.51), confirming *Hypothesis 5* that EPF would be positively related with work outcomes. In support of *Hypothesis 6*, the EPF scale had a strong, negative relationship with TIS-6. Further, it is not surprising that PMIND and PE were strongly related to TIS-6. Ozduran and Tanova (2017) found that a growth-mindset orientated culture in organizations lead to the shared belief that employee abilities are malleable.

A key motive for developing the EPF scale was to test the differential impact of PECON, PMIND, PPHEALTH, and PPWE on employee well-being and performance. Support for *Hypothesis 7* was partially demonstrated through a series of statistically significant hierarchical multiple regression analyses on JAWS, turnover intentions, and positive work role performance. Positive economic security, PMIND, and PPHEALTH were significant predictors of JAWS-NE.

Positive emotions was the only significant predictor from the PERMA model. The addition of PMIND, PECON, and PPHEALTH explained 8% more variance than the PERMA model alone. Positive mindset was the only new dimension that explained 4% more variance in turnover intentions. These findings suggest that employee mindset, perceptions of economic security, and physical health play a role on their subjective appraisal of well-being at work. Willis Towers Watson's Global Benefits Attitudes Survey (2017) found that employees' health and finances are on downward trend in the U.S. Only 35% of U.S. employees are satisfied with their financial situation, and nearly half of U.S. employees live paycheck to paycheck. Interestingly, PECON was a positive predictor of JAWS-NE, suggesting higher economic security may relate to increased negative emotions at work.

In terms of positive work role performance, PECON and PPHEALTH were predictive of individual and organizational adaptivity. However, both analyzes revealed an R squared change < 2% and should be interpreted with caution. One surprising finding from all these analyses was the lack of PPWE adding significant variance above and beyond the other pillars. One reason may be that the sample primarily consisted of managers, IT, and administrators who tend to have safe physical work environments. Occupational hazards are more prevalent in work settings that require physical labor, such as construction work. In addition, several of the hierarchical multiple regressions revealed the four new dimensions absorbed the predictive ability of the PERMA model. Specifically, PPHEALTH and PECON were strong predictors of employee well-being and performance and warrant further research.

The role of PsyCap on employee attitudes, behaviors, and performance is well documented in the PWO literature. In fact, Avey et al. (2011) found meta-analytic support for a small-medium effect of PsyCap on OCB's, job satisfaction, and stress/anxiety in 51 independent samples. Further,

Diener's (1985) SWLS scale is the most widely used, validated measure of well-being in positive psychology. As such, a comparative analysis was conducted of PsyCap, SWLS, and EPF to assess whether or not the new EPF measure predicted unique variance on TIS-6 and positive work role performance. The EPF scale captured 8% of the variance in TIS-6 above and beyond SWLS and PsyCap. This is a noteworthy finding and suggests employee positive functioning may be a robust predictor of negative performance measures. Donaldson et al. (2019) found that PPIs at work were stronger predictors of reducing undesirable work outcomes, such as turnover intentions and jobs stress, rather than improving desirable work outcomes (e.g., engagement). While statistically significant, the predictive validity of the EPF scale on proactivity and adaptivity was much more modest above and beyond PsyCap and SWLS ($\Delta R^2 < .05$). It appeared that PsyCap and EPF, the two workplace instruments, were more robust predictors than the SWLS. Interestingly, EPF predicted 15% of the variance in organizational proactivity above and beyond PsyCap and SWLS. This suggests that the EPF scale may influence how employees engage in self-starting, futureoriented behaviors at their work organization. This has implication for how the organization creates and innovates as a whole, rather than promoting departmental silos (Griffin et al., 2007).

The findings from multi-group measurement invariance testing supported *Hypothesis 9*, which explored the role of job function (i.e., whether or not someone was in business, information technology, or administrative) on how respondents interpreted the EPF scale. Support for measurement invariance includes no significant variation in factor structure, loadings, and intercepts across job function. These findings demonstrated measurement invariance across all three job functions, and may support this instrument as a useful tool across various employee job functions.

CHAPTER 7: GENERAL DISCUSSION

The goals of this dissertation were twofold: 1) use evaluation as a tool to further understand PPIs at work beyond meta-analytic findings, and 2) develop and test a measure (i.e., EPF) that targets several dimensions used in PPIs at work. In pursuit of these goals, Phase One evaluated 22 well-designed PPIs at work implemented in a variety of international contexts. One theoretical takeaway from the interventions in Phase One was the distinction between targeting a single component (e.g., gratitude) versus a multi-component (e.g., PERMA) dimension of positive psychology. Research has demonstrated that well-being is best measured as a multi-faceted construct (Diener, Collon, Lucas, 2009); however, the majority of PPIs to date have been conducted with one-dimensional constructs in the workplace (Bolier et al., 2013) Using these insights from Phase One, Phase Two included nine SME's and 1,027 full-time employees in the U.S. population to help create a new, multi-dimensional employee positive functioning scale.

Results from Phase One provided evidence for scholars and practitioners looking to use PPIs in the workplace. Findings showed the effect of implementing SPPIs versus MPPIs at work, positive psychology theories used in practice, aspects of intervention activities, and the measured impact on work outcomes. Donaldson et al. (2019) found that PPIs at work have a small, reliable ability to improve work outcomes. Building on their meta-analysis, Phase One unpacked the practical characteristics that moderated the success or null findings of these interventions. For example, SPPIs at work were most successful when they utilized random assignment in their intervention design.

Based on an analysis of single component versus multicomponent interventions reviewed in Phase One, Phase Two attempted to capture a model of EPF based on Seligman's PERMA model. Using a sample of employees from Amazon's MTurk, four additional dimensions to the

PERMA were explored. All nine dimensions demonstrated convergent and discriminant validity with other well-being measures, such as PsyCap and SWLS. Further, the EPF scale and nine dimensions showed criterion validity with a series of theory-related performance measures, such as turnover intentions and positive work role performance. The predictive validity of all new dimensions beside PPWE was also demonstrated with work outcomes, along with support for measurement invariance by job function (i.e., business, IT, and administrative). Finally, a comparative analysis of the EPF scale with other well-being measures, such as PCQ and SWLS, showed a significant effect on work outcomes above and beyond the two other prominent scales. Thus, Phase Two offered sound evidence for the use of a general measure of EPF, along with support for nine lower-order scales.

Theoretical Contributions

In Phase One, process evaluation provided a novel conceptualization of PPIs at work, building on quantitative findings from the first PWO meta-analysis (Donaldson et al., 2019). The ability to explore how positive psychology theory impacted quality of intervention implementation led to several insights that inspired Phase Two. Evaluation findings from Phase One shed light on the effectiveness using a multidimensional versus single component framework to design PPIs at work. Hendricks et al. (2019) reviewed the efficacy of multi-component positive psychology interventions (MPPIs). Hendricks and colleagues consider MPPIs as interventions that use a "variety of evidence-based individual exercises and target two or more theoretically relevant hedonic and eudaimonic well-being components" (p. 4). Their meta-analytic findings demonstrated small to moderate effects on stress and anxiety, similar to effect sizes found in Donaldson et al.'s (2019) meta-analysis with work outcomes. Other scholars have also cautioned against focusing on a single predictor of well-being, which could result in a myopic understanding of flourishing (Jayawickreme et al., 2012). Examples of single component interventions that target one aspect of well-being include gratitude and strengths-based interventions. This insight on MPPIs spurred the idea to create a more exhaustive positive psychology model based on Seligman's Theory of Well-Being (Seligman, 2011) in Phase Two.

In addition to a multidimensional model of employee well-being, Phase Two answered Jayawickreme et al.'s (2012) call to clean up well-being measurement, and included constructs that fit into each level of the *Engine Framework*. The EPF model spans across inputs, processes, and outcomes of well-being, which is useful for future researchers trying to investigate the causal relationships between the nine dimensions and three levels in *Engine Model*. Next, this study addressed Goodman et al.'s (2018) comparison of SWB and PERMA. Goodman and colleagues found that PERMA and SWB had a latent correlation of .98, suggesting equivalence of the two constructs. To combat these measurement concerns, this study found that four additional theory-based dimensions of positive functioning psychometrically distinguished EPF from SWB and other well-being measures. Even further, a comparative analysis revealed that EPF was a significant predictor of work outcomes, such as turnover intentions and positive work role performance, above and beyond the PCQ and SWLS.

Another theoretical contribution was the validation of the EPF model in the employee versus general population. This study found that EPF and PCQ were consistently better predictors of work outcomes than SWLS (i.e., general well-being measure), which suggests the important distinction between workplace well-being and general well-being. Likewise, Judge and Watanabe (1993) found only a moderate correlation between hedonic general well-being and job satisfaction. Meta-analytic findings have shown that job satisfaction is related to SWB (Tail, Padgett, & Baldwin, 1989). However, the magnitude of these correlations has varied considerably (range

between .16 - .68) and yielded inconsistent results (Adelmann, Antonucci, Crohan, & Coleman, 1989). Thus, this study presents an employee-driven model that can be compared to other workplace and general well-being models.

Furthermore, the EPF scale is best conceptualized as a higher-order construct manifested by nine subdimensions. This is consistent with other well-being research, which has supported either a higher-order or bifactor representation of well-being (Chen, Jing, Hayes, & Lee, 2013; Coffey, Wray-Lake, Mashek, & Branand, 2016; Jovanovic, 2015; Seligman, 2011). These findings also have implications for the role of positive economic security, positive mindset, and positive physical health on work outcomes. These three dimensions were consistent predictors of key organizational outcomes, such as turnover intentions and JAWS, supporting their relevance in explaining EPF and key performance measures. Finally, the EPF should be considered a unique value added to the PWO literature. This research chose PsyCap and SWLS for comparison purposes due to reputation, psychometric validation, and the ability to predict important outcomes. From a theoretical perspective, the EPF scale predicted unique variance in key work outcomes above and beyond these major scales. Thus, this study offered a new multidimensional theory of employee well-being that can help explain employee well-being and work outcomes.

Practical Implications

Phase one. Findings from Phase One are useful for practitioners looking to implement a particular positive psychology theory in the work setting. Process evaluation helped bridge the gap between positive psychology theory and how it was implemented in practice. For example, if practitioners are looking to improve a certain aspect of positive psychology at work, such as gratitude, then it is probably best to use random assignment and include a large intervention group. This would control for self-selection bias that was found in several of the gratitude interventions in

Phase One. These findings will also make scholars and practitioners cognizant of implementing a SPPIs or MPPI at work. Multicomponent positive psychology interventions outperformed SPPIs when it came to measuring work outcomes at posttest. Findings demonstrated that in addition to more complex intervention activities, MPPIs included more rigorous research designs, including random assignment into the treatment and control group. Also, multicomponent positive psychology interventions had an average of 26 more employees in the treatment group than SPPIs. Thus, practitioners should take into account the importance of research design and statistical power when implementing a PPI at work.

Phase two. From a practical perspective, measuring EPF is relevant for leaders and human resource managers wishing to improve turnover intentions, job-related affective well-being, and positive work role performance, among other work outcomes. Not to mention, if employees perceive they have high levels of positive functioning it will reinforce their positive orientation to the work organization. Further, this research goes above and beyond the typical "engagement survey" to provide nine specific dimensions with reliable and valid measurement. Organizations looking to perform a needs assessment with their employees can use either the general measure or individual measures to evaluate their positive functioning. For example, employees might, on average, have high positive meaning and positive accomplishment but lack positive physical health. As such, leaders and managers should be trained with this tool to design targeted interventions aimed at improving the nine dimensions of EPF.

Limitations and Future Directions

Phase one. While Phase One provided valuable information on PPIs at work using evaluation science, there were several limitations that should be noted. First, Donaldson et al. (2019) only included 22 studies in their review. Future research should include a broader range of

intervention studies to paint a complete picture of the state of PPIs at work. Just including the most well-studied interventions presents possible negative unintended side effects, such as publication bias. Second, there could be a variety of intervention characteristics (e.g., leadership buy-in; Knight et al., 2017) that impact work outcomes. As such, just focusing on the role of positive psychology theory type should be interpreted with caution when making claims about work performance. Finally, process evaluation is a useful tool from evaluation theory; however, there exist a swath of other evaluative approaches that would add value to the PWO knowledge base.

Phase two. At the fourth World Congress on Positive Psychology major thought leaders in the field, including Mihaly Csikszentmihalyi, Barbara Fredrickson, and Martin Seligman pointed out the over reliance on self-report and cross-sectional survey data in positive psychology research. By a similar vein, the first limitation of Phase Two was the use of self-report data. Future research will need to address these concerns and explore self-report effects by asking coworkers about their colleagues' level of positive functioning to address discriminant validity, construct proliferation, and mono-method bias concerns (Shaffer, DeGeest, & Li, 2016). Second, the EPF scale contains nine dimensions that employees would pursue for their own sake (Seligman, 2011). Therefore, the perceived positive value of each construct may lead to positive response sets in the data (Longo et al., 2017). Third, it is important to understand boundary conditions between the nine dimensions and other workplace factors, such as blue-collar work versus white-collar work. For example, it may be the case that employees who rely on physical labor (e.g., construction work) would rank certain dimensions of EPF (e.g., positive physical health) as more important to positive functioning than employees who work primarily in the office setting. Thus, future research should understand the structural dimensions of EPF to best tailor workplace interventions.

Fourth, this study attempted to develop and create a measurement model for EPF. Future research will be needed to explore the causal relationships between the nine dimensions in order to understand how they influence each other. It would be useful to understand whether or not constructs such as positive economic security moderate the ability to experience positive meaning at work, and so forth. Fifth, Phase Two used a sample of employees from Amazon's MTurk. Although, MTurk samples have shown comparability to student samples and the U.S. population (Buhrmester et al., 2016; Huff & Tingley, 2015), the EPF scales still needs validation work in non-MTurk samples. Additionally, cross-cultural validation work could further strengthen the EPF scale and solidify the factor structure.

Conclusion

As organizations prepare for a volatile, uncertain, complex, and ambiguous workplace of tomorrow, there is no doubt the science of PWO will cultivate employee positive functioning and performance. A process evaluation in Phase One discovered how the theoretical and practical characteristics of PPIs at work impacted work outcomes, and Phase Two empirically validated and tested a new model of employee positive functioning. Building on Seligman's PERMA theory of well-being, three new dimensions – positive mindset, positive economic security, and positive physical health – were predictive of employee and organizational work outcomes. Employee positive functioning can be used to design, measure, and evaluate future PPIs at work. Still, more research is needed to advance the field of PWO so employees and organizations can positively transform the world of work.
*References marked with an asterisk indicate interventions included in Phase One

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Appendix A.

					Reach			
	PP		Single or		(Intervention	Research		Work Outcome(s) at
Reference	Theory	Intervention Activity	Multicomponent	Dose	Group)	Design	Randomization	Posttest
Zhang (2014)	PsyCap	•Read microintervention model based on Luthans et al. (2006)	Multicomponent	30 minutes of structured reading materials	105 employees	•Pre-post with control group	Yes	(+) Job performance (+) PsyCap
Williams, Kern, and Waters (2016)	PsyCap	 Hope and optimism - participants learn to dispute negative thinking with hope and optimism <i>Resilience</i> - participants learn about the ABCDE model and behaviors to learn resilience <i>Self-efficacy</i> - use skills and knowledge in lives to build self- efficacy 	Multicomponent	3-day training - 6 hours total	51 teaching staff	•Voluntary participation •Pre-post with control group	No	(N) PsyCap (N) Organizational virtuousness
Williams, Kern, and Waters (2017)	PsyCap	• <i>Hope and optimism</i> - participants learn to dispute negative thinking with hope and optimism • <i>Resilience</i> - participants learn about the ABCDE model and behaviors to learn resilience • <i>Self-efficacy</i> - use skills and knowledge in lives to build self- efficacy	Multicomponent	3-day training - 6 hours total	51 teaching staff	•Voluntary participation •Pre-post without control group	No	(+) PsyCap(+) Organizationalvirtuousness
Yuan (2015)	PsyCap	 <i>Hope</i> - goal setting training using SMART goals <i>Self-efficacy</i> - expressive writing <i>Optimism</i> - ABCDE model of learned optimism <i>Resilience</i> - risk management and resource leverage practice skills 	Multicomponent	4-week training	48 employees	•Pre-post with control group	Yes	 (+) Work engagement (+) SWLS (+) PsyCap (N) Work productivity

Table A1. Process evaluation of positive psychology interventions at work

van Wingerden, Bakker, and Derks (2016)	PsyCap + job crafting	Session 1: personal resources (e.g., sharing about past, present, and future) Session 2: job resources (e.g., job crafting plan) Session 3: evaluation (e.g., sharing experiences and successes)	Multicomponent	3 training sessions over 5 weeks	43 healthcare professionals	 Participants were assigned to condition by location Pre-post with control group 	No	 (+) PsyCap (+) Job crafting (+) Work engagement (+) In-role performance
van Wingerden, Derks, and Bakker (2017)	PsyCap + job crafting	 <u>PsyCap:</u> 1. Discussed thoughts and feelings about career 2. Practiced giving and receiving feedback 3. Practiced refusing a request <u>Job crafting:</u> •Received job crafting intervention (cf. van Wingerden et al., 2017) 	Multicomponent	3 training sessions over 6 weeks	26 special education teachers	•Voluntary participation •Pre-post with control group	No	(+) In-role performance (N) Work engagement
Laschinger et al. (2012)	Well- Being	<u>CREW (civility, respect,</u> <u>engagement in the workplace)</u> <u>Toolkit:</u> •Promote respectful interactions •Develop conflict management skills •Teambuilding •Share successes •Communication strategies	Multicomponent	Weekly sessions for 6 months	165 animal shelter staff	•Managers willingness to commit to the intervention •Pre-post with control group	No	(+) Empowerment(+) Trust in management(-) Supervisor incivility(N) Coworker incivility
Neumeier et al. (2017)	Well- Being	 <u>PERMA-based program:</u> Practicing gratitude Savoring the moment You at your best self Random acts of kindness Visualizing your best possible self Wearing a smile Brainstorming meaningfulness 	Multicomponent	2 weeks	96 employees	•Pre-post waitlist control group	Yes	 (+) General subjective well-being (+) Work-related subjective well-being

Page & Vella- Brodrick (2013)	Well- Being	 <u>Working for wellness program:</u> 1. What is workplace well-being? 2. Knowing and using strengths 3. Goal striving 4. Flow 5. Relationships and altruism 6. Consolidation of learning 	Multicomponent	6 weeks (1hr per week)	31 government employees in Australia	•Pre-post control group	Yes	 (+) Psychological well- being (N) Work-related well- being (+) Subjective well-being (+) Work-specific affective well-being
Chan (2010)	Gratitude	•Weekly log of three good things that happened to them at work using an online platform	Single	15 min/wk for eight weeks	96 school teachers	•Voluntary participation •High gratitude compared to low gratitude group	No	 (+) Meaning (N) Pleasure (N) Engagement (-) Emotional exhaustion (-) Depersonalization (N) Personal accomplishment
Grant and Gino (2010)	Gratitude	•Director of annual giving thanked fundraisers for their hard work. For example, she explained to the fundraisers "I am very grateful for your hard work. We sincerely appreciate your contributions to the university."	Single	<1 day	20 fundraisers	•Pre-post with control group	Yes	 (+) Self-efficacy (+) Prosocial behavior (+) Social worth

Harty et al. (2016)	Gratitude	 <u>5 Sessions:</u> 1 - presentation on positive psychology 2 - work in pairs/groups to identify grateful aspects of work 3 - creative display of gratitude at work (e.g.,, poem, song, dance) 4 - Individual reflections and group interviews 5 - Pictorial illustration of pleasure, meaning, and strength as they relate to gratitude 	Single	10-week intervention period that met once every two weeks, ranging from 1-2 hours each session	37 non- governmental rehabilitation, social care, and education employees	•Workplace units selected based on practical grounds •Pre-post assessment with control group	No	 (+) Job satisfaction (+) General self-efficacy (+) Hope
Kaplan et al. (2014)	Gratitude	•Three good things that happened to them at work using an online platform	Single	3 days per week for 2 weeks	33 staff members from a large public university	•Pre-post with social connectedness control group	Yes	 (+) Positive affective well- being (+) Gratitude (N) Negative well-being (N) Social connectedness
Winslow et al. (2017)	Gratitude	•Record two things in their job or work for which they are grateful (examples included supportive work relationships, sacrifices or contributions that others have made for you, advantages or opportunities at work, and thankfulness for the opportunity to have your job in general)	Single	2 times a week for 4 weeks	28 employees from social service agency	•Participants were assigned to condition by agency location •Pre-post with waitlist control group	No	 (N) Positive affective wellbeing (N) Negative affective wellbeing (N) Job stress (N) Gratitude (N) Social connectedness (N) Job satisfaction (N) Turnover intent
Demerouti et al. (2017)	Job crafting	 Job analysis of their tasks and sub- tasks Trainers helped employees craft the demands and resources in their work Personal crafting plan using SMART goals 	Single	3-hour training	30 public sector employees	•Voluntary participation •Pre-post with no control group	No	 (+) Positive affective wellbeing (+) Openness to change (N) Adaptive performance

Van den Heuvel et al. (2015)	Job crafting	 Employees mapped their tasks, demands, and resources on a poster Employees created specific job crafting goals 	Single	1 training day, 4 weeks of independent work, and a half-day reflection session.	39 Dutch police officers	•Voluntary participation •Pre-post with control group	No	 (N) Seeking challenge demands (N) Seeking resources (N) Reducing demands (N) Opportunities for development (N) Leader-member exchange (N) Self-efficacy (N) Positive affective well- being (N) Negative affective well-being (N) Self-efficacy (N) Self-efficacy
van Wingerden, Bakker, and Derks (2017)	Job crafting	Step 1: job analysis Step 2: person analysis Step 3: job-person analysis Step 4: personal job crafting plan Step 5: sharing experiences Step 6: embedding for continued success	Single	2 training sessions over 6 weeks (8 hours and 4 hours, respectively)	45 primary school teachers	•Participants were assigned to condition by location	No	 (+) Challenging job demands (-) Hindering job demands (N) Social and structural job resources (N) Workload (N) Emotional job demands (N) Feedback (N) Professional development (+) Work engagement (+) In-role performance
van Wingerden, Derks, and Bakker (2017)	Job crafting	 Sorted job tasks Made list of strengths, motivations, and personal risk factors Discussion + job crafting goals set for next four weeks Evaluate job crafting goals 	Single	3 training sessions over 6 weeks	32 special education teachers	•Voluntary participation •Pre-post with control group	No	(N) In-role performance(N) Work engagement(N) Job crafting

Mackie (2014)	Strengths	 Strength-based assessment (e.g., MLQ 360, Realise2) Goal-setting: a realized strengthen unrealized strength, and a learned behavior or weakness Monitoring and evaluation 	Single	6, 90-min coaching sessions	10 coachees	•Voluntary participation •Pre-post with waitlist control group	No	(+) MLQ51
Meyers & van Woerkom (2017)	Strengths	•Strengths identification: discover three most dominant strengths •Strengths development •Strengths use: understand personal, social, and job resources	Single	Half day strengths training	67 Dutch employees	•Voluntary participation •Pre-post with waitlist control group	No	 (+) Positive affect (+) PsyCap (N) SWLS (N) Work engagement (N) Burnout
Williams (2010)	Strengths	•Strengths orientation and group discussion on how to incorporate a strengths dialogue into the performance-appraisal process	Single	l day	26 nonprofit employees in New York	•Pre-post with control group	No	(N) Satisfaction with appraisal process(N) Motivation to improve future performance(N) Performance appraisal
Harzer & Ruch (2016)	Strengths	 Learn about 4 highest character strengths Thought about daily tasks and activities at work Ways they currently use their signature strengths at work If-then-plans about how to use character strengths in the future 	Single	4 weeks	83 German- speaking employees	•Pre-post with control group	Yes	(+) Calling at work (+) Global life satisfaction

Note: PsyCap = psychological capital; SWLS = satisfaction with life scale; MLQ = multifactor leadership questionnaire; N = null finding; + = significant positive finding; - = significant negative finding.

	Single or			Ratio of sig.
	Multicomponent	Significant	Null work	to null work
PP theory	(S/M)	work outcomes	outcomes	outcomes
PsyCap	Μ	7	3	7:3
Well-being	Μ	8	1	8:1
PsyCap + job				
crafting	Μ	5	1	5:1
Gratitude	S	8	12	2:3
Job crafting	S	6	18	1:3
Strengths	S	4	6	2:3
TOTAL	-	38	41	38:41
Single	-	18	36	1:2
Multicomponent	-	20	5	4:1

Table A2. Summary table of positive psychology theory, single and multicomponent interventions, and work outcomes

Note: PP = positive psychology; S = single; M = multicomponent sig. = significant; work outcomes include measurements at post-test between the intervention group (i.e., PP theory type) and control group (cf. Donaldson et al., 2019).
Appendix B. The Nine Dimensions of Employee Positive Functioning Definitions and Initial Item Bank

Measure Overview

In 2011, Dr. Martin Seligman, the founder of positive psychology, published the book *Flourish*. He defined five pillars of well-being called PERMA (i.e., positive emotion, engagement, relationships, meaning, and accomplishment) that were grounded in empirical psychology literature. These five pillars were then developed and validated into a brief measure called the PERMA-Profiler (Butler & Kern, 2016). While Kern (2014, October) also created a resource for the PERMA-Profiler in the work setting, there is scant research that investigates PERMA and the multi-dimensional nature of well-being at work (Kern, Waters, Adler, & White, 2014; Kun, Balogh, & Krasz, 2017).

Furthermore, the purpose of the nine dimensions of employee positive functioning (EPF) is to expand on the PERMA model by adding a *positive lens* on each pillar, and propose *four new pillars* called positive mindset, positive economic security, positive physical health, and positive physical work environment. I suggest nine dimensions provide a comprehensive, multi-dimensional framework to most accurately assess employee flourishing.

Instructions:

Below are the definitions of EPF, and an item bank that contains potential items to be used in the development of an EPF survey instrument. *Thank you* for agreeing to participate as a subject matter expert (SME) in the development of EPF. We ask that you provide feedback on the definitions and construct validity of the pillars (*please use track changes*), and rank the items in the item bank. In the item bank you will see a column on the far right, "Ranking (1-5)," which

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we ask you to rank on a scale of 1 (*very important*) to 5 (*not very important*) to include in the final Instrument. Please reach out to Scott Donaldson (<u>scott.donaldson@cgu.edu</u>) if you have further questions.

Important Note. These sample survey items attempt to assess how employees experience EPF in a "typical workday."

EPF Definitions (First Draft)

1. Positive Emotions (PE)

Emotions range from very negative to very positive, and low to high levels of arousal (Cacioppo & Gardner, 1999). For example, feeling of love and joy are positive emotions, whereas high levels of anxiety and anger are categorized as negative emotions. Further, these feelings can range from low arousal (e.g., content, calm, etc.) to high arousal (e.g., elated, explosive, etc.). Whereas negative emotions tend to narrow attention and focus (e.g., fear creates the urge to escape), positive emotions broaden thought-action repertoires (e.g., joy creates the urge to play), and can increase personal and social resources (Frederickson, 1998, 2001). The positive lens in our model of employee optimal functioning prescribes that positive emotions are elicited in the context of individual development that facilitates virtuous growth and goal-directed work behaviors. Graham, Thomson, Nakamura, Brandt, and Siegel (2017) refer to these types of positive emotions as future-oriented and motivated towards a favorable outcome, which include anticipatory enthusiasm, courage, determination, and hope, to name a few. On the other hand, Graham et al. (2017) referred to hazardous emotions that result from self-destructive work behaviors, such as experiencing glee from sabotaging a colleagues plans or engaging in other unethical work-related behavior. We do not include these types of emotions.

2. Positive Work Engagement (PEN)

Schaufeli and Bakker (2004) defined work engagement as the opposite of burnout. Unlike burned out employees who are exhausted and cynical, engaged employees are energetic and connected with their work activities. Work engagement and burnout are conceptually distinct (not two ends of the same continuum) and thus, measured independently. We include both Schaufeli and Bakker's definition of work engagement and Csikszentmihalyi's (1990) concept of flow in our definition of positive work engagement. Positive work engagement is characterized by employees with high levels of absorption, interest, and involvement in their work, as well as a feeling that their knowledge, skills, and abilities match the job demands.

3. Positive Relationships (PREL)

Positive relationships are those in which one feels supported, connected, and valued by others in the organization, and can be experienced in coworker, coaching, and mentoring relationships among others (Yip, Ehrhardt, Black, & Walker, 2018). In order for these dyadic processes to classify as "positive" they must promote mutual growth and bringing the best out in each other at work. Positive relationships should include trust and a willingness to give and receive constructive feedback from colleagues and supervisors. Additionally, employees with a propensity toward positive relationships proactively develop meaningful connections with both direct reports and managers, as well as other colleagues who work within their groups.

4. Positive Meaning (PMEAN)

Positive meaning refers to a sense of individually valued purpose, significance, and coherence in the workplace (Martela & Steger, 2016). Positive meaning at work is characterized by perceptions of pursuing a meaningful career, self-discovery at work, and work that serves a contribution to the greater good.

5. Positive Accomplishment (PACCOM)

Positive accomplishment is defined as a perceived evaluation of one's achievements at work (e.g., skills, abilities, awards, promotions, etc.), especially as they pertain to achieving work-related goals that promote mastery and development towards one's work organization or career aspirations (Seligman, 2011). Positive accomplishments are personal achievements that we craft for ourselves, and comes with the feeling of acknowledging the experience of engaging and prototyping new ways to develop skills that help us in pursuit of mastering our craft.

6. Positive Physical Health (PPHEALTH)

Positive physical health at work refers to perceived biological, functional, and psychological health that promotes physical health in the workplace (Seligman, 2008). Biological health assets include self-reported illness, such as heart rate health and BMI, suggesting the importance of being mindful and reflective of one's own health history and health habits. Functional assets include self-reported physical fitness at work, such as the ability to walk a flight of stairs without being winded, or the ability to walk to and from lunch. Psychological health assets include self-reported health-related locus of control as it applies to one's physical health (Wallston, 2005), and self-reported absence of distressing physical symptoms.

7. Positive Economic Security (PECON)

Positive economic security is defined as individuals' *perceptions* of four dimensions crucial to their economic security: income stability, job security, no medical spending shocks, and buffers of financial wealth (Hacker et al., 2014). In addition, we add the positive lens to these four dimensions in terms of their ability to promote the pursuit of developmental opportunities, flourishing, and/or meaning at work. PECON aims is to highlight and pinpoint how one's

perception of their overall economic situation impacts, hinders, or facilitates goal-oriented behaviors in the context of their lives at work.

8. Positive Mindset (PMIND)

Positive mindset is an open, developable "future-oriented" construct characterized by prospection, growth mindset, and a proclivity towards persevering in the face of setbacks, especially over long periods of time (Duckworth, Peterson, Matthews, & Kelly, 2007; Dweck, 2006; Luthans, Youssef, & Avolio, 2007). Further, the "positive" aspect of a positive mindset includes the aim to maximize human potential and development at work.

9. Positive Work Environment (PWE)

Positive work environment includes physical and psychosocial factors that promote the ability to maximize our best selves at work. Positive physical work environments are characterized by spatiotemporal elements that improve the experience of work, such as an abundance of natural light, access to nature, assurance of physiological safety, and organization in the physical arrangement of the workplace (Hartig, Evans, Korpela, & Garling, 1997). Positive psychosocial characteristics include perceptions of social cohesion in the work environment that promote personally valued strengths and growth between diverse individuals and job demands, coworkers, work teams, managers, and their organization (Piasentin & Chapman, 2007). Employees in positive work environments perceive they are treated fairly, equitably, in a socially just manner, and feel they are valued for being their authentic self (Warren, Donaldson, Lee, & Donaldson, 2019). Work environments that share both positive physical and psychosocial elements provide employees the opportunity to flourish.

Dimension	Sub-Dimension	Itams	Rosnansa Sat	Scala
Positive Emotions	General positive emotion at work	 •At work, how often do you feel joyful? •At work, how often do you feel positive? •At work, do what extent do you feel contented? 	0 = never 10 = always	•Workplace PERMA Profiler (Scale of Positive and Negative Experience)
Positive Engagement	Absorption	 At work, how often do you become absorbed in what you are doing? At work, how often do you lose track of time while doing something you enjoy? I feel happy when I am working intensely I am immersed in my work I get carried away when I am working 	0 = never 10=always; 0 = never 6 = every day	 Workplace PERMA Profiler (ESS) Utrecht Work Engagement Scale (UWES)-9
Positive Engagement	Vigor	 •To what extent do you feel excited and interested in your work? •At work, I feel bursting with energy •At my job, I feel strong and vigorous •When I get up in the morning, I feel like going to work 	0 = not at all 10 = completely; 0 = never 6 = every day	Workplace PERMA Profiler (ABS)UWES-9
Positive Engagement	Dedication	 I am enthusiastic about my job My job inspires me I am proud of the work that I do 	0 = never 6 = every day	• UWES-9
Positive Relationships	Giving	•To what extent do you receive help and support from coworkers when you need it?	0 = not at all 10 = completely	•Workplace PERMA Profiler (European Social Survey)
Positive Relationships	Perceived	 To what extent do you feel appreciated by your coworkers? How satisfied are you with your professional relationships? 	0 = not at all 10 = completely	•Workplace PERMA Profiler (UK Office for National Statistics Experimental Opinion Survey Questions; World Health Organizations Quality of Life)
Positive Relationships	Shared Vision	 Management emphasizes a vision for the future We often discuss possibilities for the future Our future as an organization will be better than our past We are encouraged by management to use and build on our strengths 	1 = strongly disagree 5 = strongly agree	•Positive and Negative Emotional Attractor (PNEA)
Positive Relationships	Shared Compassion	 I feel trusted by my colleagues I care about my colleagues at work I trust my colleagues 	1 = strongly disagree 5 = strongly agree	•PNEA

The Nine Dimensions of Employee Positive Functioning Item Bank (N = 86)

Positive Relationships	Shared Positive Mood	This is a great place to workI enjoy working hereWorking here is a joy	1 = strongly disagree 5 = strongly	•PNEA
Positive Meaning	Worth	 Overall, it feels good to work here In general, to what extent do you feel that what you do at work is valuable and worthwhile? 	agree 0 = not at all 10 = completely	•Workplace PERMA Profiler (ESS)
Positive Meaning	Transcendent	•To what extent is your work purposeful and meaningful?	0 = not at all 10 = completely	Workplace PERMA Profiler (Flourishing Scale)
Positive Meaning	Direction	•To what extent do you generally feel that you have a sense of direction in your work?	0 = not at all 10 = completely	Workplace PERMA Profiler (ONS)
Positive Meaning	Positive Meaning	 I have found a meaningful career I understand how my work contributes to my life's meaning I have a good sense of what makes my job meaningful I have discovered work that has a satisfying purpose 	1 = Absolutely Untrue 5 = Absolutely True	The Work and Meaning Inventory (WAMI)
Positive Meaning	Meaning-Making	 I view my work as contributing to my personal growth My work better helps me understand myself My work helps me make sense of the world around me 	1 = Absolutely Untrue 5 = Absolutely True	The Work and Meaning Inventory (WAMI)
Positive Meaning	Greater Good Motivations	 I know my work makes a positive difference in the world The work I do serves a greater purpose 	1 = Absolutely Untrue 5 = Absolutely True	The Work and Meaning Inventory (WAMI)
Positive Accomplishment	Goals	 How often do you feel you are making progress towards accomplishing your work-related goals? How often do you achieve the important work goals you have set for yourself? 	0 = never 10=always	Workplace PERMA Profiler (GSE + Lab)
Positive Accomplishment	Efficacy	•How often are you able to handle your work-related responsibilities?	0 = never 10=always	Workplace PERMA Profiler (Scales of Psychological Well-Being)
Positive Accomplishment	Achievement Motivation	•At my place of employment, I am An achiever Productive Ambitious Competent Energetic Aggressive Thorough Efficient	0 = never 5=always	Contextual Achievement Motivation Scale (CAMS)
Positive Accomplishment	Learning Goal Orientation	•I am willing to select a challenging work assignment that I can learn a lot from	1 = strongly disagree	Work Domain Goal Orientation Instrument

		•I often look for opportunities to develop new skills and knowledge	5 = strongly agree	
Positive Accomplishment	Prove (Performance Goal) Orientation	 I prefer to work on projects where I can prove ability to others I enjoy it when others at work are aware of how well I am doing 	1 = strongly disagree 5 = strongly agree	Work Domain Goal Orientation Instrument
Positive Mindset	Psychological Capital (Self- Efficacy)	 I feel confident in representing my work in a meeting with management I feel confident presenting information to a group of colleagues 	1 = strongly disagree 6 = strongly agree	PsyCap Short Form (PCQ)
Positive Mindset	Psychological Capital (Hope)	If I should find myself in a jam at work, I could think of many ways to get out of itI can think of many ways to reach my current work goals	1 = strongly disagree 6 = strongly agree	PsyCap Short Form (PCQ)
Positive Mindset	Psychological Capital (Resilience)	 I usually take stressful things at work in stride I can get through difficult times at work because I've experienced difficulty before 	1 = strongly disagree 6 = strongly agree	PsyCap Short Form (PCQ)
Positive Mindset	Psychological Capital (Optimism)	•I always look on the bright side of things regarding my job •I am optimistic about what will happen to me in the future as it pertains to work	1 = strongly disagree 6 = strongly agree	PsyCap Short Form (PCQ)
Positive Mindset	GRIT	 Setbacks don't discourage me at work I am a hard worker in my job I finish whatever I begin at work I am diligent at work 	1 = not like me at all 5 = very much like me	Short Grit Scale (Grit-S)
Positive Mindset	Growth Mindset	 No matter who you are, you can significantly change your level of talent at work I am able to change how much talent I have toward my work I can change even my basic level of talent at work 	1 = strongly disagree 6 = strongly agree	Mindset Test
Positive Mindset	Prospection	 I am able to imagine a positive future at work My future is filled with growth opportunities at work I expect I will set many new goals at work 	1 = strongly disagree 6 = strongly agree	•Zimbardo Time Perspective Inventory (ZTPI) •Future Time Perspective Scale (FTP)
Positive Health	Biological	•I currently have exceptionally low blood pressure •I currently have a healthy weight	1 = not at all true 5 = very true	PosOrg Lab
Positive Health	Functional	•I feel able to adapt to, and cope successfully with sources of physical distress (e.g., insomnia, speech impediments, injuries, vision issues, etc.)	1 = strongly disagree	PosOrg Lab

		•I feel able to accommodate physical distress (e.g., insomnia, speech impediments, injuries, vision issues, etc.) without attributing them to ill health	6 = strongly agree	
Positive Health	Psychological	•I am in control of my health •If I take the right actions, I can stay healthy	1 = not bothered at all 5 = bothered a lot; 1 = strongly disagree 6 = strongly agree	•Patient Health Questionnaire 15-Item Somatic Symptom Severity Scale •Multidimensional Health Locus of Control Scale (MHLOC)
Positive Economic Security	Income	 My current income affords me stability My current income improves my experience of work I could borrow money from family and friends if I lost my income If my current income vanished, I could last months without hardship 	1 = strongly disagree 6 = strongly agree; 1 = very worried 5 = not worried at all	The Economic Security Index (ESI); Survey of Economic Risk Perceptions and Insecurity (SERPI); PosOrg Lab
Positive Economic Security	Job Security	 I feel confident I will have a job in 1 year from now My job security is stable for the foreseeable future If I lost my job I would have no problem finding other work 	1 = strongly disagree 6 = strongly agree; 1 = very worried 5 = not worried at all	The Economic Security Index (ESI); Survey of Economic Risk Perceptions and Insecurity (SERPI); PosOrg Lab
Positive Economic Security	Medical Spending	 I believe my current financial situation can buffer against major out-of pocket medical expenses Losing several months from work due to serious illness would not affect my economic security 	1 = strongly disagree 6 = strongly agree; 1 = very worried 5 = not worried at all	The Economic Security Index (ESI); Survey of Economic Risk Perceptions and Insecurity (SERPI); PosOrg Lab
Positive Economic Security	Financial Savings	 In the event of a financial emergency, I have adequate savings I have adequate income to pay for a secure retirement 	1 = strongly disagree 6 = strongly agree; 1 = very worried 5 = not worried at all	The Economic Security Index (ESI); Survey of Economic Risk Perceptions and Insecurity (SERPI); PosOrg Lab

Appendix C Final Item Bank for Employee Positive Functioning

NINE DIMENSIONS OF EMPLOYEE POSITIVE FUNCTIONING (EPF)

Dimension	Sub-Dimension	Items	Response Set	Adapted Scales
Positive Emotions	Future-Oriented and Affective	I feel joy in a typical workdayOverall, I feel enthusiastic about my workI love my job	1 = Strongly Disagree 7 = Strongly Agree	•Workplace PERMA Profiler (Scale of Positive and Negative Experience)
Positive Engagement	Absorption	 I typically become absorbed while I am working on something that challenges my abilities I lose track of time while doing something I enjoy at work When I am working on something I enjoy, I forget everything else around me 	1 = Strongly Disagree 7 = Strongly Agree	• Utrecht Work Engagement Scale (UWES)-9
Positive Psychosocial Work Environment	Giving	•I can receive support from coworkers if I need it	1 = Strongly Disagree 7 = Strongly Agree	•Workplace PERMA Profiler (European Social Survey)
Positive Psychosocial Work Environment	Perceived	•I feel appreciated by my coworkers	1 = Strongly Disagree 7 = Strongly Agree	
Positive Psychosocial Work Environment	Shared Compassion	•I trust my colleagues	1 = Strongly Disagree 7 = Strongly Agree	•PNEA
Positive Psychosocial Work Environment	Psychosocial	•My colleagues bring out my best self	1 = Strongly Disagree 7 = Strongly Agree	•PosOrg Lab
Positive Meaning	Transcendent	•My work is meaningful	1 = Strongly Disagree 7 = Strongly Agree	•Workplace PERMA Profiler (Flourishing Scale)

Positive Meaning	Positive Meaning	•I understand what makes my job meaningful	1 = Strongly Disagree 7 = Strongly Agree	•The Work and Meaning Inventory (WAMI)
Positive Meaning	Greater Good Motivations	•The work I do serves a greater purpose	1 = Strongly Disagree 7 = Strongly Agree	•The Work and Meaning Inventory (WAMI)
Positive Accomplishment	Goals	•I set goals that help me achieve my career aspirations •I typically accomplish what I set out to do in my job	1 = Strongly Disagree 7 = Strongly Agree	•Workplace PERMA Profiler (GSE + Lab)
Positive Accomplishment	Prove (Performance Goal) Orientation	•I am generally satisfied with my performance at work	1 = Strongly Disagree 7 = Strongly Agree	•Work Domain Goal Orientation Instrument
Positive Mindset	Growth Mindset	•I believe I can improve my job skills through hard work	1 = Strongly Disagree 7 = Strongly Agree	•Mindset Test
Positive Mindset	Prospection	•I believe my job will allow me to develop in the future •I have a bright future at my current work organization	1 = Strongly Disagree 7 = Strongly Agree	•Zimbardo Time Perspective Inventory (ZTPI) •Future Time Perspective Scale (FTP)
Positive Physical Health	Biological	 I typically feel physically healthy I am rarely sick	1 = Strongly Disagree 7 = Strongly Agree	•PosOrg Lab •Seligman (n.d.)
Positive Physical Health	Functional	•I can typically overcome sources of physical distress (e.g., insomnia, injuries, vision issues, etc.)	1 = Strongly Disagree 7 = Strongly Agree	•PosOrg Lab • Seligman (n.d.)
Positive Physical Health	Psychological	•I feel in control of my physical health	1 = Strongly Disagree 7 = Strongly Agree	 Patient Health Questionnaire 15- Item Somatic Symptom Severity Scale Multidimensional Health Locus of Control Scale (MHLOC)
Positive Economic Security	Income	•I am comfortable with my current income	1 = Strongly Disagree 7 = Strongly Agree	•The Economic Security Index (ESI); Survey of Economic Risk Perceptions and Insecurity (SERPI); PosOrg Lab
Positive Economic Security	Medical Spending	•I could lose several months of pay due to serious illness, and still have my economic security	1 = Strongly Disagree 7 = Strongly Agree	•The Economic Security Index (ESI); Survey of Economic Risk Perceptions and Insecurity (SERPI); PosOrg Lab

Positive Economic Security	Financial Savings	•In the event of a financial emergency, I have adequate savings	1 = Strongly Disagree 7 = Strongly Agree	•The Economic Security Index (ESI); Survey of Economic Risk Perceptions and Insecurity (SERPI); PosOrg Lab
Positive Work Environment	Physical	 My physical work environment (e.g., office space) allows me to focus on my work. There is plenty of natural light in my workplace I can conveniently access nature in my work environment (e.g., parks, oceans, mountains, etc.) 	1 = Strongly Disagree 7 = Strongly Agree	•Adapted Perceived Restorativeness Scale (PRS)
Positive Relationships	Interpersonal Relationships	 I receive support from others when I need it I feel loved in my personal relationships I am satisfied with my personal relationships 	1 = Strongly Disagree 7 = Strongly Agree	PERMA-Profiler

Appendix D

Key Acronyms

- EFA exploratory factor analysis
- EPF Employee Positive Functioning

PE Positive Emotions

PEN Positive Engagement

PRELPositive Psychosocial Work Relationships

PMEAN Positive Meaning

PACCOM Positive Accomplishment

PPHEALTH Positive Physical Health

PECON Positive Economic Security

PMIND Positive Mindset

PPWE Positive Physical Work Environment

PWE Positive Work Environment [Study 3]

JAWS Job-Related Affective Well-Being (Van Katwky et al., 2000)

JAWS-NE Negative Emotions

JAWS-PE Positive Emotions

- JSS Job Stress Scale (Lambert et al., 2006)
- MPPI multi-component positive psychology intervention

NEA negative emotional attractor

OCB-C Organizational Citizenship Behavior (Spector et al., 2010)

ODI organizational development intervention (Beckhard, 2000)

PCQ PsyCap Short Form (Luthans et al., 2007), Psychological Captial Questionnaire

PERMA positive emotions, engagement, positive relationships, meaning, accomplishment (Seligman, 2011)

POB positive organizational behavior (Luthans, 2002)

POP positive organizational psychology (Donaldson & Ko, 2010)

POS positive organizational scholarship (Cameron et al., 2003)

PPIs positive psychology interventions (Meyers et al., 2013)

PsyCap Psychological capital (Luthans et al, 2007)

PWO Positive Work and Organizations (Warren et al., 2017) PWRP Positive Work Role Performance (Griffin et al., 2007)

Iadapt	individual adaptivity
Tadapt	team adaptivity
Oadapt	organizational adaptivity
Iproact	individual proactivity
Tproact	team proactivity
Oproact	organizational proactivity
Iprof	individual proficiency
Tprof	team proficiency
Oprof	organizational proficiency

SME subject matter expert

SWLS Satisfaction with Life Scale (Diener, 1985)

TDE theory-driven evaluation science (Donaldson, 2007)

TIS-6 Turnover Intentions (Roodt & Bothma, 2013)