Journal of Well-Being Assessment
https://doi.org/10.1007/s41543-020-00033-1

ORIGINAL RESEARCH

The Positive Functioning at Work Scale: Psychometric Assessment, Validation, and Measurement Invariance

Scott I. Donaldson[1] · Stewart I. Donaldson[2]

Accepted: 8 December 2020/Published online: 11 January 2021

Abstract

The PERMA framework (Seligman 2011) presents five building blocks of well-being: positive emotion, engagement, relationships, meaning, and accomplishment. However, Seligman (2018) suggested the original five building blocks are highly predictive of well-being but certainly not exhaustive. This research attempted to expand the PERMA model in the workplace with four new building blocks of well-being: physical health, mindset, environment, and economic security. Study 1 utilized nine subject matter experts (SMEs) to content analyze and evaluate an item pool for scale development. In Study 2 ($N = 300$), an exploratory factor analysis (EFA) extrapolated nine dimensions of positive functioning at work (PF-W) with a random sample of full-time employees recruited on Amazon's Mechanical Turk (MTurk). The purpose of Study 3 was to validate the PF-W scale and test its ability to predict work outcomes. Findings from 727 full-time employees supported a general factor of PF-W with nine lower-order dimensions. The measure exhibited convergent, discriminant, criterion, predictive, and incremental forms of validity with other well-being (Diener 1985; Luthans, Youssef and Avolio 2007) and performance measures (Griffin, Neal and Parker 2007), as well as measurement invariance across job function. The Positive Functioning at Work Scale provides a comprehensive measurement tool that can inform future workplace programs and interventions. It also predicts important work outcomes, such as turnover intentions, job-related affective well-being, plus individual, team, and organizational adaptivity, proactivity, and organizational proficiency.

Keywords Well-being · Positive psychology · Positive organizational psychology · Scale validity · Measure development · Work performance

✉ Scott I. Donaldson
sidonaldson@health.ucsd.edu

Extended author information available on the last page of the article

"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 inalienable human rights related to well-being that were perceived as bestowed by our creator and necessitating protection by the government. While this represents a fundamental part of the American socio-political belief system, the concept of well-being 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 and Deci 2001; Waterman 2008). At the turn of the twenty-first century, Seligman and Csikszentmihalyi (2000) built upon this long-standing ethos when they 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).

After more than a decade of empirical research on positive psychology topics, including well-being and positive functioning, Seligman (2011) proposed five building blocks of well-being, which he called PERMA:

Positive emotion — experiencing happiness, joy, love, gratitude, etc.
Engagement — absorption; experiencing flow.
Relationships — connecting with others; love and be loved.
Meaning — connect to meaning; find your purpose.
Accomplishment — pursue and accomplish goals; strive for greatness.

Seligman (2018) concluded that while the original PERMA building blocks have been found to be highly predictive of well-being and positive functioning (see Donaldson, 2019, Donaldson, Lee, and Donaldson, 2019a; Kern, Waters, Adler, and White 2014, 2015), he encouraged future researchers to explore whether additional building blocks might strengthen the original PERMA framework. Donaldson, Heshmati, Lee, and Donaldson (2020) and Donaldson (2019) found through extensive grounded applied research in the workplace and empirical studies using the PERMA-Profiler (Bulter and Kern, 2016), in combination with systematic reviews and meta-analyses on positive psychology interventions at work (Donaldson, Chen, and Donaldson in press; Donaldson et al. 2019a, b), that four additional building blocks of well-being were worthy of future exploration:

Physical Health — biological, functional, and psychological health assets.
Mindset — future-oriented, growth mindset, perseverance.
Environment — spatiotemporal elements, such as access to natural light, nature, physiological safety.
Economic Security — perception of financial security.

Physical Health Seligman (2008) proposed the possibility of a sixth building block which he called physical health and added it to a new scale called PERMA-H (Butler and Kern 2016). He describes physical health as a state beyond absence of disease and referred to perceived biological, functional, and psychological health assets that promote physical health (Seligman 2008). Biological health assets include self-reported health, 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. Physical health assets include a self-reported, health-related locus of control as it applies to one's physical health (Wallston 2005), plus the self-reported absence of distressing physical symptoms. The PERMA-H Well-Being Survey summarizes physical health as "eating well, moving regularly, and sleeping deeply" (Butler and Kern 2016).

Mindset Based on the process we describe below, mindset emerged as another potential building block to consider. Mindset has been defined as an open, developable construct characterized by a growth mindset and a proclivity towards persevering in the face of setbacks, especially over long periods of time (Duckworth, Peterson, Matthews and Kelly 2007; Dweck 2006; Luthans, Youssef and Avolio 2007). Caniels, Semijn, and Renders (2018) found a relationship between employees with a growth mindset and personal development in the workplace. Further, mindset is grounded in Seligman's prospective psychology, supporting an orientation toward future possibilities in the workplace (Seligman, Railton, Baumeister and Spripada 2013). In this study, we explored mindset as a possible building block by focusing on employees' belief that their job will allow them to develop in the future, that they have a bright future at their work organization, and they can improve their job skills through hard work.

Environment The quality of the work environment that employees spend many of their waking hours in was proposed as another potential building block. The work environment includes physical, restorative factors 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 often perceive that their physical job resources reduce job demands and improve the quality of the workplace (Bellini, Fornara, and Bonaiuto 2015). These types of workplaces can provide employees with a restorative environment where they can recover from the depletion of energy and have the opportunity to flourish. We explored employees' perceptions of the quality of their work environment, including if their environment allowed them to focus on their work, whether or not there was plenty of natural light in their work environment, and if they could conveniently access nature at work.

Economic Security Finally, economic security is defined as an individual's perception of the impact of income, medical spending, and financial savings on well-being (Hacker et al. 2014). Diener and Seligman (2004) and a behavioral economist (Easterlin 2003) provided varying accounts on the curvilinear relationship between income and happiness; however, they both agree that economic security is crucial to well-being. Thus, economic security aims to highlight how one's perception of one's overall economic situation influences behaviors at work. We asked employees about their perceptions of income stability and financial savings in the event of serious illness or financial emergency.

1 Well-Being in the Workplace

Early studies on work-related well-being focused on designing and implementing interventions that could prevent occupational health issues, such as stress, burnout, and interpersonal problems in the workplace (Friedlander and Brown 1974; Nicholas 1982). However, more recently, studies have

attempted to investigate the effectiveness of positive psychology interventions at work (Donaldson 2019). For example, Donaldson et al. (2019a) conducted a meta-analysis on the relationship between positive psychology interventions at work and organizational effectiveness, including five positive psychology theory types: psychological capital, job crafting, strengths, well-being, and gratitude. Donaldson and colleagues found small to moderate positive effects on work outcomes, which were slightly stronger for improving undesirable work outcomes, such as turnover intentions and burnout. Of the three well-being interventions, the PERMA-based program had significant findings on all measured work outcomes and was the only well-being intervention to use random assignment (Laschinger et al. 2012; Neumeier et al. 2017; Page and Vella-Brodrick 2013). The well-being interventions represented the highest significant to null ratio found across all positive psychology theories in the study (8:1; Donaldson et al. 2019a).

To date, the majority of workplace well-being literature has tackled separate elements of well-being. While Kern (2014, October) created a measure for the PERMA-Profiler in the work setting, more research needs to investigate the building blocks of well-being at work. The current research attempted to provide a comprehensive measure of well-being at work, expanding on the PERMA model with four additional building blocks—physical health, mindset, environment, and economic security. The resulting nine-dimensional PF-W adds an extended framework and measure to better inform the growing literature on the science of multicomponent positive psychology interventions (Hendriks et al. 2019).

2 Present Study

Subject matter experts (SMEs) in the field of positive organizational psychology were recruited to help build an item bank, evaluating the four possible building blocks in combination with the original five building blocks of PERMA. The SMEs provided feedback on the construct validity of the building blocks and ranked the items in order of importance. The PF-W scale was developed to expand and improve upon the Workplace PERMA-Profiler (Butler and Kern 2016).

Three studies were conducted to develop and validate PF-W, testing for convergent, discriminant, and incremental forms of validity as well as measurement invariance. First, it was hypothesized that PF-W would be positively correlated with other similar measures of well-being in the positive psychology literature, including life satisfaction (SWLS; Diener 1985) and the psychological capital questionnaire (PCQ; Luthans, Youssef and Avolio 2007). These two scales have been shown to predict both important employee and organizational outcomes, as well as estimates of population well-being (Avey, Reichard, Luthans and Mhatre 2011; Kobau, Sniezek, Zack, Lucas and Burns 2010). In addition to examining the relatedness of the various well-being measures, it was important to know if PF-W contributed unique variance to measures of well-being. While PF-W is expected to be positively related with other measures of well-being, it was also hypothesized that PF-W would be negatively related to negative well-being measures, such as 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 both desirable 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 and Fox 2010), positive work role behaviors (PWRB; Griffin, Neal and Parker 2007), and job-related affective well-being (JAWS; Van Katwky, Fox, Spector and Kelloway 2000). In addition to

establishing convergent and discriminant validity with related well-being and performance measures, we needed to demonstrate the incremental and predictive validity of PF-W. Thus, it was hypothesized that the four new building blocks would predict unique variance above and beyond the PERMA model, and PF-W would predict unique variance above and beyond life satisfaction and psychological capital. The following hypotheses were tested:

- *Hypothesis 1.* Scores on PF-W will be positively related with life satisfaction and psychological capital.
- *Hypothesis 2.* Scores on PF-W will be negatively related with job stress.
- *Hypothesis 3.* Scores on PF-W will be positively related to positive work outcomes, such as organizational citizenship behavior, job-related affective well-being, and positive work role performance.
- *Hypothesis 4.* Scores on PF-W will be negatively related to negative work outcomes, including turnover intentions.
- *Hypothesis 5.* Beyond PERMA, each of the new building blocks of PF-W (i.e., physical health, mindset, environment, and economic security) will predict unique variance in both positive and negative work outcomes.
- *Hypothesis 6.* Scores on PF-W will significantly predict turnover and positive work role performance above and beyond life satisfaction and psychological capital.
- *Hypothesis 7.* Scores on PF-W will not vary based on job function.

3 Study One – Method

Study 1 followed DeVellis' (2017) guidelines on scale development, which consisted of generating an item pool, determining the format for measurement, reviewing the initial item pool with subject matter experts and including 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 and Kern 2016). This initial item pool consisted of 86 Likert-type items. 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 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 PF-W item bank were phrased as declarative statements and measured on a 1 = Strongly Disagree to 7 = Strongly Agree response set. Huppert and So (2013) suggested reverse well-being items tap into ill-being constructs. 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 PF-W scale (see Supplementary A).

4 Results

4.1 Content Validation

Twelve SMEs were invited to review and evaluate the 78-item bank based on their expertise in the area of positive psychology. The response rate was 67% (9/12). Each participant was given

a measure overview and instructions for rating the importance of each item. For example, each participant was asked to "provide feedback on the definitions and construct validity of PF-W (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 Supplementary A for definitions and the final item bank. Item information consisted of the dimensions/sub-dimensions of PF-W, items included in that dimension/sub-dimension, the response set used, the 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 PF-W instrument.

Item ratings were evaluated on each construct using intraclass correlation (ICC) and descriptive statistics. Intraclass correlation is widely used to evaluate inter-rater, test-retest, and intra-rater reliability (Koo and Li 2016). There are different types of ICC models depending on the rating format. For Study 1, 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 was 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 Koo and Li (2016) contend that there are no standard values for an acceptable ICC, they suggest values less than .50 are considered poor reliability. Further, descriptive statistics revealed 22 items that had a mean rank above two. A research team of three SMEs and one survey design expert reviewed the problematic items. After consensus was reached about dropping 20 of the poor items and rewording the other two, the content validated item bank was narrowed from 78 items to 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 1 and Study 2) was to have approximately three to four items on each building block for the confirmatory factor analysis (CFA) in Study 3. Table 1 demonstrates the flow between item development, content validation, and the final survey instrument in Study 3. Five SMEs pilot tested the initial instrument before it was administered via Qualtrics in Study 3.

Table 1 Scale Development

Scales	Item Development	Content Validation	Factor Analyses
Positive emotion	4	4	3
Engagement	6	4	3
Relationships	10	6	4
Meaning	12	10	3
Accomplishment	6	4	3
Physical health	6	5	4
Mindset	18	12	3
Environment	7	6	3
Economic security	9	7	3
N	**78**	**58**	**29**

5 Study Two – Method

5.1 Purpose

An exploratory factor analysis was performed to explore the underlying dimensionality of the prospective PF-W items. In utilizing EFA, only items possessing satisfactory loadings (>.32) and marginal cross-loadings (<.40) were considered for the final measure (Yong and Pearce 2013). Then, a CFA was used in Study 3 to validate the dimensionality of the revised measure. Brown (2012) and DeVellis (2017) suggest CFA is a great complement to EFA because CFA allows the researcher to test how well hypothesized factors fit the data.

5.2 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. Participants surveyed via MTurk are shown to be demographically diverse (Buhrmester, Kwang, and Gosling 2016; Goodman, Cryder and Cheema 2013), and responses are found to be as reliable and valid as responses from other traditional recruiting methods (Azzam & Jacobson 2013; Harman and Azzam 2018; Jacobson, Whyte and Azzam 2018; Rand 2012). The survey included the 58 prospective PF-W 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 to have earned 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 items from each construct on the PF-W scale. Harrison and McLaughlin (1996) suggest 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 Institutional Review Board.

5.3 Measures

Below is a list of the measures used to assess PF-W in Study 2. These items were adapted and modified from the PERMA profiler and validated scales in the positive psychology literature. Please see Supplementary A for a complete list of the items and validated scales in the final instrument. All items were rated on a 7-point Likert-type scale (Strongly Disagree/Strongly Agree). Please see Supplementary B for a list of key acronyms used in Study 2 and Study 3.

Positive Emotion Positive emotion items were examined using four items that were adapted from the Workplace PERMA Profiler and SPANE scale (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."

Engagement Engagement consisted of one sub-dimension (i.e., absorption). *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. These items were adapted from the Workplace PERMA Profiler and Utrecht Work Engagement Scale (UWES-9; Kern 2014; Schaufeli and Bakker 2004).

Relationships Relationships consisted of two sub-dimensions. The Workplace PERMA Profiler (including ONS and WHO-QOL 100 scale items) uses 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."

Meaning Meaning was measured using six sub-dimensions derived from the Workplace PERMA Profiler and The Work and Meaning Inventory (WAMI). The Workplace PERMA Profiler assesses three sub-dimensions of meaning: *worth*, *transcendent*, and *direction*. An example *worth* item is "In general, I feel the work I do is worthwhile," while *transcendent* items included "My work is meaningful." The last sub-dimension on the Workplace PERMA Profiler was *direction*, exemplified by the item "I generally feel that I have a sense of direction in my work." The WAMI assesses meaning through three sub-dimensions: *meaning, meaning-making, and greater good motivations. 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*, the survey incorporated items such as "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*, with items such as "I know my work makes a positive difference in the world" and "The work I do serves a greater purpose."

Accomplishment Accomplishment was measured using two sub-dimensions, *goals* and *prove performance goals*, from the Workplace PERMA Profiler, contextual achievement motivation scale (CAMS), and work domain goal orientation instrument. Example items for each sub-dimension are "I am making progress towards accomplishing my work-related goals" and "I am generally satisfied with my performance at work," respectively.

Mindset Mindset included four sub-dimensions: *psychological capital, GRIT, growth mindset, and prospection. Psychological capital* further contained the four sub-dimensions of *self-efficacy, hope, resilience, and optimism*. The psychological capital questionnaire (PCQ) asked rating 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), including statements such as "Setbacks don't discourage me at work" and "I am a hard worker in my job." The Mindset Test assessed items like "I am able to change how much talent I have toward my work." The last sub-dimension of mindset is *prospection*, which used the future time perspective scale (FTP) to solicit ratings for statements like "I expect I will set many new goals at work" and "My future is filled with growth opportunities at work."

Physical health Positive health was measured across three sub-dimensions: *biological, functional, and psychological.* 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 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."

Environment Environment measured *physical* and *psychosocial* factors that promote employees' best selves at work. An example item is "My physical work environment (e.g., office space) allows me to focus on my work." Psychosocial characteristics of the workplace

include social cohesion and growth between diverse individuals and job demand (Piasentin and Chapman 2007). Some example items are "My coworkers bring out my best self" and "My coworkers and I have similar values in terms of how we approach our work."

Economic security Economic security items were based on the economic security index (ESI). The four sub-dimensions of economic security presented were *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 statements 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*, the survey solicited ratings for statements like "I believe my current financial situation can buffer against major out-of-pocket medical expenses" and "Losing several months from work due to serious illness would not affect my economic security." Finally, we measured *financial savings* with items such as "In the event of a financial emergency, I have adequate savings."

6 Results

First, inter-item correlations, item variances, item 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).

6.1 Missing Data Analysis

Preliminary data cleaning was performed to remove participants who did not complete the majority of the survey (i.e., below 67% completion). Thus, 33 cases were deleted who failed to complete a majority of the 58-item instrument, plus one case who did not give informed consent. Next, Desimone, Harms and Desimone's (2015) best practice recommendations for data screening were 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 2 were "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 s (i.e., less than 2 min 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 300 participants.

6.2 Survey Demographics

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). 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 an associate's (32.9%, $n = 99$), master's (12.6%, $n = 38$), and doctoral (3%, $n = 9$) degree. 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.

6.3 Exploratory Factor Analysis

The dimensionality of PF-W 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 and van Assen 2017), and theoretical expertise. Next, the EFA matrix of communalities was 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 and 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 meaning, mindset, and economic security. The items in question for meaning were "My work contributes to my personal growth" and "I have found a meaningful career." The marginally high cross-loading item on mindset was "I can improve the level of talent I currently possess in my job." The two items on economic security with high cross-loadings were "My job affords me a stable income," and "If I lost my job I would have no problem finding other work." After removing cross-loading 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 measure 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, notwithstanding the work environment factor that had two items with unacceptable loadings (<.15). These items were revised for the CFA in Study 3. 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 the variables that might be caused by underlying factors. High values (close to 1.0) generally indicate that a factor analysis

may be useful for the data. If the value is less than .50, the results of the factor analysis probably won't be very useful. All communalities were above .50. Examination of the scree plot using the new Kaiser cutoff (>.70) revealed nine factors that explained 73% of the variance. Table 2 shows the factor loadings of the 27-item measure after the final round of EFA.

The updated pattern matrix for the 29-item PF-W scale had excellent reliability ($\alpha = .94$). The reliabilities for each subscale besides environment ranged from acceptable (>.70) to excellent (>.90; Cronbach, 1970): positive emotions ($\alpha = .93$), engagement ($\alpha = .88$), relationships ($\alpha = .90$), meaning ($\alpha = .91$), accomplishment ($\alpha = .81$), physical health ($\alpha = .85$), mindset ($\alpha = .86$), environment ($\alpha = .76$), and economic security ($\alpha = .84$).

Table 2 Exploratory Factor Loadings with Oblique Rotation of Positive Functioning at Work Measure in Study 3 (N = 300)

Item	Factor								
	Positive Emotion	Engagement	Relationships	Meaning	Accomplishemnt	Health	Mindset	Environment	Economic Secutity
P_2	**.82**	.05	.01	.06	.06	.05	−.03	−.05	.03
P_1	**.76**	.01	.11	−.01	.03	.00	.05	.12	.05
P_4	**.65**	.04	.04	.10	−.04	.08	.21	−.12	.01
E_A_2	−.06	**.97**	.04	.02	−.06	.01	−.03	.05	.04
E_A_3	.10	**.80**	−.04	−.02	.04	−.01	.02	−.08	−.05
E_A_1	.08	**.56**	.03	.09	.21	−.02	.11	.00	−.08
R_P_1	.12	−.05	**.83**	.05	.05	−.07	−.07	.01	.01
R_G_1	−.03	.08	**.79**	−.03	.08	.06	.00	.03	.00
R_SC_2	−.05	.04	**.79**	−.01	.00	.11	.10	−.05	−.03
Enviro_PS_3	.21	.00	**.51**	.23	−.17	.01	.06	.09	.04
M_T_1	−.03	.01	.06	**.87**	.00	.03	.01	−.05	.02
M_GG_2	.03	.01	−.01	**.83**	.00	−.07	.01	.10	.00
M_PM_3	.08	.05	−.02	**.81**	.08	.05	−.02	−.05	−.03
A_G_2	.06	.03	.04	.05	**.80**	.08	.05	.01	.03
A_P_2	−.05	−.01	.10	.07	**.57**	.05	.20	.05	.05
A_G_1	.17	.09.	.04	.25	**.34**	−.08	.17	.06	.05
Health_1	.01	.00	.03	.05	.02	**.86**	.01	−.08	.03
Health_5	.05	−.04	.06	−.04	.09	**.66**	.09	.15	.03
Health_2	.08	.09	.01	−.01	.04	**.64**	−.12	.11	−.02
Mind_P_1	.16	.08	.04	.09	.04	−.01	**.66**	.00	.03
Mind_P_2	.10	.01	.16	.11	−.01	.14	**.58**	−.11	.11
Mind_GM_1	.08	.10	.02	−.03	.15	.01	**.55**	.21	−.04
Enviro_P_2	.14	.03	−.09	.19	−.10	.13	.19	**.14**	.04
Enviro_P_1	.06	−.05	.03	.30	−.09	.29	.24	**.13**	.16
Econ_FS_1	.00	−.01	.01	−.02	.00	−.01	−.03	.01	**.96**
Econ_MS_1	.03	.02	−.05	−.01	.00	.02	−.02	.00	**.85**
Econ_I_2	−.06	.01	.08	.12	.11	.00	.25	−.11	**.50**

Note. Items on intended factor are in boldface; E_A = engagement (absorption); R_P = relationships (perceived); R_G = relationships (giving); R_SC = relationships (shared compassion); Enviro_PS_3 = environment (psychosocial); M_T_1 = meaning (transcendent); M_GG_2 = meaning (greater good motivations); M_PM_3 = meaning (positive meaning); A_G_1, G_2 = accomplishment (goals); A_P_2 = accomplishment (performance goal); Mind_P_1, P_2 = mindset (prospection); Mind_GM_1 = mindset (growth mindset); Enviro_P_1, P_2 = physical environment; Econ_FS_1 = economic security (financial savings); Econ_MS_1 = economic security (medical spending); Econ_I_2 = economic security (income)

7 Discussion

The results demonstrated that a nine-factor solution to the PF-W scale fit the hypothesized model. Further, there were three themes that emerged from the EFA that deserve further theoretical validation. First, one item from environment had a stronger loading coefficient with relationships, leaving two items on environment. Consistent with Warren et al. (2017), 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 and relationships were combined into one workplace factor for Study 3 (i.e., relationships). In Study 3, relationships included items pertaining to valued coworkers and mentors, as well as perceptions of a socially cohesive work environment. The remaining factor for the physical aspects (e.g., physiological safety, access to nature, etc.) of the work environment was called environment. Unfortunately, this left only two items to factor analyze, and further content validation was needed to add more items before the CFA in Study 3.

Another interesting finding from round one of the EFA procedure occurred within the economic security factor. Two subfactors formed that were comprised of 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 of economic behavior. In order to have a construct that represented multiple subdimensions of employees' economic behavior, the final instrument included income, medical spending, and financial savings. This factor still included employees' perceptions of their income, while also representing other relevant economic factors, such as medical spending and financial savings.

There was a similar trend within the mindset factor. Originally, mindset was operationalized to cover elements of psychological capital, grit, growth mindset, and prospection. However, the EFA results showed that psychological capital formed its own factor apart from grit, growth mindset, and prospection. This makes sense from a theoretical perspective since psychological capital is a state-like, developable construct consisting of resilience, hope, self-efficacy, and optimism. The other three elements of 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 psychological capital and mindset should be positively related, empirical evidence 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 2 was a 29-item instrument that contained nine factors: positive emotions, engagement, relationships, meaning, accomplishment, physical health, mindset, environment, and economic security. The next step was to further validate the psychometric properties of the PF-W 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 3, three SMEs created revised items on the environment factor.

8 Study Three – Method

8.1 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 was performed on each on these four subsections, searching PsychInfo, Web of Science, and Ackerman, Warren, and Donaldson's (2018) systematic review of measurement scales. 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 three positive well-being measures, one negative well-being measure, three positive performance measures, and one negative performance measure (see Table 3).

The Job-related Affective Well-being Scale (JAWS) is designed to assess employees' 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 (Van eta al. 2000). The satisfaction with life scale (SWLS, also known as life satisfaction) 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, life satisfaction has been validated not only at the population level in the U.S. but also in international populations. The major strength of life satisfaction is that is consists of only five items. Finally, the last positive well-being measure was psychological capital. Psychological capital is a seminal construct in the positive psychology literature with close to 3000 citations. In addition to psychometric support for the psychological capital 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 was vetted. The job stress scale was elected because of its simple five-item response set. The workplace stress scale (WSS) had no psychometric

Table 3 Final Criterion Measures Pool for Study 3

Well-Being Measures	Author(s)
PCQ 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 & Daniels (2018)
Psychological wellbeing scale (PWB)	Ryff & 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
Performance Measures	Author(s)
Organizational citizenship behavior (OCB-C)	Spector et al. (2010)
Work role performance (PWRP)	Griffin et al. (2007)
Job-related affective well-being scale (JAWS & 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. (1986)

Note. Bolded scales were used for the final instrument in Study 3

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 was selected because it 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 levels. 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 volatile, uncertain, complex, and ambiguous world (Bennett and Lemoine 2014). Griffin et al.'s (2007) new model of positive work role performance has been cited nearly 1600 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.

8.2 Survey Procedure

The survey was divided into two sections. In the first part, every participant received the 29-item PF-W scale and 27-item positive work role performance (PWRP) scale. This ensured that all respondents initially completed the main predictor variable (i.e., PF-W scale) and dependent variable (i.e., PWRP), which totaled 56items. 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 3, 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 (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 PCQ (8 items on positive well-being). The final survey ranged from 71 to 76 items for each participant with a near even balance between performance and well-being measures. Please see Supplementary A for the final instrument.

8.3 Measures

Positive Functioning at Work Scale [29 items; All participants] The 29-item PF-W scale was developed in Study 2.

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, as well as the aggregated positive emotions (i.e., HPHA and HPLA) and negative emotions (i.e., LPHA and LPLA) subscales. Van Katwyk et al. (2000) supported the

psychometric validity of the JAWS scale and subscales. The JAWS scale 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 relationships with performance and job satisfaction.

Satisfaction with Life Scale [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). Life satisfaction has been to shown to have Cronbach's alphas in the excellent range (i.e., > .90). Sample items are "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, Spector, Goh and Bruursema 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 to 93). Respondents reported their level of proficiency, proactivity, and adaptivity in the workplace on a 7-point Likert-type 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 [6 items; Block Three] The TIS-6 was used to measure employee perceptions and attitudes toward turnover (Roodt and Bothma 2013). The TIS-6 consisted of five 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 ($\alpha = .80$) and criterion-predictive validity.

9 Results

9.1 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. 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's (22%, $n = 159$), associate's (19.5%, $n = 141$), and doctoral (2.4%, $n = 17$) 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 & design; marketing, sales, & 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%, $n = 236$).

9.2 Preliminary Analyses

Similar to Study 2, preliminary data cleaning was performed to remove participants who did not complete the majority of the survey instrument (i.e., below 67% completion). Thus, 81 cases were removed who did not complete the PF-W scale. Next, Desimone et al.'s (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 s (i.e., less than 2 min 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 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 A_P_2 (Kurtosis = 2.63), A_G_2 (Kurtosis = 2.56), and Mind_P_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 3 to 727 participants. All analyses were conducted using the lavaan (Rosseel 2012) and SemTools package (Jorgensen, Pornprasertmanit, Schoemann, and 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 and Bentler 2000).

9.3 Confirmatory Factor Analysis

In order to evaluate model fit of the 29-item PF-W 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) and Tucker-Lewis Index were chosen (NFI; Bentler 1990; Bentler and Bonett 1980; Bollen 1989). 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 that 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).

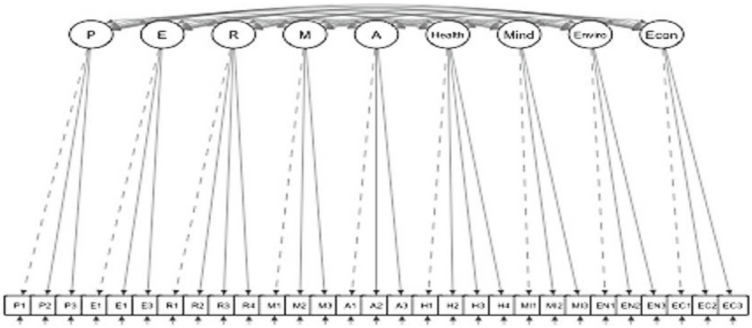
In order to evaluate the best fitting solution based on theoretical consideration, four structural equation models with a nested model fit comparison were tested (see Fig. 1 for the best fitting conceptual models). The first-order model with nine correlated factors was used as the reference model based 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., accomplishment, economic security, and environment) 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 PF-W. 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 nine-factor solution, which specified all nine dimensions and allowed them to correlate. This model suggested PF-W is composed of nine multidimensional factors that relate to each other, yet are not causally determined by a higher-order construct. The model showed very good fit with the data, $X^2(337) = 984.55$, $p < .01$, $X^2/df = 2.92$, RMSEA = .051, 90% CI of RMSEA (.048, .055), SRMR = .047, CFI = .951, TLI = .942, AIC = 61,473.65.

Two higher-order models were then tested. First, one higher-order model was used to predict all nine lower-order constructs. Theoretically, this model assumes that PF-W 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 PF-W 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 = 61,780.72. Additionally, Rodriguez, Reise and Haviland (2016)

a) Nine-Factor



b) Higher-Order

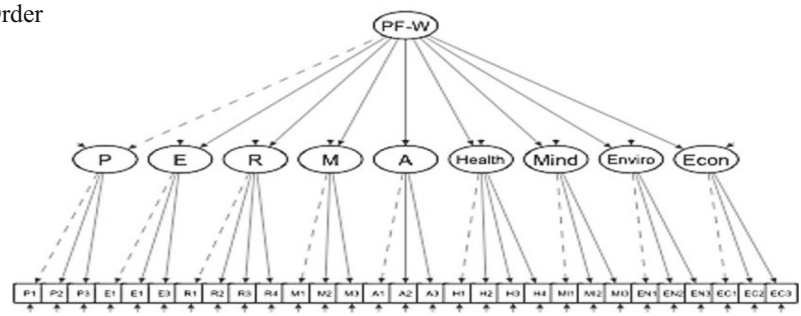


Fig. 1 Best fitting model alternatives for the positive functioning at work scale. **a** Nine-factor model **b** Higher-order model

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 PF-W. See Table 4 for fit indices of the four CFA models.

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 nine-factor 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. In summary, the CFA findings support the use of a higher-order, bi-factor, or nine-factor model of PF-W that incorporates the nine-lower order dimensions in the measurement model.

To assess reliability of the PF-W 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 (ωh) statistic calculates the general factor saturation when

Table 4 Fit Indices of the Model Alternatives for Positive Functioning at Work

Model	χ^2	*df*	*p*	RMSEA (90% CI)	SRMR	CFI	TLI	AIC
Nine-factor	984.55	337	$p < .01$	.051 (.048, .055)	.047	.951	.942	61,473.65
Higher-order	1280.12	364	$p < .01$	.059 (.055, .062)	.059	.931	.923	61,715.22
Bifactor	1345.62	364	$p < .01$	.061 (.057, .064)	.055	.926	.918	61,780.72
One-factor	3936.46	373	$p < .01$	.115 (.111, .118)	.083	.733	.709	64,353.56

Note. $N = 727$; χ^2 = chi-square; RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Square Residual; CFI = Comparative Fit Index; TLI = Tucker-Lewis index; AIC = Akaike's Information Criterion

computing reliability. Revelle and Zinbarg (2009) suggest omega outperforms other measures of internal consistency, especially when taking into account the factor structure of the dataset. Overall, the PF-W scale possessed acceptable to excellent internal consistency statistics (see Table 6). Accomplishment and environment showed the lowest loadings (<.80).

9.4 Evaluating Convergent and Discriminant Validity

Table 7 shows correlations of the PF-W and its subscales with life satisfaction, psychological capital, and job stress. The PF-W 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 PF-W were in the medium to large range (.32 to .73; Cohen 1988) with the exception of the correlations between economic security and the other eight dimensions, which were all small to medium (between .24 and .43).

Hypothesis 3 proposed that the PF-W scale would be positively related with other well-being measures, including the life satisfaction and psychological capital. Findings supported a large, positive relationship between the PF-W scale and life satisfaction, $r(230) = .74$, $p < .05$, as well as between the PF-W scale and psychological capital, $r(230) = .71$, $p < .05$. Further, *Hypothesis 4* was supported since the PF-W scale was negatively related to job stress, $r(206) = -.37$, $p < .05$. Strong, positive relationships with life satisfaction and psychological capital, and a medium, negative relationship with job stress supported convergent validity of the PF-W scale.

Similarly, the relationships between the PF-W scale, life satisfaction, and psychological capital 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 PF-W and life satisfaction (.74) and psychological capital (.71) were large, but not large enough to argue they are measuring the same thing.

Table 5 Nested Model Comparison

	df	AIC	BIC	Chi square difference
Nine-factor	337	61,474	61,923	CM
Higher-order	364	61,715	62,041	295.57*** (higher-order vs. nine-factor)
Bifactor	364	61,781	62,107	65.50 (bifactor vs. higher-order)
One-factor	373	64,354	64,638	259.84*** (one-factor vs. bifactor)

Note. CM = comparison model; *** = $p < .001$; AIC = Akaike's Information Criterion; BIC = Bayesian Information Criterion

Table 6 Internal Consistency Measures for Positive Functioning at Work and Nine Sub-dimensions

	PF-W	P	E	R	M	A	Health	Mind	Enviro	Econ
Cronbach's α	.94	.93	.83	.88	.91	.76	.82	.83	.66	.83
Gutman's λ_6	.96	.90	.77	.88	.88	.71	.79	.79	.59	.79
McDonald's omega hierarchical ω_h	.83	.93	.83	.85	.91	.79	.83	.84	.69	.84
Minimum split half (β)	.97	.84	.75	.89	.84	.72	.84	.80	.68	.79
Maximum split half (λ_4)	.84	.82	.73	.87	.79	.63	.79	.65	.61	.77

Note. PF-W = Positive Functioning at Work; P = positive emotion; E = engagement; R = relationships; M = meaning; A = accomplishment; Health = physical health; Mind = mindset; Enviro = environment; Econ = economic security

9.5 Criterion Validity

To test *Hypothesis 6* and *Hypothesis 7*, a correlation matrix produced the relationship between the PF-W scale and work outcomes (see Table 8). Overall, performance measures had medium to strong relationships with the PF-W scale. Most notably, the PF-W scale and JAWS (negative emotions) subscale had the strongest relationship, $r(276) = .79$, $p < .05$. There was also a strong, negative relationship between the PF-W scale and turnover intentions, $r(230) = -.56$, $p < .05$. The nine subdimensions of the PWRP scale (i.e., individual proficiency, team proficiency, organizational proficiency, individual adaptivity, team adaptivity, organizational adaptivity, individual proactivity, team proactivity, organizational proactivity) had medium to strong relationships with the PF-W scale. This trend was generally replicated across the nine dimensions of PF-W. However, economic security and work outcomes generally demonstrated small to medium relationships. Additionally, accomplishment tended to have strong relationships with performance measures. Finally, all dimensions of the PF-W scale and subscales had stable, negative relationships with turnover intentions and JAWS (negative emotions). This further supported the convergent validity of the scale. Table 8 supports the

Table 7 Means, Standard Deviations, Correlations for Positive Functioning at Work, and Well-Being Measures

Variable	*M*	*SD*	*N*	1	2	3	4	5	6	7	8	9	10
1. Positive functioning at work	5.20	0.87	723	–									
2. Positive emotion	5.09	1.47	723	**.85**	–								
3. Engagement	5.44	1.05	723	**.65**	**.57**	–							
4. Relationships	5.41	1.04	723	**.72**	**.60**	**.31**	–						
5. Meaning	5.51	1.27	723	**.72**	**.73**	**.51**	**.53**	–					
6. Accomplishment	5.67	0.93	723	**.72**	**.58**	**.48**	**.51**	**.52**	–				
7. Physical health	5.38	1.03	723	**.72**	**.42**	**.32**	**.39**	**.34**	**.53**	–			
8. Mindset	5.45	1.16	723	**.72**	**.73**	**.49**	**.59**	**.64**	**.73**	**.53**	–		
9. Environment	4.75	1.31	723	**.67**	**.50**	**.31**	**.44**	**.40**	**.42**	**.34**	**.47**	–	
10. Economic security	4.14	1.68	723	**.60**	**.39**	**.19**	**.29**	**.24**	**.29**	**.43**	**.39**	**.39**	–
11. Life satisfaction	4.77	1.57	230	**.74**	**.62**	**.38**	**.51**	**.48**	**.52**	**.59**	**.54**	**.51**	**.65**
12. Psychological capital	5.46	0.84	230	**.71**	**.59**	**.45**	**.51**	**.53**	**.71**	**.60**	**.59**	**.47**	**.37**
13. Job stress	2.61	0.89	206	**−.37**	**−.36**	**−.23**	**−.29**	**−.33**	**−.41**	**−.18**	**−.34**	**−.19**	−.03

Note. Correlation coefficients that are statistically significant are bolded ($p < .05$)

Table 8 Correlations between Positive Functioning at Work and Work Outcomes

	PF-W	P	E	R	M	A	Health	Mind	Enviro	Econ
JAWS	**.28**	**.32**	**.23**	.11	**.22**	**.15**	.05	**.15**	**.27**	**.25**
JAWS (positive emotions)	**.79**	**.82**	**.50**	**.56**	**.64**	**.61**	**.50**	**.70**	**.48**	**.41**
JAWS (negative emotions)	**−.49**	**−.48**	**−.27**	**−.43**	**−.40**	**−.45**	**−.44**	**−.53**	**−.19**	**−.14**
Organizational citizenship behavior	**.40**	**.38**	**.24**	**.34**	**.27**	**.23**	**.17**	**.32**	**.29**	**.20**
Positive Work Role Performance										
Individual proficiency	**.40**	**.24**	**.36**	**.32**	**.33**	**.61**	**.36**	**.39**	**.18**	.04
Team proficiency	**.52**	**.35**	**.37**	**.51**	**.37**	**.59**	**.45**	**.48**	**.26**	**.17**
Organizational proficiency	**.71**	**.65**	**.50**	**.60**	**.61**	**.58**	**.46**	**.68**	**.40**	**.27**
Individual adaptivity	**.54**	**.40**	**.43**	**.39**	**.40**	**.62**	**.43**	**.47**	**.31**	**.20**
Team adaptivity	**.56**	**.42**	**.44**	**.45**	**.41**	**.63**	**.45**	**.53**	**.33**	**.17**
Organizational adaptivity	**.54**	**.41**	**.40**	.47	**.40**	**.60**	**.44**	**.50**	**.33**	**.19**
Individual proactivity	**.52**	**.43**	**.39**	**.35**	**.38**	**.53**	**.34**	**.44**	**.34**	**.23**
Team proactivity	**.54**	**.42**	**.39**	**.37**	**.39**	**.54**	**.37**	**.48**	**.33**	**.28**
Organizational proactivity	**.54**	**.43**	**.30**	**.37**	**.36**	**.51**	**.36**	**.47**	**.36**	**.34**
Turnover intentions	**−.56**	**−.61**	**−.34**	**−.45**	**−.51**	**−.43**	**−.27**	**−.57**	**−.34**	**−.24**

Note. Statistically significant correlations are bolded ($p < .05$); PF-W = Positive Functioning at Work; P = positive emotion; E = engagement; R = relationships; M = meaning; A = accomplishment; Health = physical health; Mind = mindset; Enviro = environment; Econ = economic security; JAWS = Job-related affective well-being scale

relationship between the PF-W Scale and performance measures included in Study 3 (*Hypotheses 6* and *7)*.

9.6 Incremental and Criterion Validity

In order to evaluate incremental and criterion validity of the PF-W scale (*Hypothesis 7*), a series of hierarchical multiple regressions were run to determine if the four new building blocks improved the prediction of work outcomes beyond PERMA. First, the incremental validity of PF-W predicting JAWS (negative emotions) beyond PERMA was assessed. 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, with no significant Cook's D leverage values greater than .20. 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, work outcomes that were significantly predicted by the PF-W measure were included.

The first model investigating PERMA on JAWS (negative emotions) was statistically significant, $R^2 = .29$, $F(5, 270) = 22.03$, $p < .05$. The addition of four new building blocks to the prediction of JAWS (negative emptions) (see Table 9) led to a statistically significant increase in ΔR^2 of .07, $\Delta F(4, 266) = 7.18$, $p < .05$. Specifically, mindset ($b = -.23$, 95% *CI* (−.49, −.09), $p < .05$) and physical health ($b = -23$, 95% *CI* (−.37, −.10), $p < .05$) were strong negative predictors, whereas economic security ($b = .16$, 95% *CI* (.05, .28), $p < .05$) was a small positive predictor. Environment ($b = .11$, 95% *CI* (.00, .23), $p < .05$) had a marginally significant relationship with JAWS (negative emotions).

Table 9 Incremental Validity of Positive Functioning at Work Predicting Job-Related Affective Well-Being (Negative Emotions) Beyond PERMA

	PERMA		Positive Functioning at Work	
Variable	*b*	95% *CI*	*b*	95% *CI*
Positive Emotion	**−.27**	(−.45, −.09)	**−.20**	(−.40, −.02)
Engagement	**.11**	(−.01, .25)	**.11**	(−.01, .24)
Relationships	**−.21**	(−.34, −.07)	**−.14**	(−.28, −.01)
Meaning	−.02	(−.18, .13)	.00	(−.17, .15)
Accomplishment	**−.20**	(−.35, −.07)	−.02	(−.18, .14)
Physical health			**−.23**	(−.37, −.10)
Mindset			**−.29**	(−.49, −.09)
Environment			**.11**	(.00, .23)
Economic security			**.16**	(.05, .28)
R^2	**.29**		**.36**	
ΔR^2			**.07**	

Note. $N = 276$; Statistically significant model coefficients and model summary statistics are bolded ($p < .05$)

The ability of PERMA to predict turnover intentions was then explored, which was statistically significant, $R^2 = .404$, $F(5, 224) = 30.35$, $p < .05$. The addition of four new building blocks to the prediction of turnover intentions led to a statistically significant increase in ΔR^2 of .04, $\Delta F(4, 220) = 3.58$, $p < .05$. Specifically, mindset ($b = -.30$, 95% *CI* (−.48, −.14), $p < .05$) was the only new predictor that was statistically significant. In addition, positive emotions ($b = -.42$, 95% *CI* (−.61, −.24), $p < .05$) was the only predictor that was statistically significant from the PERMA model and PF-W (see Table 10).

The next series of hierarchical multiple regressions tested the nine building blocks of PF-W on individual and organizational adaptivity. First, PERMA was a significant predictor of individual adaptivity, $R^2 = .413$, $F(5, 709) = 99.73$, $p < .05$ (see Table 11). The addition of four new building blocks to the prediction of individual adaptivity led to a statistically significant increase in ΔR^2 of .02, $\Delta F(4, 705) = 3.98$, $p < .05$. In particular, engagement ($b = .16$, 95% *CI* (.09, .23), $p < .05$) and accomplishment ($b = .52$, 95% *CI* (.45, .60), $p < .05$) were significant predictors in the PERMA model. However, in PF-W, engagement

Table 10 Incremental Validity of Positive Functioning at Work Predicting Turnover Intentions Beyond PERMA

Variable	PERMA		Positive Functioning at Work	
	b	95% *CI*	*b*	95% *CI*
Positive Emotions	**−.48**	(−.66, −.31)	**−.42**	(−.61, −.24)
Engagement	.10	(−.03, .24)	.10	(−.02, .24)
Relationships	−.08	(−.21, −.05)	−.10	(−.24, .03)
Meaning	−.11	(−.28, .04)	.07	(−.23, .08)
Accomplishment	−.10	(−.24, −.03)	−.02	(−.18, .12)
Physical health			.10	(−.03, .24)
Mindset			**−.30**	(−.48, −.14)
Environment			.03	(−.09, .17)
Economic security			.05	(−.07, .18)
R^2	**.40**		**.44**	
ΔR^2			**.04**	

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

($b = .15$, 95% *CI* (.09, .23), $p < .05$), accomplishment ($b = .49$, 95% *CI* (.41, .58), $p < .05$), and health ($b = .14$, 95% *CI* (.07, .21), $p < .05$) were the only three significant predictors.

The final hierarchical multiple regression examined the PF-W scale on organizational adaptivity. As demonstrated in Table 12, PERMA was a significant predictor of organizational adaptivity, $R^2 = .38$, $F(5, 709) = 87.658$, $p < .05$. The addition of four new building blocks to the prediction of organizational adaptivity led to a statistically significant increase in ΔR^2 of .02, $\Delta F(4, 705) = 6.148$, $p < .05$. The findings from the PERMA model showed that engagement ($b = .12$, 95% *CI* (.05, .19), $p < .05$), relationships ($b = .10$, 95% *CI* (.03, .18), $p < .05$), and accomplishment ($b = .47$, 95% *CI* (.40, .55), $p < .05$) were significant predictors of organizational adaptivity. The PF-W model showed that engagement ($b = .12$, 95% *CI* (.04, .19), $p < .05$), accomplishment ($b = .39$, 95% *CI* (.30, .48), $p < .05$), physical health ($b = .16$, 95% *CI* (.09, .24), $p < .05$), and economic security ($b = -.07$, 95% *CI* (−.14, .00), $p < .05$) were significant predictors of organizational adaptivity when factoring in all nine building blocks. While the four additional building blocks had small, negligible effects on proactivity (except at the organizational level), the results from proactivity and proficiency were nearly identical (tables for proficiency available upon request).

9.7 Comparative Analysis of Positive Functioning at Work, Life Satisfaction, and Psychological Capital on Work Outcomes

In order to further explore the predictive validity of the PF-W scale and test *Hypothesis 8*, which aimed to compare PF-W with life satisfaction and psychological capital, a hierarchical multiple regression was used to conduct a comparative analysis on turnover intentions, proactivity, and adaptivity. First, as demonstrated in Table 13, psychological capital and life satisfaction were significant predictors of turnover intentions, $R^2 = .25$, $F(2, 227) = 37.96$, $p < .05$. The addition of PF-W to the prediction of turnover intentions led to a statistically significant increase in ΔR^2 of .07, $\Delta F(1, 226) = 24.71$, $p < .05$. The findings from Model 1 showed that life satisfaction ($b = -.24$, 95% *CI* (−.38, −.10), $p < .05$) and psychological capital ($b = -.31$, 95% *CI* (−.46, −.18), $p < .05$) were significant predictors of turnover intentions. Model 2 showed that when all three measures were

Table 11 Incremental Validity of Positive Functioning at Work Predicting Individual Adaptivity Beyond PERMA

Variable	PERMA		Positive Functioning at Work	
	b	95% *CI*	*b*	95% *CI*
Positive emotion	−.07	(−.17, .02)	−.06	(−.16, .04)
Engagement	**.16**	(.09, .23)	**.15**	(.09, .23)
Relationships	**.06**	(−.01, .14)	.05	(−.02, .13)
Meaning	.05	(−.03, .14)	.06	(−.02, .15)
Accomplishment	**.52**	(.45, .60)	**.49**	(.41, .58)
Physical health			**.14**	(.07, .21)
Mindset			−.06	(−.17, .04)
Environment			.02	(−.04, .10)
Economic security			−.03	(−.10, .03)
R^2	**.41**		**.43**	
ΔR^2			**.02**	

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

Table 12 Incremental Validity of Positive Functioning at Work Predicting Organizational Adaptivity Beyond PERMA

Variable	PERMA		Positive Functioning at Work	
	b	95% *CI*	*b*	95% *CI*
Positive emotion	−.05	(−.15, .04)	−.08	(−.19, .02)
Engagement	**.12**	(.05, .19)	**.12**	(.04, .19)
Relationships	**.10**	(.03, .18)	**.07**	(.00, .15)
Meaning	.06	(−.02, .16)	.06	(−.03, .15)
Accomplishment	**.47**	(.40, .55)	**.39**	(.30, .48)
Physical health			**.16**	(.09, .24)
Mindset			.05	(−.05, .16)
Environment			.05	(−.01, .13)
Economic security			**−.07**	(−.14, .00)
R^2	**.38**		**.40**	
ΔR^2			**.02**	

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

included in the model, only PF-W ($b = -.46$, 95% *CI* (−.65, −.28), $p < .05$) was a unique predictor of turnover intentions.

Hierarchical multiple regression was then used to conduct a comparative analysis of PF-W on individual, team, and organizational adaptivity. Table 14 shows that PF-W added unique variance at all three levels, as indicated by significant R squared improvements, ΔR^2 of .02, ΔR^2 of .04, ΔR^2 of .02, at the individual, team, and organizational level, respectively.

The last hierarchical multiple regression analysis examined the PF-W scale on individual, team, and organizational proactivity and organizational proficiency. Tables 15 and 16 show that the PF-W added unique variance at all three levels, as indicated by significant R squared improvements, ΔR^2 of .05, ΔR^2 of .03, ΔR^2 of .03 and ΔR^2 of .15, at the individual, team, and organizational level, respectively.

9.8 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 and Lautenschlager 2004). Statistical substantiation for measurement invariance supports that participants interpreted the items and

Table 13 Predictive Validity of Life Satisfaction, Psychological Capital, and Positive Functioning at Work on Turnover Intentions

Variable	Model 1		Model 2	
	b	95% *CI*	*b*	95% *CI*
Life satisfaction	**−.24**	(−.38, −.10)	−.01	(−.17, .15)
Psychological capital	**−.31**	(−.46, −.18)	−.12	(−.27, .03)
Positive functioning at work			**−.46**	(−.65, −.28)
R^2	**.25**		**.32**	
ΔR^2			**.07**	

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

Table 14 Predictive Validity of Life Satisfaction, Psychological Capital, and Positive Functioning at Work on Individual, Team, and Organizational Adaptivity

Variable	Model 1		Model 2	
	b	95% *CI*	*b*	95% *CI*
Individual				
Life satisfaction	−.01	(−.14, .09)	−.06	(−.26, .01)
Psychological capital	**.66**	(.59, .82)	**.58**	(.48, .78)
Positive functioning at work			**.19**	(.06, .38)
R^2	**.48**		**.50**	
ΔR^2			**.02**	
Team				
Life satisfaction	−.03	(−.19, .07)	**−.11**	(−.38, −.08)
Psychological capital	**.57**	(.53, .78)	**.44**	(.36, .65)
Positive functioning at work			**.28**	(.18, .52)
R^2	**.39**		**.42**	
ΔR^2			**.03**	
Organizational				
Life satisfaction	−.01	(−.14, .11)	−.07	(−.28, .01)
Psychological capital	**.61**	(.53, .78)	**.51**	(.41, .69)
Positive functioning at work			**.21**	(.07, .41)
R^2	**.41**		**.43**	
ΔR^2			**.02**	

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 ($p < .08$)

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* would conclude that employee job function did not influence how participants interpreted the building blocks of PF-W. 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.

Table 15 Predictive Validity of Life Satisfaction, Psychological Capital, and Positive Functioning at Work on Organizational Proficiency

Variable	Model 1		Model 2	
	b	95% *CI*	*b*	95% *CI*
Life satisfaction	.07	(−.02, .24)	**−.13**	(−.35, −.07)
Psychological capital	**.59**	(.37, .64)	**.26**	(.09, .36)
Positive functioning at work			**.72**	(.50, .82)
R^2	**.33**		**.48**	
ΔR^2			**.15**	

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 ($p < .08$)

Table 16 Predictive Validity of Life Satisfaction, Psychological Capital, and Positive Functioning at Work on Individual, Team, and Organizational Proactivity

Variable	Model 1		Model 2	
	b	95% *CI*	*b*	95% *CI*
Individual				
Life satisfaction	.04	(−.09, .21)	−.10	(−.33, .03)
Psychological capital	.59	(.33, .62)	.41	(.17, .49)
Positive functioning at work			.45	(.19, .59)
R^2	.26		.31	
ΔR^2			.05	
Team				
Life satisfaction	.07	(−.03, .25)	−.04	(−.23, .11)
Psychological capital	**.68**	(.39, .67)	**.53**	(.27, .57)
Positive functioning at work			**.37**	(.11, .50)
R^2	**.36**		**.39**	
ΔR^2			**.03**	
Organizational				
Life satisfaction	**.12**	(.03, .32)	.02	(−.16, .21)
Psychological capital	**.55**	(.26, .56)	**.40**	(.14, .47)
Positive functioning at work			**.36**	(.08, .49)
R^2	**.28**		**.31**	
ΔR^2			**.03**	

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 ($p < .08$)

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 PF-W 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, and 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 provide support for configural, metric, and strong invariance of the employee positive functioning scale.

10 Discussion

The purpose of Study 3 was to validate the PF-W scale with a sample of U.S. employees. To establish convergent and discriminant validity (*Hypotheses 3–4*), PF-W was correlated with other positive and negative well-being measures. *Hypothesis 3* and *4* were supported by strong,

Table 17 Multigroup Confirmatory Factor Analytic Model of Nine-Factor Positive Functioning at Work by Job Function

Model	χ^2	*df*	*p*	*RMSEA* (90% CI)	*SRMR*	*CFI*	*TLI*
Business	813.465	337	$p < .01$	.051 (.046, .055)	.047	.951	.941
Information Technology	539.351	337	$p < .01$	.062 (.052, .072)	.059	.921	.905
Administrative	558.945	337	$p < .01$	.073 (.063, .084)	.071	.915	.898

Note. $N =$ 545; Business ($n = 267$); Information Technology ($n = 156$); Administrative ($n = 122$); χ^2 = chi-square; RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Square Residual; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index

positive relationships between PF-W, life satisfaction, psychological capital and by a medium, negative relationship between PF-W and job stress. 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. Study 3 found psychometric support for a distinct construct with the addition of four new building blocks and validation in the work setting. One interesting finding was the relationship between economic security and the other factors in the PF-W model. Whereas the vast majority of the nine interrelationships of PF-W were medium to strong, economic security showed smaller relationships. In spite of this, economic security and the overall PF-W scale were strongly related, indicating the importance of perceptions of economic security on overall employee well-being (Diener 2005).

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

A key motive for developing the PF-W scale was to test the differential role of the four new building blocks (physical health, mindset, environment, and economic security) on predicting employee performance. Support for *Hypothesis 7* was demonstrated through a series of statistically significant hierarchical multiple regression analyses on JAWS, turnover intentions,

Table 18 Measurement Invariance for Nine-Factor and Higher-Order Models of Positive Functioning at Work

Model	χ^2	*df*	*p*	$\Delta\chi^2$	Δdf	Δp	ΔCFI
Nine-Factor							
Configural invariance	1793.5	1011	$p < .01$				
Metric invariance	1855.6	1051	$p < .01$	62.104	40	$p < .05$	.002
Scalar invariance	1923.8	1091	$p < .01$	68.277	40	$p < .01$	.003
Higher-Order							
Configural invariance	2089.5	1092	$p < .01$				
Metric invariance	2171.9	1148	$p < .01$	82.464	56	$p < .05$	.003
Scalar invariance	2241.2	1186	$p < .01$	69.257	38	$p < .01$	.003

Note. $N = 575$; χ^2 = Chi-square; CFI = Comparative Fit Index

and positive work role performance. Despite turnover intentions and organizational proficiency, which found a significant role to mindset, economic security and physical health were consistent predictors of work outcomes. These findings suggest that employees' perceptions of economic security and physical health play a major role in their subjective appraisal of performance. Willis Towers Watson's Global Benefits Attitudes Survey (2017) found that employees' health and finances are on a downward trend in the U.S. Only 35% of U.S. employees reported satisfaction with their financial situation, and nearly half of U.S. employees live paycheck to paycheck. One surprising finding from Study 3's analyses was that environment did not add 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.

The role of psychological capital on employee attitudes, behaviors, and performance is well documented in the positive work and organizations literature. In fact, Avey et al. (2011) found meta-analytic support for a small-medium effect of psychological capital on organizational citizenship behavior, job satisfaction, and stress/anxiety in 51 independent samples. Further, Diener's (1985) SWLS is the most widely used, validated measure of well-being in positive psychology. As such, a comparative analysis was conducted of psychological capital, life satisfaction, and PF-W to assess whether or not the new PF-W measure predicted unique variance on turnover intentions and positive work role performance. The PF-W scale captured 8% of the variance in turnover intentions above and beyond life satisfaction and psychological capital. This is a noteworthy finding and suggests positive functioning may be a useful predictor of undesirable work outcomes. Donaldson et al. (2019a) found that positive psychology interventions at work were stronger predictors of reducing undesirable work outcomes, such as turnover intentions and job stress, rather than improving desirable work outcomes (e.g., engagement). While statistically significant, the predictive validity of the PF-W scale on proactivity and adaptivity was much more modest above and beyond psychological capital and life satisfaction ($\Delta R^2 < .05$). It appeared that psychological capital and PF-W, the two workplace instruments, were more robust predictors than life satisfaction. Interestingly, PF-W predicted 15% of the variance in organizational proactivity above and beyond life satisfaction and psychological capital. This suggests that the PF-W scale may influence how employees engage in self-starting, future-oriented behaviors at their work organization. This has implications 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 PF-W scale. Support for measurement invariance includes no significant variation in factor structure, loadings, and intercepts across job function. Our findings demonstrated measurement invariance across all three job functions and may support our instrument as a useful tool across various employee job functions.

11 General Discussion

These studies developed and tested a comprehensive model of positive functioning at work expanding upon Seligman's PERMA model. Using a random sample of employees from Amazon's MTurk, four additional building blocks (physical health, mindset, environment, and economic

security) to PERMA were explored. All nine building blocks demonstrated convergent and discriminant validity with other well-being measures. Further, the overall PF-W scale and nine building blocks showed criterion validity with a series of theory-related work outcomes, such as turnover intentions and positive work role performance. The predictive validity of the four new building blocks was also tested with work outcomes, along with support for measurement invariance by job function (i.e., business, IT, and administrative). Finally, a comparative analysis of the PF-W scale with life satisfaction and psychological capital showed a significant effect on work outcomes above and beyond the two other prominent scales. Thus, Study 3 provided evidence for the use of a general measure of PF-W, along with support for nine lower-order measures.

11.1 Theoretical Contributions

Positive functioning at work integrates constructs across inputs, processes, and outcomes of well-being, which is useful for future researchers trying to investigate the causal relationships between the nine building blocks. This study found that PF-W and psychological capital were consistently better predictors of work outcomes than life satisfaction (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 subjective well-being (Tail, Padgett and Baldwin 1989). However, the magnitude of these relationships has varied considerably (.16–.68) and yielded inconsistent results (Adelmann, Antonucci, Crohan, and Coleman 1989). This study presents an employee-driven model that can be compared to other workplace and general well-being models.

Furthermore, PF-W may be best conceptualized with a general factor manifested by nine dimensions. This is consistent with other well-being research, which has supported either a higher-order or bifactor representation of well-being (Chen et al. 2013; Coffey, Wray-Lake, Mashek and Branand 2016; Jovanovic 2015; Seligman 2011). These findings also have implications for the role of economic security, mindset, and physical health on work outcomes. These three dimensions were consistent predictors of key work outcomes, such as turnover intentions and job-related affective well-being, supporting their relevance in explaining PF-W and key performance measures. Finally, the authors hope the PF-W scale adds value to the positive psychology literature. This research chose life satisfaction and psychological capital for comparison purposes due to their reputation, psychometric validation, and ability to predict important outcomes. From a theoretical perspective, this study offered a new multidimensional framework of employee well-being that may help explain work outcomes above and beyond other well-validated scales.

11.2 Practical Implications

From a practical perspective, measuring PF-W is relevant for leaders and human resource managers wishing to improve employee well-being, turnover intentions, job-related affect, and positive work role performance. Not to mention that if employees perceive they have high levels of positive functioning, this 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 meaning and accomplishment but lack physical health. As such, leaders

and managers could be trained with this tool to design targeted interventions aimed at improving each of the nine dimensions of PF-W.

Specifically, we found that employees who reported a positive mindset were able to ameliorate the effects of negative work outcomes, such as turnover intentions and job-related negative emotion. On the other hand, physical health and economic security were uniquely predictive of positive work role performance measures. Taken together, the nine dimensions may have a differential ability to predict work outcomes, and practitioners could consider these findings when selecting a positive psychology intervention at work. The PF-W scale also appears to predict variance in work outcomes above and beyond life satisfaction and psychological capital. This was particularly the case with turnover intentions and organizational proficiency. Thus, the PF-W scale adds a multidimensional well-being tool for practitioners, scholars, and interventionists in the workplace.

12 Limitations and Future Directions

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 overreliance on self-report and cross-sectional survey data in positive psychology research (Ackerman et al. 2018; Donaldson et al. 2020). In a similar vein, this study's first limitation 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 in order to address discriminant validity, construct proliferation, and mono-method bias concerns (Shaffer, DeGeest and Li 2016). Second, the PF-W scale contains nine dimensions that employees might find highly desirable. 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 PF-W (e.g., physical health) as more important to positive functioning than employees who work primarily in an office setting. Thus, future research should understand the structural dimensions of PF-W to best tailor workplace interventions.

Fourth, this study attempted to develop and create a measurement model for PF-W. 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 economic security moderate the ability to experience meaning at work, and so forth. Fifth, we 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 and Tingley 2015), the PF-W scale still needs validation work in non-MTurk samples. Additionally, cross-cultural validation work could further strengthen the PF-W scale and solidify the factor structure.

13 Conclusion

As organizations prepare for the yet-to-be-determined workplace of tomorrow, there is no doubt that the science of positive work and organizations can help cultivate employee positive functioning and performance. This study empirically validated and tested a new model of

positive functioning, building on Seligman's PERMA theory of well-being. Four new building blocks—physical health, mindset, environment, and economic security—promise to serve as useful constructs in the organizational sciences. Still, more research is needed to advance the field so employees and organizations can positively transform the world of work.

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/s41543-020-00033-1.

Compliance with Ethical Standards

Conflict of Interest All the authors declare no conflicts of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki. Declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors.

Informed Consent Informed consent was obtained from all individual participants included in the study.

References

Ackerman, C. E., Warren, M. A., & Donaldson, S. I. (2018). Scaling the heights of positive psychology: A systematic review of measurement scales. *International Journal of Wellbeing, 8*(2), 1–21.

Adelmann, P. K., Antonucci, T. C., Crohan, S. E., & Coleman, L. M. (1989). Empty nest, cohort, and employment in the well-being of midlife women. *Sex Roles: A Journal of Research, 20*, 173–189.

Avey, J., Reichard, R., Luthans, F., & Mhatre, K. (2011). Meta-analysis of the impact of positive psychological capital on employee attitudes, behaviors, and performance. *Human Resource Development Quarterly, 22*(2), 127–152.

Azzam, T., & Jacobson, M. R. (2013). Finding a comparison group: Is online crowdsourcing a viable option? *American Journal of Evaluation, 34*(3), 372–384.

Bennett, N., & Lemoine, J. G. (2014). What VUCA really means for you. Retrieved from https://hbr.org/2014/01/what-vuca-really-means-for-you

Bentler, P. M., & Bonett, D. G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin, 88*(3), 588–606.

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin, 107*(2), 238–246.

Bollen, K. (1989). Structural equations with latent variables. *Choice Reviews Online, 27*(02), 27–0974.

Braeken, J., & van Assen, M. A. L. M. (2017). An empirical Kaiser criterion. *Psychological Methods, 22*(3), 450–466.

Brown, T. A. (2012). *Confirmatory factor analysis for applied research*. New York: Guilford Press.

Brown, T. A. (2015). Methodology in the social sciences. *Confirmatory factor analysis for applied researc*h (2nd ed.). The Guilford Press.

Buhrmester, M., Kwang, T., & Gosling, S. D. (2016). Amazon's mechanical Turk: A new source of inexpensive, yet high-quality data? In A. E. Kazdin (Ed.), *Methodological issues and strategies in clinical research* (4th ed., pp. 133–139).

Butler, J., & Kern, M. L. (2016). The PERMA-profiler: A brief multidimensional measure of flourishing. *International Journal of Well-Being, 6*(3).

Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological Bulletin, 56*(2), 81–105.

Caniels, M. C. J., Semeijn, J. H., & Renders, I. H. M. (2018). Mind the mindset! The interaction of proactive personality, transformational leadership and growth mindset for engagement at work. *Career Development International, 23*(1), 48–66.

Carlson, M., Wilcox, R., Chou, C.-P., Chang, M., Yang, F., Blanchard, J., & Clark, F. (2011). Psychometric properties of reverse-scored items on the CES-D in a sample of ethnically diverse older adults. *Psychological Assessment, 23*(2), 558–562.

Chen, F., Jing, Y., Hayes, A., & Lee, J. (2013). Two concepts or two approaches? A bifactor analysis of psychological and subjective well-being. *Journal of Happiness Studies, 14*(3), 1033–1068.

Coffey, J. K., Wray-Lake, L., Mashek, D., & Branand, B. (2016). A multi-study examination of well-being theory in college and community samples. *Journal of Happiness Studies: An Interdisciplinary Forum on Subjective Well-Being, 17*(1), 187–211.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Earlbaum Associates.

Crank, J., Regoli, R., Hewitt, J., & Culbertson, R. (1995). Institutional and organizational antecedents of role stress, work alienation, and anomie among police executives. *Criminal Justice and Behavior, 22*, 152–171.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika, 16*, 297–334.

Cronbach, L. J. (1970). *Essentials of psychological testing*. New York: Harper & Row.

DeSimone, J., Harms, P., & DeSimone, A. (2015). Best practice recommendations for data screening. *Journal of Organizational Behavior, 36*(2), 171–181.

DeVellis, R. F. (2017). *Scale development: Theory and applications* (4th ed). In *Los Angeles, CA*. Sage: Publications.

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment, 49*(1), 71–75.

Diener, E. (2005). *Income and happiness*. Retrieved from https://www.psychologicalscience.org/observer/income-and-happiness

Diener, E., & Seligman, M. E. P. (2004). Beyond money: Toward an economy of well-being. *Psychological Science in the Public Interest, 5*(1), 1–31.

Donaldson, S. I. (2019). *Evaluating positive functioning and performance: A positive work and organizations approach* (Doctoral dissertation). **Retrieved from** PQDT-Global.

Donaldson, S. I., Chen, C., & Donaldson, S. I. (in press). Designing positive organizational psychology interventions. In S. I. Donaldson & C. Chen (Eds.), *Positive organizational psychology interventions: Design and evaluation*. New Jersey: Wiley.

Donaldson, S. I., Heshmati, S., Lee, J. Y., & Donaldson, S. I. (2020). Examining building blocks of well-being beyond perma and self-report bias. *The Journal of Positive Psychology*, 1–8.

Donaldson, S. I., Lee, J. Y., & Donaldson, S. I. (2019a). Evaluating positive psychology interventions at work: A systematic review and meta-analysis. *International Journal of Applied Positive Psychology, 4*, 113–134.

Donaldson, S. I., Lee, J. Y., & Donaldson, S. I. (2019b). The effectiveness of positive psychology interventions in the workplace: A theory-driven evaluation approach. In V. Z. Llewellyn & S. Rothmann (Eds.), *Theoretical approaches to multi-cultural positive psychology interventions* (pp. 115–159). Cham, Switzerland: Springer International.

Donaldson, S. I., Heshmati, S., Lee, J. Y., & Donaldson, S. I. (2020). Examining building blocks of well-being beyond PERMA and self-report bias. *The Journal of Positive Psychology*: Advanced online publication.

Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology, 92*(6), 1087–1101.

Dweck, C. S. (2006). *Mindset: The new psychology of success*. New York: Random House.

Easterlin, R. A. (2003). Explaining happiness. *Proceedings of the National Academy of Science, 100*(19), 11176–11183.

Fox, S., Spector, P. E., Goh, A., & Bruursema, K. (2007). Does your coworker know what you're doing? Convergence of self- and peer-reports of counterproductive work behavior. *International Journal of Stress Management, 14*(1), 41–60.

Fredrickson, B. (2003). The value of positive emotions. *American Scientist, 91*(4).

Friedlander, F., & Brown, L. D. (1974). Organization development. *Annual Review of Psychology, 25*, 313–341.

Goodman, J. K., Cryder, C. E., & Cheema, A. (2013). Data collection in a flat world: The strengths and weaknesses of mechanical Turk samples. *Journal of Behavioral Decision Making, 26*(3), 213–224.

Goodman, F., Disabato, D., Kashdan, T., & Kauffman, S. (2018). Measuring well-being: A comparison of subjective well-being and PERMA. *The Journal of Positive Psychology, 13*(4), 321–332.

Griffin, M., Neal, A., & Parker, S. (2007). A new model of work role performance: Positive behavior in uncertain and interdependent contexts. *The. Academy of Management Journal, 50*(2), 327–347.

Hacker, J. S., Huber, G. A., Nichols, A., Rehm, P., Schlesinger, M., Valletta, R., & Craig, S. (2014). The economic security index: A new measure for research and policy analysis. *Review of Income and Wealth, 60*, S5–S32.

Harman, E., & Azzam, T. (2018). Towards program theory validation: Crowdsourcing the qualitative analysis of participant experiences. *Evaluation and Program Planning, 66*, 183–194.

Harrison, D., & McLaughlin, M. (1996). Structural properties and psychometric qualities of organizational self-reports: Field tests of connections predicted by cognitive theory. *Journal of Management, 22*(2), 313–338.

Hartig, T., Korpela, K., Evans, G., & Gärling, T. (1997). A measure of restorative quality in environments. *Scandinavian Housing and Planning Research, 14*(4), 175–194.

Hendriks, T., Hassankhan, A., Schotanus-Dijkstra, M., Bohlmeijer, E., & De, J. (2019). The efficacy of multi-component positive psychology interventions: A systematic review and meta-analysis of randomized controlled trials. *Journal of Happiness Studies, 21*(1), 357–390.

Horn, J. (1965). A rationale and test for the number of factors in factor analysis. *Psychometrika, 30*(2), 179–185.

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*(1), 1–55.

Huff, C., & Tingley, D. (2015). "Who are these people?" evaluating the demographic characteristics and political preferences of MTurk survey respondents. *Research & Politics, 2*(3).

Huppert, F., & So, T. (2013). Flourishing across europe: Application of a new conceptual framework for defining well-being. *Social Indicators Research, 110*(3), 837–861.

Jacobson, M. R., Whyte, C. E., & Azzam, T. (2018). Using crowdsourcing to code open-ended responses: A mixed methods approach. *American Journal of Evaluation, 39*(3), 413–429.

Jorgensen, T. D., Pornprasertmanit, S., Schoemann, A. M., & Rosseel, Y. (2018). SemTools: Useful tools for structural equation modeling. R package version *0.5*–1. Retrieved from https://CRAN.R-project.org/package=semTools

Jovanović, V. (2015). A bifactor model of subjective well-being: A re-examination of the structure of subjective well-being. *Personality and Individual Differences, 87*, 45–49.

Judge, T., & Watanabe, S. (1993). Another look at the job satisfaction^life satisfaction relationship. *Journal of Applied Psychology, 78*(6), 939–948.

Kern, M. L. (2014). *The workplace PERMA Profiler*. Retrieved from https://permahsurvey.com/

Kern, M. L., Waters, L. E., Adler, A., & White, M. A. (2015). A multidimensional approach to measuring well-being in students: Application of the PERMA framework. *The Journal of Positive Psychology, 10*(3), 262–271.

Kline, R. B. (2016). *Methodology in the social sciences. Principles and practice of structural equation modeling* (4th ed.). New York: Guilford Press.

Kobau, R., Sniezek, J., Zack, M., Lucas, R., & Burns, A. (2010). Well-being assessment: An evaluation of well-being scales for public health and population estimates of well-being among us adults. *Applied Psychology: Health and Well-Being, 2*(3), 272–297.

Koo, T., & Li, M. (2016). A guideline of selecting and reporting intraclass correlation coefficients for reliability research. *Journal of Chiropractic Medicine, 15*(2), 155–163.

Lambert, E., Hogan, N., Camp, S., & Ventura, L. (2006). The impact of work—Family conflict on correctional staff: A Riminary study. *Criminology & Criminal Justice: An International Journal, 6*(4).

Laschinger, H. K. S., Heather, K., Leiter, P. M., Day, A., Gilin-Oore, D., & Mackinnon, P. S. (2012). Building empowering work environments that foster civility and organizational trust: Testing an intervention. *Nursing Research, 61*(5), 316–325.

Ledesma, R. D., & Valero-More, P. (2007). Determining the number of factors to retain in EFA: An easy-to-use computer program for carrying out parallel analysis. *Practical Assessment, Research & Evaluation, 12*(2), 1–11.

Little, T. D., Slegers, D. W., & Card, N. A. (2006). A non-arbitrary method of identifying and scaling latent variables in sem and macs models. *Structural Equation Modeling, 13*(1), 59–72.

Longo, Y., Coyne, I., & Joseph, S. (2017). The scales of general well-being (SGWB). *Personality and Individual Differences, 109*, 148–159.

Luthans, F., Avolio, B., Avey, J., & Norman, S. (2007). Positive psychological capital: Measurement and relationship with performance and satisfaction. *Personnel Psychology, 60*(3), 541–572.

Mahalanobis, P. C. (1936). On the generalized distance in statistics. *Proceedings of the National Institute of Science of India, 2*, 49–55.

Marsh, H. W. (1996). Positive and negative global self-esteem: A substantively meaningful distinction or artifactors? *Journal of Personality and Social Psychology, 70*(4), 810–819.

Marsh, H. W., & Hocevar, D. (1985). Application of confirmatory factor analysis to the study of self-concept: First- and higher order factor models and their invariance across groups. *Psychological Bulletin, 97*(3), 562–582.

Maslach, C., Jackson, S. E., & Schwab, R. L. (1986). *Maslach burnout inventory: manual with a special supplement "burnout in education" [mbi]* (2nd ed.). Consulting Psychologists Press.

Meade, A., Johnson, E., & Braddy, P. (2008). Power and sensitivity of alternative fit indices in tests of measurement invariance. *The Journal of Applied Psychology, 93*(3), 568–592.

Meade, A., & Lautenschlager, G. (2004). A comparison of item response theory and confirmatory factor analytic methodologies for establishing measurement equivalence/invariance. *Organizational Research Methods, 7*(4), 361–388.

Meyers, M., Van Woerkom, M., & Bakker, A. (2013). The added value of the positive: A literature review of positive psychology interventions in organizations. *European Journal of Work and Organizational Psychology, 22*(5), 618–632.

Neumeier, L., Brook, L., Ditchburn, G., & Sckopke, P. (2017). Delivering your daily dose of well-being to the workplace: A randomized controlled trial of an online well-being programme for employees. *European Journal of Work and Organizational Psychology, 26*(4), 555–573.

Nicholas, I. J. (1982). Organizational climate and strategic decision-making. *Journal of General Management, 7*(3), 57–71.

Orsila, R., Luukkaala, T., Manka, M., & Nygard, C. (2011). A new approach to measuring work-related well-being. *International Journal of Occupational Safety and Ergonomics, 17*(4), 341–359. https://doi.org/10.1080/10803548.2011.11076900.

Ozduran, A., & Tanova, C. (2017). Manager mindsets and employee organizational citizenship behaviours. *International Journal of Contemporary Hospitality Management, 29*(1), 589–606.

Page, K., & Vella-Brodrick, D. (2013). The working for wellness program: RCT of an employee well-Being intervention. *Journal of Happiness Studies, 14*(3), 1007–1031.

Piasentin, K., & Chapman, D. (2007). Perceived similarity and complementarity as predictors of subjective person-organization fit. *Journal of Occupational and Organizational Psychology, 80*(2), 341–354.

Porath, C., Spreitzer, G., Gibson, C., & Garnett, F. (2012). Thriving at work: Toward its measurement, construct validation, and theoretical refinement. *Journal of Organizational Behavior, 33*(2), 250–275.

Rand, D. G. (2012). The promise of mechanical Turk: How online labor markets can help theorists run behavioral experiments. *Journal of Theoretical Biology, 299*, 172–179.

Revelle, W. (2015). *Psych: Procedures for personality and psychological research*. Retrieved from ://CRAN.R-project.org/package=psych

Revelle, W., & Zinbarg, R. (2009). Coefficients alpha, beta, omega, and the glb: Comments on Sijtsma. *Psychometrika, 74*(1), 145.

Rodriguez, A., Reise, S., & Haviland, M. (2016). Evaluating bifactor models: Calculating and interpreting statistical indices. *Psychological Methods, 21*(2), 137–150.

Roodt, G., & Bothma, C. (2013). The validation of the turnover intention scale: Original research. *SA Journal of Human Resource Management, 11*(1), 1–12.

Rosseel, Y. (2012). Lavaan: An r package for structural equation modeling. *Journal of Statistical Software, 48*(2).

Russell, E., & Daniels, K. (2018). Measuring affective well-being at work using short-form scales: Implications for affective structures and participant instructions. *Human Relations, 71*(11), 1478–1507.

Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology, 52*, 141–166.

Ryff, C., & Keyes, C. (1995). The structure of psychological well-being revisited. *Journal of Personality and Social Psychology, 69*(4), 719–727.

Schaufeli, W. B., & Bakker, A. B. (2004). Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. *Journal of Organizational Behavior, 25*(3), 293–315.

Seligman, M. E. P. (2008). Positive health. *Applied Psychology, 57*, 3–18.

Seligman, M. E. P. (2011). *Flourishing: A visionary new understanding of happiness and well-being*. New York, NY: Free Press.

Seligman, M. (2018). PERMA and the building blocks of well-being. *The Journal of Positive Psychology, 13*(4), 333–335.

Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist, 55*(1), 5–14.

Seligman, M. E., Railton, P., Baumeister, R. F., & Sripada, C. (2013). Navigating into the future or driven by the past. *Perspectives on Psychological Science, 8*(2), 119–141.

Shaffer, J. A., DeGeest, D., & Li, A. (2016). Tackling the problem of construct proliferation: A guide to assessing the discriminant validity of conceptually related constructs. *Organizational Research Methods, 19*(1), 80–110.

Spector, P. (2007). Instructions for scoring the job-related affective well-being scale, Jaws. Retrieved from http://shell.cas.usf.edu/~pspector/scales/jawsscor.html

Spector, P., Bauer, J., & Fox, S. (2010). Measurement artifacts in the assessment of counterproductive work behavior and organizational citizenship behavior: Do we know what we think we know? *The Journal of Applied Psychology, 95*(4), 781–790.

Spitzer, R., Williams, J., Kroenke, K., Hornyak, R., & McMurray, J. (2000). Validity and utility of the prime-md patient health questionnaire in assessment of 3000 obstetric-gynecologic patients: The prime-md patient health questionnaire obstetrics-gynecology study. *American Journal of Obstetrics and Gynecology, 183*(3), 759–769.

Tail, M., Padgett, M. Y., & Baldwin, T. T. (1989). Job and life satisfaction: A reexamination of the strength of the relationship and gender effects as a function of the date of the study. *Journal of Applied Psychology, 74*, 502–507.

Van Katwyk, P., Fox, S., Spector, P., & Kelloway, E. (2000). Using the job-related affective well-being scale (jaws) to investigate affective responses to work stressors. *Journal of Occupational Health Psychology, 5*(2), 219–230.

Wallston, K. A. (2005). The validity of the multidimensional health locus of control scales. *Journal of Health Psychology, 10*(5), 623–632.

Warren, M. A., Donaldson, S. I., & Luthans, F. (2017). Taking positive psychology to the workplace: Positive organizational psychology, positive organizational behavior, and positive organizational scholarship. In M. A. Warren & S. I. Donaldson (Eds.), *Scientific Advances in Positive Psychology* (pp. 195–227). Westport, CT: Praeger.

Waterman, A. (2008). Reconsidering happiness: A eudaimonist's perspective. *Journal Of Positive Psychology, 3*(4), 234–252.

Waterman, A., Schwartz, S., Zamboanga, B., Ravert, R., Williams, M., Bede Agocha, V., Yeong Kim, S., & Brent Donnellan, M. (2010). The questionnaire for eudaimonic well-being: Psychometric properties, demographic comparisons, and evidence of validity. *Journal of Positive Psychology, 5*(1), 41–61.

Wheaton, B., Muthen, B., Alwin, D. F., & Summers, G. (1977). Assessing reliability and stability in panel models. *Sociological Methodology, 8*(1), 84–136.

Willis Towers Watson (2017). *Global benefits attitudes survey.* Retrieved from https://www.willistowerswatson.com/en-US/insights/2017/11/2017-global-benefits-attitudes-survey

Yong, A. G., & Pearce, S. (2013). A beginner's guide to factor analysis: Focusing on exploratory factor analysis. *Tutorials in Quantitative Methods for Psychology, 9*(2), 79–94.

Yuan, K., & Bentler, P. (2000). Three likelihood-based methods for mean and covariance structure analysis with nonnormal missing data. *Sociological Methodology, 30*(1), 165–200.

Affiliations

Scott I. Donaldson[1] **· Stewart I. Donaldson**[2]

[1] Moores Cancer Center, University of California San Diego, La Jolla, CA, USA

[2] Division of Behavioral and Organizational Sciences, Claremont Graduate University, 123 E. 8th St, Claremont, CA 91711, USA