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RESEARCH PAPER

Evaluating Positive Psychology Interventions at Work: a Systematic Review and Meta-Analysis

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Abstract

Positive psychology interventions (PPIs) in the workplace aim to improve important outcomes, such as increased work engagement, job performance, and reduced job stress. Numerous empirical studies have been conducted in recent years to verify the effects of these interventions. This paper provides a systematic review and the first meta-analysis of PPIs at work, highlighting intervention studies explicitly aligned within the theoretical traditions of positive work and organizations (PWO). We draw from streams of PWO, including positive organizational scholarship (POS), positive organizational behavior (POB) and positive organizational psychology literature (POP) to evaluate PPIs at work. The meta-analytic findings from 22 studies showed that the five workplace positive psychology interventions had a small positive effect on improving desirable work outcomes ($g = .25$), and a small to moderate effect on reducing undesirable work outcomes ($g = -.34$). Thus, this paper provides valuable insight on the effectiveness of PPIs at work and future directions for scholars and practitioners.

Keywords Positive psychology · Interventions · Workplace · Meta-analysis

The positive psychology movement has spent the past two decades investigating human strengths and virtues, solidifying the "science of positive subjective experience, positive individual traits, and positive institutions" (Seligman and Csikszentmihalyi 2000, p.5). Since its inception, positive psychology has influenced a range of disciplines, including education, health care, neuroscience, and economics to name a few

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(Donaldson and Ko 2010; Meyers et al. 2013; Rusk and Waters 2015). This paper provides the first quantitative synthesis of the current state of positive psychology interventions (PPIs) at work. In addition, we examined the relationship between positive psychology interventions and specific work outcomes, such as performance, job-well-being, and engagement. These findings map the terrain of positive interventions in the workplace, and provide areas for future research and development.

1 Positive Work and Organizations (PWO)

Warren et al. (2017) proposed an umbrella term called positive work and organizations (PWO), which encourages cross-pollination of research among the three research streams in positive psychology at work: positive organizational psychology (POP), positive organizational behavior (POB), and positive organizational scholarship (POS). The need for a unifying framework is in response to the impact the positive orientation has had beyond its original boundaries (e.g., applied organizational psychology, organizational behavior, and management). For example, POP, POS, and POB are now influencing technology, hospitality and management, law, and financial planning, to name a few (Warren et al. 2017). The goal of PWO is to encourage dialogue across subfields and serve as a clearinghouse for best practices in positive psychology theory building and practice (see IPPA Positive Work and Organizations Division 2019). Thus, integrating these three streams of research under PWO is useful to improve the field of positive psychology.

Positive organizational psychology (POP) is "the scientific study of positive subjective experiences and traits in the workplace and positive organizations, and its application to improve the effectiveness and quality of life in organizations" (Donaldson and Ko 2010 p. 6). Unlike traditional organizational behavior modification approaches (Hersey et al. 2007), which aim to prevent harm and fix problems, POP attempts to develop positive qualities in organizations. POB examines human resource strengths (i.e., psychological capacities) that can be measured and developed, such as hope, optimism, resilience, and self-efficacy at the individual and team levels (Luthans 2002). Cameron and Caza (2004) define POS as "the study of that which is positive, flourishing, and life-giving in organizations" (p. 731). POS is concerned with positive processes and outcomes for organizations and its employees, including topics such as organizational virtuousness, positive deviance, and appreciation cultures (Cameron et al. 2003). While POB and POS are similar in their positive orientation, POB is uniquely concerned with the link between psychological capacities and organizational performance, whereas POS is focused on positive qualities and outcomes in the organizational setting (Bakker and Schaufeli 2008).

Positive organizational psychology emphasizes life-giving, positive characteristics in organizations, as well as the three pillars of positive psychology: positive subjective experiences, positive traits, and positive institutions (Peterson 2006). Positive subjective experiences include constructs such as well-being, flow, and positive emotions. Positive traits focus on character strengths such as wisdom, resilience, and purpose. The last pillar, positive institutions, encompasses families, schools, and businesses.

Meyers et al. (2013) defined a PPI at work as an intentional activity or method that identifies, builds, and/or broadens any aspects of the three pillars (i.e., positive

subjective experience, positive traits, positive institutions) as part of or as a by-product (at the individual, team, or organizational level) of an organizational intervention. In the current review, we drew from Meyers et al. (2013) definition to evaluate PPIs at work. We defined PPIs at work as interventions that explicitly utilize the theory and scholarship of positive work and organizations to guide, plan, design, and/or implement the intervention under consideration. Therefore, our purposes were to identify positive interventions at work and examine their relationship with work outcomes. The first hypothesis was as follows:

> Hypothesis 1. *Positive psychology interventions will improve desirable work outcomes (e.g., well-being) and reduce undesirable work outcomes (e.g., job stress).*

2 Need for Review of Positive Psychology Interventions at Work

Several systematic reviews have assessed positive psychology in the workplace (Avey et al. 2011; Gilbert et al. 2018; Knight et al. 2017; Rudolph et al. 2017). Gilbert et al. (2018) reviewed workplace interventions that targeted volatile psychological, cognitive, and physiological personal resources at work. Avey et al. (2011) examined the relationship between PsyCap and employee attitudes, behaviors, and performance outcomes. Knight et al. (2017) meta-analyzed personal resource building, job resource building, leadership training, and health promotion interventions relationship with work engagement. Rudolph et al. (2017) investigated the relationship between job crafting and individual differences, job characteristics, and work outcomes. Other meta-analytic reviews have also been conducted on positive psychology interventions outside the work setting (cf. Bolier et al. 2013; Sin and Lyubomirsky 2009, for meta-analytic reviews in the clinical context).

We aimed to expand the work of prior reviews and conduct a meta-analysis using PWO theory and research. Warren et al. (2017) suggested PWO uses concepts inspired by the positive psychology movement and within the three main strands of POS, POB, and POP (Seligman and Csikszentmihalyi 2000). Further, Warren et al. (2019) proposed that the overall goal of PWO is to explicitly focus on psychological mechanisms that promote employee and organizational flourishing. While we acknowledge that other interventions have been developed to improve the workplace, the psychological mechanisms through which these interventions operate vary greatly. Schueller et al. (2014) suggested PPIs should be conceptualized by the psychological mechanisms (i.e., pathway) through which they operate, and their overall focus on improving well-being. We argue that the psychological pathways in interventions outside the positive psychology movement are focused on problem solving and restoring normal functioning, including relaxation, stress management, mindfulness, and cognitive-behavioral approaches to name a few (Richardson and Rothstein 2008). These psychological mechanisms are predicated on fixing issues in the workplace, such as negative emotions, negative thinking, and interpersonal team conflict. On the other hand, PWO focuses on building personal psychological strengths, such as psychological capital, gratitude, and well-being at work. Using the PWO lens, five types of interventions emerged in our systematic review(see Section 5 for search strategy and inclusion criteria):

psychological capital interventions, job crafting interventions, employee strengths interventions, employee gratitude interventions, and employee well-being interventions.

Psychological Capital Interventions Psychological capital (PsyCap) refers to a psychological state of development that is malleable, open to development, and integral to human resource practices (Luthans and Youssef-Morgan 2017). PsyCap consists of four major components: (1) confidence in one's ability to succeed at challenging work tasks (self-efficacy); (2) positive attributions about the future of one's career or company (optimism); (3) redirecting paths to work goals in the face of obstacles (hope); and (4) bouncing back from adverse situations in the workplace (resilience; Luthans et al. 2007a). Research demonstrates that PsyCap interventions are associated with a variety of work outcomes, including improved job performance, engagement, and organizational citizenship behaviors (Avey et al. 2010: Luthans et al. 2007a).

Job Crafting Interventions Job crafting is a self-initiated, proactive process at work by which employees change elements of their jobs to optimize the fit between their job demands and personal needs, abilities, and strengths (Wrzesniewski and Dutton 2001). The concept of job crafting is rooted in the jobs demands-resources theory (JD-R), which attempts to alter social job resources (e.g., feedback and coaching), structural job resources (e.g., opportunities to develop at work), and challenging job demands (e.g., reducing workload, creating new projects; Tims et al. 2012). The results of job crafting interventions suggest that employees who design and have control over the characteristics of their work may (a) create an optimal fit between work demands and personal strengths, and (b) improve adaptive performance, well-being, and work engagement (Bakker et al. 2016; Demerouti and Bakker 2014; Van den Heuvel et al. 2015; Wingerden et al. 2016).

Employee Strengths Interventions Peterson and Seligman (2004) created the Values in Action (VIA) inventory to describe optimal human character strengths. Character strengths are defined as trait-like, measurable qualities (e.g., perseverance, teamwork, empathy) that manifest in ways of thinking, feeling, and behaving that are natural to the individual (Quinlan et al. 2012). Strengths interventions apply the theory of character strengths to the identification, development, and use of strengths for employees. Research has shown that strengths interventions can be useful for improving employee well-being, leadership, and coaching outcomes (MacKie 2014; Quinlan et al. 2012).

Employee Gratitude Interventions Wood et al. (2010) defined gratitude in the workplace as "noticing and appreciating the positive 'in one's work life' (versus 'in the world')" (p. 891). Therefore, employee gratitude interventions are intentional activities designed to increase the practice of gratitude in the workplace. For example, Kaplan et al.'s (2014) gratitude intervention asked employees to a keep a log (three times per week) to think about what they were grateful for in their job, including supportive work relationships, sacrifices, etc. Wood et al. (2010) suggested gratitude interventions are a robust strategy for improving employee job well-being.

Employee Well-Being Interventions Employee well-being may encompass both general well-being and work-specific well-being (e.g., evaluation of job satisfaction and work-related affect; Bakker and Oerlemans 2011; Neumeier et al. 2017). Seligman's well-being theory (2011), known as PERMA (i.e., positive emotions, engagement, relationships, meaning, and accomplishment), is one underlying framework used in employee well-being interventions. Several employee well-being interventions attempt to improve the various aspects of PERMA in the workplace (Neumeier et al. 2017). Interventions that target employee well-being have been shown to reduce employee absenteeism and turnover intentions, as well as improve job satisfaction (Boehm and Lyubomirsky 2008; Layous et al. 2013; Pelled and Xin 1999).

3 Evaluating Desirable and Undesirable Work Outcomes

Corporate leaders, human resource managers, and scholars will likely be interested in positive psychology interventions if they improve work outcomes. In fact, Kurt Lewin's Maxim (1943) states, "there is nothing as practical as a good theory." In order to assess work outcomes, we categorized outcome measures based on Avey et al.'s (2011) two-dimensional typology of employee attitudes (i.e., desirable and undesirable), which is meant to serve as a framework for human resource managers in most workplace situations. For example, they included desirable attitudes, behaviors, and employee performance, and undesirable attitudes, behaviors, and performance. This enabled us to evaluate the overall effectiveness of positive psychology interventions, and each unique contribution of positive psychology theory across desirable and undesirable work outcomes. For instance, it may be the case that positive psychology interventions are more effective at improving undesirable work outcomes rather than vice versa. To test this, we meta-analyzed both PPIs impact on positive behaviors and negative behaviors in the workplace. The following hypothesis was explored:

> Hypothesis 2. *Each type of positive psychology theory (*i.e.*, whether interventions use PsyCap, job crafting, employee gratitude, employee strengths, or employee well-being) will be positively related to desirable work outcomes and negatively related to undesirable work outcomes.*

4 Intervention Delivery Method

Knight et al. (2017) suggested that intervention delivery method (i.e., whether intervention is delivered by a group, individual, or online mechanism) is one of the most important aspects to consider when evaluating the effectiveness of an intervention. For example, Knight and colleagues meta-analytic findings on work engagement demonstrated that group interventions were the most effective, above and beyond individual and online interventions (Knight et al. 2017). They highlighted that group interventions facilitated personal relationships and co-collaboration with colleagues, resulting in positive work outcomes. In addition to research on traditional intervention delivery methods (i.e., group and individual; Egan et al. 2007; Nielsen et al. 2007; Park 2004), the emergence of

online intervention technology has created a new platform for organizational interventions. Meta-analytic findings suggested that online interventions are more effective than traditional methods, particularly for learning and development (Sitzmann et al. 2006). The ease, delivery, and cost of administering online interventions is also much more attractive to prospective organizations looking for intervention services (Luthans et al. 2008). Thus, we developed a third research question to explore whether intervention delivery method has an impact on work outcomes:

> Hypothesis 3. *Intervention delivery method (*i.e.*, whether interventions use online, group, or individual methods) will moderate the relationship between PPIs and desirable work outcomes and negative effect on undesirable work outcomes.*

5 Method

5.1 Search Strategy

Before we conducted a systematic literature search, we examined the *Oxford Handbook of Positive Organizational Scholarship* to develop an initial list of search terms (Cameron and Spreitzer 2011). Based on central themes outlined in the volume and prior work from Meyers et al. (2013), we created broad search terms that we believed would capture positive interventions at work. The first search terms consisted of "positive psychology," "positive organizational behavior," "positive organizational scholarship," and "positive organizational psychology." The second search terms included combinations of "intervention," "work* (workplace)," "organization* (organizational)," "employee," "manager," "training," and "group intervention." Those search terms were then entered into three electronic databases: PsycINFO, PsycArticles, and ISI Web of Science.

After investigating online databases, we then searched specific constructs (e.g., psychological capital, job crafting, and strengths theory) based on their representation in the POP, POS, and POB literature (Cameron and Spreitzer 2011). We also examined the *Journal of Happiness Studies* and *European Journal of Work and Organizational Psychology* because they are known to be major outlets for publishing positive interventions at work. Lastly, to combat the threat of publication bias we sent out two announcements to the *Academy of Management* Listserv and the International Positive Psychology Association's *Positive Work and Organization Newsletter* for any unpublished data on positive interventions at work.

5.2 Inclusion Criteria

Two reviewers (AB and CD) independently assessed articles in two separate phases. First, the titles and abstracts of the papers were assessed for the presence of a positive psychology intervention in line with our definition. Second, full-articles were examined and included based on a set of specified criteria. All disagreements were resolved by consensus. The inter-rater reliability (*kappa*) was .93.

The inclusion criteria were as follows:

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

The systematic search produced 621 articles (Web of Science = 262, PsycInfo = 338, PsyArticles = 21). After removing duplicates and reading article titles and abstracts there were 72 papers. We then compared full-articles against the inclusion criteria, which resulted in 22 articles for the final sample. Please see Fig. 1 for a flow diagram of the systematic search, including databases and full-articles searched and reasons for exclusion.

5.3 Coding of Studies

Two reviewers (AB and CD) independently coded each study for characteristics based on a protocol developed by the research team. All disagreements were resolved by consensus. Study characteristics included type of document (e.g., article or dissertation), positive psychology theory (e.g., psychological capital, job crafting, strengths theory, etc.), intervention type (e.g., coaching, training, or workshop), intervention delivery method (e.g., individual, group, or online), study design (e.g., pretest-posttest control group), industry (e.g., academia, government, etc.), gender, type of control group (e.g., control group, waitlist control group, etc.), duration (e.g., three to four hour training session), *N*, type of outcome (e.g., desirable or undesirable performance), outcome scale used (e.g., Utrecht Work Engagement Scale), and follow up time point (e.g., T3 at six months).

The coding scheme was developed to include relevant demographic information reported in the studies, and identify moderators to be tested in the statistical procedure. The inclusion of moderators was based on the research questions and recommendations of extant literature on positive organizational interventions at work (Knight et al. 2017; Meyers et al. 2013). For our outcome variables, we used Reichard et al.'s (2013) coding scheme to dichotomize work outcomes into desirable and undesirable. Desirable work outcomes included performance (e.g., in-role performance, adaptive performance, job performance, etc.), job well-being (e.g., job-related positive affective well-being, work happiness, job satisfaction, etc.), work engagement, and other (e.g., organization based self-esteem, workplace trust, calling, etc.). Undesirable work outcomes included negative job well-being (e.g., job-related negative affective well-being, job stress, and

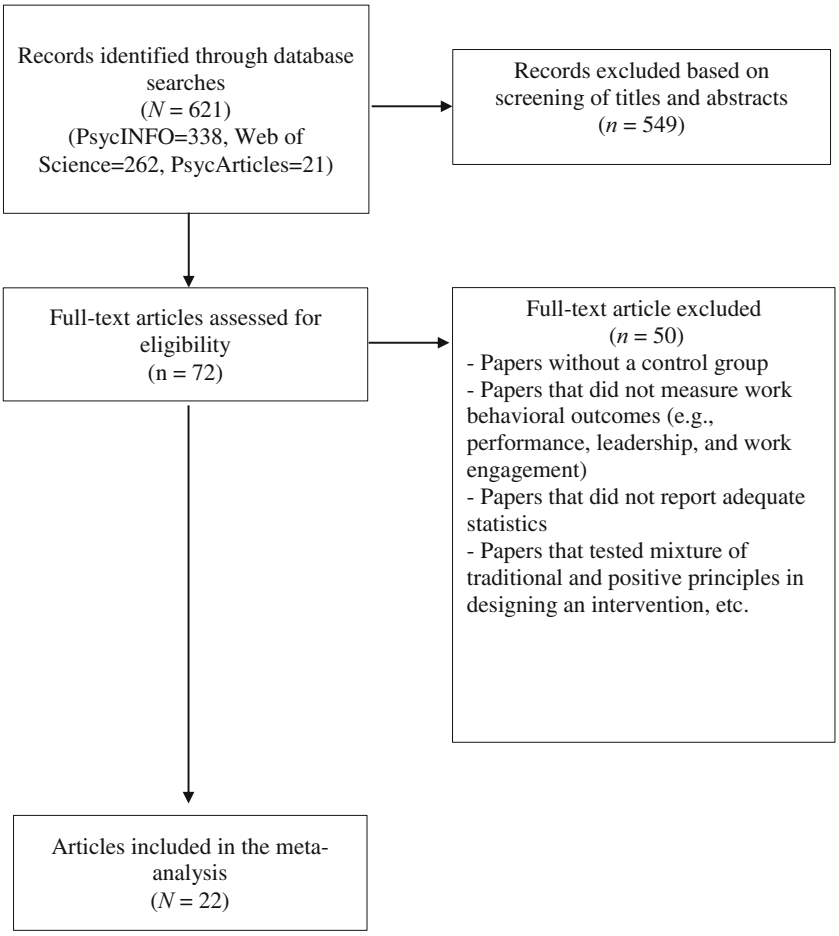

Fig. 1 A flow diagram of the systematic literature search, including databases and full-articles searched, and reasons for exclusion

emotional exhaustion) and negative performance (e.g., supervisor incivility, anger, turnover intent, work avoidance, etc.). Please see Tables 1 and 2 for entire list of outcome measures included in the meta-analysis.

5.4 Effect Size Calculation and Statistical Procedure

For each primary study we computed Cohen's standardized mean difference (*d*) by subtracting the mean gain (i.e., pre-post change) of the treatment group by the mean gain of the control group (i.e., pre-post change), and dividing the results by the pooled standard deviation of both groups. We used Lipsey and Wilson's (2001) Practical Meta-Analysis Effect Size Calculator to compute each primary study's *d* value. The means and standard deviations were extracted from baseline and posttest measures reported in each study. In cases where means and standard deviations of either baseline or posttest were unavailable, authors were contacted to provide adequate statistics. If necessary, alternative statistics such as *F*, *t*, and *p*-values were used.

Table 1 Meta-analytic results for the effects of positive interventions on desirable and undesirable work outcomes

				Intervention effects				Heterogeneity within each outcome			
Outcome	*k*	*n* (t)	*n* (c)	*g*	SE	95%-CI	*p*	*Q*	*df*	*p*	I^2
Desirable work outcomes[a]	40	1618	2494	0.25	0.04	0.17–0.33	.00	52.81	39	.07	26.15
Undesirable work outcomes[b]	12	569	1346	−0.34	0.12	−0.57- -0.11	.00	46.69	11	.00	76.44

k = number of effect sizes included in the analysis; *n*(t) = number of participants in the treatment group; *n*(c) = number of participants in the control group; *g* = average effect size according to Hedges' *g; SE* = standard error of the average effect size; 95% CI, *LL-UL* = the minimum and maximum limits of the 95% confidence level*; Q* = statistical test used for the estimation of heterogeneity; I^2 = the proportion of effect size variance that is accounted for in the moderator variables

[a] Desirable work outcomes = performance, job well-being, engagement, other

[b] Undesirable work outcomes = negative performance, negative job-well-being

Table 2 Meta-analytic results for the effects of positive interventions on work outcomes

				Intervention effects				Heterogeneity within each outcome			
Outcome	*k*	*n*(t)	*n*(c)	*g*	SE	95%-CI	*p*	*Q*	*df*	*p*	I^2
Performance[a]	9	368	363	0.08	0.12	−0.15, 0.31	.49	16.99	8	.03	52.91
Performance/N[b]	3	126	151	−0.57	0.59	−1.72, 0.59	.34	38.42	2	.00	94.75
Wellbeing[c]	16	654	1176	0.30	0.05	0.19, 0.40	.00	15.89	15	.39	5.60
Wellbeing/N[d]	9	443	1195	−0.28	0.06	−0.40, −0.16	.00	8.06	8	.43	.74
Engagement[e]	9	393	738	0.17	0.07	0.03, 0.30	.02	6.98	8	.54	.00
Other[f]	6	203	217	0.44	0.10	0.25, 0.64	.00	3.46	5	.63	.00

k = number of effect sizes included in the analysis; *n*(t) = number of participants in the treatment group; *n*(c) = number of participants in the control group; g = average effect size according to Hedges'g; SE = standard error of the average effect size; 95% CI, *LL-UL* = the minimum and maximum limits of the 95% confidence interval; *Q* = statistical test used for the estimation of heterogeneity; I^2 = the proportion of effect size variance that can is accounted for in the moderator variables

[a] Performance measures include: In-role performance, personal accomplishment, adaptive performance, job performance, presenteeism, group performance appraisal

[b] Negative performance measures includes: Supervisor incivility, coworker incivility, anger-in, turnover intent, depersonalization, absenteeism, work avoidance, procrastination, burnout

[c] Well-being measures include: Job-related affective positive affective well-being, empowerment, job satisfaction, work happiness, work psychological flexibility

[d] Negative well-being measures include: Job-related negative affective well-being, job stress, emotional exhaustion

[e] Engagement measures include: Work engagement

[f] Other measures include: Leader member exchange, organization based self-esteem, workplace trust, forgiveness, prosocial behavior, leadership, calling

Since Cohen's *d* produces an overestimation for studies with small sample size, we used an adjusted estimate called Hedges' *g,* which generates weights for each effect size based on its sample size (Borenstein et al. 2009; Lipsey and Wilson 2001). Regarding estimating the magnitude of the effect size, we used best practice recommendations (Cohen 1988; Cooper and Findley 1982). Given organizational interventions at work showed effect sizes ranged from 0.12 to 0.85 (Lipsey and Wilson 1993), we interpreted effect sizes with values between 0-.30 as small, .30–.60 as moderate, and above .60 as large. The mean effect sizes of overall and specific work outcomes such as performance, negative performance, well-being, negative well-being, engagement, and other (i.e., empowerment, trust, organization based self-esteem, forgiveness, leadership, and calling) was calculated using a random effects model. Card (2012) suggests the use of random effects over fixed effects when studies are not identical in terms of their characteristics (e.g., positive psychology theory, design, etc.). A fixed effect sizes model assumes that all of the variability between effect sizes is due to sampling error, whereas a random effect sizes model assumes that the variability between effect sizes are due to not only subject-level sampling error but also systematic sources of variability (Lipsey and Wilson 2009). Considering each study included in this meta-analysis has various settings, procedures, and intervention types, it is not safe to assume variability of the effect size is only due to sampling error. Therefore, a random effect sizes model was chosen.

To analyze the effects of moderators, analog to ANOVA was performed, which is best suited for a limited set of moderator hypotheses (Lipsey and Wilson 2001). It tests the homogeneity among the effect sizes within the categories and the differences between the categories. If the between groups Q is significant, the mean effect size across groups differ by more than sampling error alone (Lipsey and Wilson 2001). It tests subgroup heterogeneity among the chosen potential moderator using Cochran's Q, which is a standardized measure that uses the chi-square distribution to compare observed to expected variation in between studies effects. The other statistic utilized to explain the amount of between groups variation was I^2.

Publication bias was assessed using Orwin's (1983) Fail Safe *N*, Egger's regression test, and Kendall's tau (Egger et al. 1997). Outliers were inspected with a Baujat plot and handled via the three-sigma rule (i.e., effect size and/or sample size values greater than three standard deviations from the mean were thrown out; Kline 1998).

6 Results

6.1 Demographics

Twenty-two studies were included in the meta-analysis amounting 52 independent samples. The total *N* for this meta-analysis was 6027 (n(treat) = 2187; n(control) = 3840), representing 10 nations (e.g., Australia, China, Netherlands, Sweden, United States, etc.). There was a wide distribution of gender between studies (36.8%–96% women for those studies that reported gender, $n = 20$). Study outcomes included performance ($k = 9$), negative performance ($k = 3$), well-being ($k = 16$), negative well-being ($k = 9$), engagement ($k = 9$), and other ($k = 6$) at posttest. There were five positive psychology theories represented across 22 studies: psychological capital ($k = 8$), job

crafting ($k = 12$), gratitude ($k = 13$), strengths theory ($k = 6$), and well-being ($k = 13$). Seven studies implemented online interventions, 11 implemented individual interventions, and four implemented group interventions. Finally, 18 studies were published articles and four were doctoral dissertations. Table 5 provides a detailed description of the study characteristics.

6.2 Effectiveness of Theory-Driven Positive Psychology Interventions on Work Outcomes

This meta-analysis revealed that, overall (i.e., across desirable and undesirable work outcomes), positive psychology interventions had a small to moderate effect on work outcomes (Hedges' $g = .31$, 95%CI [0 .24, 0.38], $p < .001$). In addition, there was considerable heterogeneity between studies $Q(51) = 72.93$, $p = .03$, which suggested other characteristics, such as positive psychology theory, might be associated with intervention effectiveness. To further assess the impact of positive psychology interventions, we meta-analyzed desirable and undesirable work outcomes.

The results indicated that positive psychology interventions impact on undesirable work outcomes (Hedges' $g = -.34$, 95% CI [−0.57, −0.11], $p = .004$) was slightly stronger than the effects on desirable work outcomes (Hedges' $g = .25$, 95%CI [0.17, 0.33], $p < .001$). Further, both desirable ($Q(39) = 52.81$, $p = .07$) and undesirable ($Q(11) = 46.69$, $p < .001$) work outcomes had significant heterogeneity, suggesting the potential presence of moderators.

There was no significant effect of positive psychology interventions on either performance or negative performance, respectively (see Table 2). However, there was a small to moderate, positive effect on job well-being (Hedges' $g = .30$, 95%CI [0.19, 0.40], $p < .001$), negative well-being (Hedges' $g = -.28$, 95%CI [−0.40, −0.16], $p < .01$), and other (e.g., organizational virtuousness; Hedges' $g = .44$, 95%-CI = .25–.64, $p < .01$), as well as a small, but reliable impact on work engagement (Hedges' $g = .17$, 95%CI [.03, .30], $p = .015$). None of the Q tests for these specific work outcomes were significant.

6.3 Positive Psychology Theory and Intervention Delivery Method on Work Outcomes

We conducted moderator analyses to investigate whether the effect of positive psychology theory interventions were associated with type of theory and intervention delivery method on work outcomes (see Table 3). The Q-test revealed no significant differences between theories (Q_{btw} (4) =5.15, $p = .27$) suggesting there was no moderator effect. The I_2 test also supported low heterogeneity across theories indicating that only 22.33% of the effect size variance was accounted for in the theory of intervention. However, each positive psychology theory showed slightly different sub-effects. Employee strengths and employee gratitude interventions small to moderate effects on desirable work outcomes (Hedges' $g = .35$, 95%-CI [0.15, 0.55], $p < .01$; Hedges' $g = .34$, 95%CI [0.18, 0.49], $p < .01$), whereas PsyCap (Hedges' $g = .21$, 95% CI[0.05, 0.37, $p < .01$), and employee well-being (Hedges' $g = .25$, 95%CI [0.13, 0.37], $p < .01$) interventions had small effects on desirable work outcomes.

Table 3 Moderator analyses investigating the effects of positive psychology theory and intervention delivery method on desirable work outcomes

				Intervention effects				Heterogeneity within each outcome			
Moderator	*k*	*n*(t)	*n*(c)	*g*	SE	95%-CI	*p*	*Q*	*df*	*p*	I^2
Positive psychology theory											
PsyCap	6	277	345	0.21	0.08	0.05–0.37	0.01	9.87	5	.08	49.34
Job crafting	11	408	364	0.13	0.07	−0.02-0.27	0.08	13.56	10	.19	26.25
Gratitude	8	306	364	0.34	0.08	0.18–0.49	0.00	7.86	7	.35	10.94
Strengths	5	202	197	0.35	0.10	0.15–0.55	0.00	8.86	4	.06	54.85
Well-being	10	425	1224	0.25	0.06	0.13–0.37	0.00	7.52	9	0.6	0.00
Heterogeneity between								5.15	4	.27	
Intervention delivery method											
Individual	21	806	744	0.22	0.05	0.12–0.33	0.00	25	20	0.2	19.65
Group	4	253	954	0.30	0.08	0.14–0.47	0.00	12	3	0	74.09
Online	15	559	796	0.24	0.06	0.13–0.36	0.00	13	14	0.5	0.00
Heterogeneity between								.69	2	.71	

k = number of effect sizes included in the analysis; *n*(t) = number of participants in the treatment group; *n*(c) = number of participants in the control group; *g* = average effect size according to Hedges' *g; SE* = standard error of the average effect size; 95%CI, *LL-UL* = the minimum and maximum limits of the 95% confidence level*; Q* = statistical test used for the estimation of heterogeneity; I^2 = the proportion of effect size variance that is accounted for in the moderator variables

Intervention delivery method also did not significantly differ between method types (Q_{btw} (2) = .69, p = 0.71). However, the mean effect size for each group was slightly different. When the intervention was delivered in groups, a small, albeit larger effect of positive psychology interventions on desirable outcomes was observed (Hedges' g = .30, 95%CI[0.14, 0.47], p < .01), whereas small effects were shown from the studies that were conducted with individuals (Hedges' g = .22, 95%CI[0 .12, 0.33], p < .01) and online (Hedges' g = .24, 95%CI [0.13, 0.36], p < .01). All of these groups showed statistically significant results.

We also performed moderator analyses on the type of positive psychology theory and intervention delivery method on undesirable work outcomes (see Table 4 and 5). Again, no moderator effects were observed from the Q test for both type of positive psychology theory and intervention delivery method (Q_{btw}(1) = 2.43, p = .30; Q_{btw} (1) = 1.03, p = .60 respectively). However, mean effect size for each group varied. For example, psychological capital interventions (Hedges' g = −.88, 95%CI[−1.60, -0.16], p = .02) were found to have a large effect and employee gratitude interventions (Hedges' g = −.40, 95%CI [−0.84, 0.04], p = .08) had a marginally significant, medium effect on reducing undesirable work outcomes. It must be noted that employee strengths and job crafting interventions were not included in this analysis because they only had one effect size each. Finally, individual interventions (Hedges' g = −.61, 95%CI [−1.20, 0.02], p = .04) had a large, negative effect on undesirable work outcomes.

Table 4 Moderator analyses investigating the effects of positive psychology theory and intervention delivery method on undesirable work outcomes

				Intervention effects				Heterogeneity within each outcomes			
Moderator	*k*	*n*(t)	*n*(c)	*g*	SE	95%-CI	*p*	*Q*	*df*	*p*	I^2
Positive psychology theory											
PsyCap	2	59	88	−0.88	0.37	−1.60- -0.16	0.02	7.84	1	.00	84.24
Gratitude	5	183	210	−0.40	0.22	−0.84-0.04	0.08	0.76	4	.94	0.00
Well-being	3	221	938	−0.17	0.28	−0.71-0.38	0.55	0.15	2	.93	0.00
Heterogeneity between								2.43	2	.30	
Intervention delivery method											
Individual	3	136	140	−0.61	0.30	−1.20- -0.02	0.04	9.12	2	.01	78.07
Group	2	202	916	−0.21	0.34	−0.87-0.45	0.53	0.06	1	.81	0.00
Online	7	231	290	−0.28	0.20	−0.67-0.10	0.15	1.59	6	.95	0.00
Heterogeneity between								1.03	2	.60	

k = number of effect sizes included in the analysis; *n*(t) = number of participants in the treatment group; *n*(c) = number of participants in the control group; *g* = average effect size according to Hedges' *g; SE* = standard error of the average effect size; 95%CI, *LL-UL* = the minimum and maximum limits of the 95% confidence level; *Q* = statistical test used for the estimation of heterogeneity; I^2 = the proportion of effect size variance that is accounted for in the moderator variables

PsyCap = Psychological Capital

T2 = post-test; T3 = follow-up

Publication bias was detected via Orwin's (1983) Fail-Safe N test ($N = 156$), Egger's Test ($p < .01$; Egger et al. 1997), and the Rank Correlation Test for Funnel Plot Asymmetry ($p = .04$). As such, the "file drawer problem" should be considered when interpreting the meta-analytic findings (Rosenthal 1979).

7 Discussion

The field of positive psychology has grown extensively during the two past decades (Kim et al. 2018; Donaldson et al. 2015). Basic research studies (Avey et al. 2011; Gilbert et al. 2018; Rudolph et al. 2017) that evaluate positive psychology interventions have also grown, along with a few meta-analyses (e.g., Bolier et al. 2015; Knight et al. 2017; Sin and Lyubomirsky 2009). However, we know of no meta-analysis that has examined PPIs through the PWO theoretical lens. Therefore, this systematic review and meta-analysis sought out to address three research questions: 1) whether PPIs impacted work outcomes in general; 2) and if so, whether the type of positive psychology theory (i.e., whether interventions use PsyCap, job crafting, employee gratitude, employee strengths, or employee well-being) was associated with desirable and undesirable work outcomes; and 3) whether intervention delivery method was associated with desirable and undesirable work outcomes.

Table 5 Study characteristics

Reference	Doc Type	Country	Industry	% of Female	Design	Pos. Theory	Int. Type	Int. Style	Length of Int.	Outcome Measure
Chan 2010	J	China	Edu	82	NR	Gratitude	O	TE	>1 M	MBI
Demerouti et al. 2017	J	Greece	Multi	68	NR	Job Crafting	I	TE	< 1D	JAWS; OC; AP
Fiery 2016	D	United States	Service	91	R	Well-Being	O	TE	1 M	WAAQ; DISC; MBI; UWES
Grant and Gino 2010	J	United States	Edu	76	R	Gratitude	I	TE	< 1D	PBS
Harty et al. 2016	J	Sweden	NGO	77	NR	Gratitude	G	TE	>1 M	PPWQ
Harzer and Ruch 2016	J	Germany	Edu	45	R	Strengths	O	TE	1 M	CS
Van den Heuvel et al. 2015	J	Netherlands	Police	37	NR	Job Crafting	I	TE	1 M	LMX; JAWS
Kaplan et al. 2014	J	–	Edu	87	NR	Gratitude	I	T	>1 M	GAC; JAWS (PAWB & NAWB)
Laschinger et al. 2012	J	Canada	Health	–	NR	Well-Being	G	TE	>1 M	CWEQ; WIS; ITWS
MacKie 2014	J	Australia	NP	54	NR	Strengths	I	TE	>1 M	MLQ
Meyers et al., 2017	J	Netherlands	Consulting	72	NR	Strengths	I	TE	< 1D	UWES; UBS
Neumeier et al. 2017	J	–	Multi	67	R	Well-Being	O	TE	<1 M	WSWB; GSWB
Page and Vella-Brodrick 2013	J	Australia	Gov	73	R	Strengths	G	T	>1 M	WWBI
Van Wingerden et al. 2016	J	Netherlands	Health	96	NR	Job Crafting	I	T	>1 M	UWES; IRP
Van Wingerden et al. (2017a)	J	Netherlands	Edu	89	NR	Job Crafting	I	TE	>1 M	UWES; IRP
Van Wingerden et al. (2017b)	J	Netherlands	Edu	83	NR	Job Crafting	I	T	>1 M	UWES; IRP
Williams et al. 2016	J	Australia	Edu	61	NR	PsyCap	G	T	<1 M	OVS; UWES; JAWS; JIG; OCS
Williams 2010	D	United States	Health	NA	NR	Strengths	I	T	<1 M	GPA
Winslow et al. 2017	J	United States	Services	92	NR	Gratitude	O	TE	1 M	JAWS; JS; ITQ
Yuan 2015	D	China	–	76	R	PsyCap	O	TE	1 M	UWES; HPQ

Table 5 (continued)

Reference	Doc Type	Country	Industry	% of Female	Design	Pos. Theory	Int. Type	Int. Style	Length of Int.	Outcome Measure
Zhang et al. 2014	J	China	Multi	41	NR	PsyCap	I	T	< 1D	CPQ
Zhao 2012	D	England and Wales	NP	73	R	Well-Being	O	TE	>1 M	OBSE; JIG; FIW; SAE

Type of documentation: J = Published in a peer reviewed journal; D = Dissertation

Design: R = Randomized allocation; NR = Non-randomized allocation

Length of Int.: Int. = Intervention; M = Month; D = Day

Int. Type: I = individual; G = group, O = online

Int. Style: TE = Training & Exercise; T = Training

Measure: AP = Adaptive Performance; CPQ = Contextual Performance Questionnaire; CS = The Calling Scale (Dobrow and Tosti-Kharas 2011); CWEQ = Conditions for Work Effectiveness Questionnaire; FIW = Forgiveness inventory for workplace; GPA = Group performance appraisal; HPQ = Work Productivity; IRP In-role performance (William and Anderson 1991); ITQ = Intention to quit (Cammann et al. 1983); ITW=Interpersonal Trust at Work Scale; JAWS = Job-related Affective Well-being; JIG = Job in General (Balzer et al. 1990); JS = Job satisfaction (Brayfiled and Rothe 1951); LMX = Leader Member Exchange; MBI = Maslach Burnout Inventory; MLQ = Leadership Questionnaire (Bass and Avolio 1997); NAWB = Negative Affective Wellbeing; OBSE = Organization based self-esteem; OC=Openness to change; OCS = Organizational Commitment Scale; OVS = Organizational Virtuousness Scale; UBS = Utrechtse burnout Scale; UWES = Utrecht work engagement scale, 2006); PAWB = Positive Affective Wellbeing; PBS=Prosocial behavior scale; SAEI = State-trait Anger Expression Inventory; WAAQ = Work-Related Acceptance and Action Questionnaire (Bond et al. 2013); WIS=Workplace Incivility Scale; WWBI = The Workplace Well-being Index (Page 2005)

The result of our systematic search and inclusion criteria produced 22 articles and 52 effect sizes at posttest. The meta-analytic findings showed that PPIs had a small to moderate effect across desirable and undesirable work outcomes. This supports our first research question and suggests organizational interventions that utilize a positive psychological theory (when guiding, planning, or implementing an organizational intervention) can improve desirable (e.g., job well-being) and reduce undesirable (e.g., job stress) work outcomes. Further, we found that PPIs at work significantly improved well-being, engagement, and other important work outcomes (i.e., leader member exchange, organization based self-esteem, workplace trust, forgiveness, prosocial behavior, leadership, and calling), although there was no overall effect on performance or between positive psychology theory type. Thus, positive psychology theory type may not serve as the most predictive moderator of work outcomes.

The overarching aim of positive psychology is to study what makes life worth living, juxtaposed to the repair-focus (e.g., treating depression) traditionally found in psychological research (Seligman and Csikszentmihalyi 2000; Peterson 2006). However, critics have argued that a foundation on optimism and positive thinking creates a "tyranny of positivity," or research that is overly reliant on positive outcomes (Held 2002). Wong (2011) even suggests that positive psychology needs a more balanced taxonomy of negative and positive research streams. However, our findings challenge these criticisms that accentuating the positive simultaneously attenuates the negative. Bernstein (2003) stated that "focusing on the positive does not mean excluding the negative," when it concerns positive organizational psychology (pp. 267 & 270). In fact, our results suggest that PPIs at work may be more effective in the opposite direction. That is, using positive psychology interventions to target reduction of undesirable work behaviors may be as or even more effective than vice versa. The strength and direction of this finding is consistent with other meta-analyses conducted in the clinical and organizational setting, examining the relationship between positive psychology interventions and negative outcomes measures (cf. Avey et al. 2011; Boiler et al. 2013; Sin and Lyubomirsky 2009). This is especially important in the American workplace where "two-thirds of employees are bored, detached or jaded and ready to sabotage plans, projects, and other people" (Mckee 2017, para. 4).

Furthermore, our second research question investigated the effects of specific positive psychology theories on work outcomes. Even though there were no statistically significant differences between positive psychology theory type, employee gratitude and strengths interventions for desirable work outcomes were shown to have stronger mean effect sizes ($g = .34$ and .35 respectively) than other interventions. Meyers and Van Woerkom (2017) found that strengths interventions are linked with improved employee well-being and engagement. Employee well-being and psychological capital interventions were also effective at improving desirable outcomes, albeit to a lesser extent. A wealth of primary research has demonstrated PsyCap's influence on job satisfaction, job performance, and job engagement (Avey et al. 2010; Luthans et al. 2007b; Norman et al. 2010). In addition, research on the effectiveness of well-being interventions is linked to numerous positive organizational outcomes, including organizational commitment, job satisfaction, and intentions to stay (Laschinger et al. 2009, 2004; Nedd 2006).

In term of improving undesirable work outcomes, there was also no statistically significant differences between positive psychology theory type. However, PsyCap had

the strongest, individual effect. Thus, our meta-analysis suggests PsyCap interventions may be the most robust positive psychology theory to date that can improve all domains of work outcomes (i.e., whether they are associated with desirable or undesirable work). With that being said, more research is needed to investigate PsyCap's effectiveness as an intervention for managing organizational performance. Lastly, employee gratitude interventions were not found to reduce undesirable work outcomes. It was inconsistent with the prior research that employee gratitude interventions can help employees cope with negative situations by reframing them in a positive light (Winslow et al. 2017). Therefore, more research is needed to investigate the exact psychological mechanisms that operate within employee gratitude interventions.

All three types of intervention delivery methods (i.e., individual, group, & online) showed statistically significant effects on desirable work outcomes. However, they did not differ across intervention delivery method, rejecting our third research question. Whereas individual and online interventions had small effects on improving desirable work outcomes, group interventions had a medium effect. Knight et al. (2017) suggested that group interventions influence antecedents of desirable work outcomes, such as a social support climate. In addition, Park (2004) found that a group intervention was positively related to organizational climate and positive interactions with colleagues. Thus, a possible explanation for the strength of group interventions is that they engender co-collaboration with colleagues that results in increased job satisfaction and work engagement, among other desirable work outcomes.

On the other hand, individual interventions had a medium effect on decreasing undesirable work outcomes, whereas group and online interventions were found to be non-significant. One possible explanation is that interventions that target individuals are similar to positive psychotherapy techniques (PPT; Seligman et al. 2006). For example, PPT focuses on the applications of signature strengths to solve individual problems, instead of solely focusing on pathologies. Seligman et al. (2006) suggested that an over emphasis on deficiencies produces "end-runs," or diminishing returns on trying to solve problems. Rather, bringing client core positive traits to the surface and developing plans on how to use strengths more often is how PPT counters pathological symptoms. More research is needed to understand which aspects of PPIs with individuals are responsible for influencing undesirable work outcomes.

7.1 Limitations and Future Directions

While this study provides valuable information on PPIs at work, there were several limitations to consider. First, there exist a variety of factors that could impact organizational interventions (e.g., scheduling, leadership support, *N*, location, industry, etc.; see Knight et al. 2017) apart from the role of positive psychology theory. Therefore, isolating just one study characteristic should be interpreted with caution. Second, publication bias likely influenced the strength and direction of our meta-analytic findings. Future studies should do a more thorough search of unpublished studies to attenuate the impact of papers that just report significant findings. Lastly, the categorization scheme for our primary outcome variables (i.e., desirable and undesirable) could be seen as a strength or limitation. It is a strength in the sense that it provides summary information about the interventions impact on positive and negative work outcomes, and a limitation in the sense that aggregated outcomes could be conceptually

different in how they impact work outcomes. More work is needed to test both individual outcome measures in PPIs, and their impact when combined into summary effects.

8 Conclusion

Our review suggested that PPIs at work should be considered when organizations decide to implement an intervention targeted at improving certain positive psychological states, such as well-being and engagement. We found significant relationships across desirable and undesirable work outcomes, but not specifically for performance or negative performance. As such, future research should investigate the link between PPIs at work and positive and negative performance outcomes. Future research also needs to make clear which types of positive psychology theories are the most effective on work outcomes. For example, practitioners would benefit from understanding whether employee gratitude interventions are best served to improve undesirable work outcomes or vice versa. Finally, organizational behavior scholars would benefit from research that compares traditional organizational behavior interventions (e.g., goal-setting) with PPIs at work to see which are more effective overall. Nonetheless, this paper mapped the terrain for scholars and practitioners interested in using PPIs to improve the quality of work life and performance at work.

Compliance with Ethical Standards

Conflict of Interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

Ethical Approval This research did not use procedures performed on human participants.

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