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# Enhancing Well-Being and Alleviating Depressive Symptoms With Positive Psychology Interventions: A Practice-Friendly Meta-Analysis



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Do positive psychology interventions—that is, treatment methods or intentional activities aimed at cultivating positive feelings, positive behaviors, or positive cognitions—enhance well-being and ameliorate depressive symptoms? A meta-analysis of 51 such interventions with 4,266 individuals was conducted to address this question and to provide practical guidance to clinicians. The results revealed that positive psychology interventions do indeed significantly enhance well-being (mean  $r = .29$ ) and decrease depressive symptoms (mean  $r = .31$ ). In addition, several factors were found to impact the effectiveness of positive psychology interventions, including the depression status, self-selection, and age of participants, as well as the format and duration of the interventions. Accordingly, clinicians should be encouraged to incorporate positive psychology techniques into their clinical work, particularly for treating clients who are depressed, relatively older, or highly motivated to improve. Our findings also suggest that clinicians would do well to deliver positive psychology interventions as individual (versus group) therapy and for relatively longer periods of time. © 2009 Wiley Periodicals, Inc. *J Clin Psychol: In Session* 65: 467–487, 2009.

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Achieving greater happiness is an important goal for many people around the world. Although most individuals are, in fact, happy (Diener & Diener, 1996), fewer than

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20% of adults in the United States report that they are flourishing (Keyes, 2002). Indeed, many appear to be languishing—that is, feeling as if they are “stuck in a rut” or “wanting more”—yet are not diagnosable with a mental disorder (Fredrickson, 2008). Because happiness has been shown to be both the cause and the consequence of many desirable life outcomes (including career success, marriage, and health; Lyubomirsky, King, & Diener, 2005; Pressman & Cohen, 2005), it is vital to understand how languishing individuals can be lifted to a more optimal state of functioning. This spurs the millennia-old question: How does one enhance well-being and relieve suffering?

Over the past decade, research in the field of positive psychology has emerged to provide evidence-based answers and to guide practitioners. Increasingly, psychological well-being (WB) is viewed as not only the absence of mental disorder but also the presence of positive psychological resources, including components of hedonic or subjective well-being (e.g., positive affect, life satisfaction, happiness; Diener, 1984), as well as components of eudaimonic well-being (e.g., self-acceptance, positive relations, autonomy, purpose in life; Ryan & Deci, 2001; Ryff, 1989). A promising approach to increase well-being is through positive psychology interventions (PPIs)—that is, treatment methods or intentional activities that aim to cultivate positive feelings, behaviors, or cognitions. For instance, PPI strategies as diverse as writing gratitude letters, practicing optimistic thinking, replaying positive experiences, and socializing have been shown to increase WB in nonclinical samples (e.g., Fordyce, 1977; Lyubomirsky, Dickerhoof, Boehm, & Sheldon, 2008; Ruini, Belaise, Brombin, Caffo, & Fava, 2006). It is worth noting, however, that programs, interventions, or treatments aimed at fixing, remedying, or healing something that is pathological or deficient—as opposed to building strengths—do not fit the definition of a PPI.

In the past several years, research on PPIs for treating depression has proliferated. Although PPIs may be an option for treating a variety of mental disorders (e.g., anxiety disorders; Fava et al., 2005), they can be particularly useful for addressing a paucity of positive affect, engagement, and life meaning that characterize depression (Forbes & Dahl, 2005; Seligman, Rashid, & Parks, 2006). For example, depressed individuals are likely to benefit from increases in positive emotions, which have been shown to speed recovery from the physiological effects of negative emotions (Fredrickson & Levenson, 1998; Tugade & Fredrickson, 2004), to improve broad-minded coping skills (Fredrickson & Joiner, 2002), and to prevent relapses (Fava & Ruini, 2003).

However, PPI studies have provided mixed results. Some studies have shown that positive psychotherapy, delivered to depressed individuals either in a group setting or individually, significantly boosts WB and decreases depression (Fava et al., 2005; Seligman et al., 2006). Other studies, however, have not found PPIs to be beneficial overall compared with no-treatment control or placebo groups (e.g., Della Porta, Sin, & Lyubomirsky, 2008; Froh, Sefick, & Emmons, 2008).

The general effectiveness of PPIs remains unclear, as no systematic quantitative review of the research has yet been published. Solid empirical evidence is needed to advance beyond anecdotal or clinical observations. Thus, the purpose of our meta-analysis was to provide guidance to clinical practitioners by answering the following vital questions:

- Do PPIs effectively enhance WB and ameliorate depression relative to control groups and, if so, with what magnitude?

- Which variables—with respect to both the characteristics of the participants and the methodologies used—moderate the effectiveness of PPIs?

Because PPIs span multiple literatures, this meta-analysis is not comprehensive. Instead, we primarily focus on PPIs conducted in positive psychology and include samplings of PPIs from large, related literatures (e.g., mindfulness, life review therapy, forgiveness therapy) to increase the generalizability of the findings.

## Meta-Analysis Method

### *Literature Search*

English-language PPI studies, conducted between 1977 and 2008, were located using several search strategies. First, we searched our own libraries by hand for published and unpublished studies. Next, we searched the PsycINFO online database using combinations of the following keywords: *depression*, *intervention*, *positive affect*, *positive psychology*, *positive psychotherapy*, *well-being therapy*, and *well-being*. Furthermore, references for studies outside the positive psychology field were gathered from colleagues. Finally, the reference sections of obtained papers, as well as PsycINFO-generated listings of works that cite the papers, were examined for additional PPI studies.

Studies were included in the meta-analysis if they met the following criteria:

1. The study must empirically test an intervention, therapy, or activity primarily aimed at increasing positive feelings, positive behaviors, or positive cognitions, as opposed to ameliorating pathology or fixing negative thoughts or maladaptive behavior patterns.
2. Pre-intervention and post-intervention measures of WB or depression (as defined by the *Diagnostic and Statistical Manual of Mental Disorders-IV-TR*; American Psychiatric Association, 2000) must be included.
3. The study must have a comparison group, such as a no-treatment control, neutral control, placebo, or treatment as usual.
4. The study must provide an effect size (or information to calculate an effect size) for the strength and direction of the difference between the PPI group's and comparison group's outcomes.

Interventions designed to improve physical well-being (health) or that involve physical activity were excluded, as they are beyond the scope of this meta-analysis. Furthermore, mood induction studies were excluded, as their aim is to boost temporary mood, not psychological well-being.

### *Data Recorded*

The specific measures of WB or depression, sample size, effect sizes, and one-tailed  $Z$ 's associated with the significance levels were extracted from each study. In nearly all cases, the  $r$  effect size for WB or depression was computed from Cohen's  $d$ ,  $F$ ,  $t$ ,  $p$ , or descriptive statistics. If a result was reported as significant but did not provide an exact probability, the one-tailed  $p$  value was assumed to be .025. If a result was simply reported as nonsignificant and no data were provided to calculate an exact probability, it was conservatively assigned  $p$  (one-tailed) = .5 and  $r = 0$ . For studies in which multiple measures of WB or depression were used, the  $r$  for each measure was transformed to its corresponding Fisher  $Z_r$ , and then averaged to form a single

score (a conservative approach; Rosenthal & DiMatteo, 2001). Results in the unpredicted direction (i.e., the comparison group experienced greater increases in WB and greater decreases in depression compared with the PPI group) were recorded as negative values of  $r$ .

In addition, the following information from each study was coded for the analysis of moderators: depression status of participants (depressed or nondepressed); participant age (child/adolescent up to 17 years old, young adult from 18 to 35 years old, middle adult from 36 to 59 years old, or older adult of at least 60 years old); whether participants self-selected to participate in the positive intervention (self-selected or non-self-selected); intervention format (individual therapy, group-administered, or self-administered); intervention duration (up to 4 weeks, 5–7 weeks, 8–12 weeks, or more than 12 weeks); and comparison group type (no-treatment control, neutral control, placebo, or treatment as usual). See Tables 1 and 2 for a complete list of studies and their relevant characteristics and results.

### Statistical Analyses

Meta-analytic tests were conducted using both fixed effects and random effects models. The fixed effects model, although limited in generalizability to the sample of studies contained in the meta-analysis, is statistically powerful and appropriate for small-sample meta-analyses (Rosenthal, 1995). The random effects model is less powerful; however, it permits generalization to studies outside this sample (Rosenthal, 1995).

*Significance tests.* Significance testing was conducted to determine the probability that the sets of effect sizes for WB and depression are not significantly different from zero. For the fixed effects model, one-tailed  $p$  values from each study were converted to  $Z$  scores and then combined using the Stouffer method (e.g., Mosteller & Bush, 1954; Rosenthal & Rosnow, 2008, p. 673). For the random effects model, one-sample  $t$ -tests were conducted on the mean Fisher  $Z_r$  effect sizes (Rosenthal, 1995).

*Fail-safe  $N$ .* To address the “file drawer problem”—that is, the bias for significant results to be more likely published and retrievable for a meta-analysis relative to nonsignificant results—the fail-safe  $N$  was computed. This  $N$  represents the number of studies averaging null results that must exist to render the overall findings nonsignificant (Rosenthal, 1979, 1991a). The tolerance level was also computed to estimate the number of irretrievable studies that possibly exist, based on the assumption that the number of unpublished studies is not five times greater than the number of published ones (Rosenthal & Rosnow, 2008, p. 689).

*Heterogeneity test.* A chi-square ( $\chi^2$ ) test was performed to determine the probability that the obtained effect sizes are not heterogeneous (Rosenthal, 1991b, p. 73). A highly significant chi-square result would suggest that moderator variables may account for the heterogeneity of the effect sizes (Rosenthal & DiMatteo, 2001).

*Moderator analyses.* Predictions regarding moderators were translated into linear contrast weights ( $\lambda$ ), and contrast tests were conducted on the effect sizes based on the fixed effects model (Rosenthal, 1991b, p. 80; Rosenthal & DiMatteo, 2001). For the random effects model, the relationships between moderators and effect sizes were analyzed by correlating Fisher  $Z_r$  effect sizes with their corresponding contrast weights (Rosenthal, 1991a).

Table 1  
Studies Examining the Effect of PPI on Well-Being

Study	Intervention <sup>a</sup>	WB measure <sup>b</sup>	n	r	Depression status	Age <sup>c</sup>	Moderators			
							Self-selection	Intervention delivery	Intervention duration	Comparison group type <sup>d</sup>
Bédard et al. (2003)	Mindfulness	Mental health component of the Short Form Health Survey	13	0.58	depressed	MA	self-selected	group-admin.	8–12 weeks	—
Burton et al. (2004)	Positive writing	PA	90	0.55	nondepressed	YA	non-self-selected	self-admin.	≤ 4 weeks	neutral ctrl
Cheavens et al. (2006)	Hope therapy	State Hope Scale; Purpose in Life Test	32	0.37	depressed	MA	self-selected	group-admin.	8–12 weeks	no-treat ctrl
Cook (1998)	Positive reminiscence	Life Satisfaction Index - Form A	36	0.38	nondepressed	OA	self-selected	group-admin.	> 12 weeks	no-treat ctrl
Davis (2004)	Life review therapy	Life Satisfaction Index - Form Z	14	0.75	—	OA	self-selected	individual therapy	≤ 4 weeks	—
Della Porta et al. (2008)	Gratitude	SWLS; SHS; PA	130	0.04	nondepressed	YA	non-self-selected	self-admin.	≤ 4 weeks	placebo
Della Porta et al. (2008)	Gratitude	SWLS; SHS; PA	32	-0.31	depressed	YA	non-self-selected	self-admin.	≤ 4 weeks	placebo
Emmons et al. (2003, Study 1)	Gratitude	global life appraisals; PA	132	0.11	nondepressed	YA	non-self-selected	self-admin.	8–12 weeks	neutral ctrl
Emmons et al. (2003, Study 3)	Gratitude	global life appraisals; PA; connectedness; observer reports	65	0.32	—	MA	non-self-selected	self-admin.	≤ 4 weeks	no-treat ctrl
Fava et al. (1998)	WBT	Ryff's PWB; 4 scales of WB in SQ	20	0.20	depressed	YA	self-selected	individual therapy	> 12 weeks	TAU
Fava et al. (2005)	CBT/WBT	Ryff's PWB; 4 scales of WB in SQ	16	0.44	nondepressed	MA	self-selected	individual therapy	> 12 weeks	TAU
Fordyce (1977, Study 1)	Fordyce's happiness program	Happiness measures (self-report scores for quality and quantity of happiness)	202	0.27	nondepressed	YA	non-self-selected	self-admin.	≤ 4 weeks	placebo
Fordyce (1977, Study 2)	Fordyce's happiness program	Happiness measures	68	0.40	nondepressed	YA	non-self-selected	self-admin.	5–7 weeks	placebo

Table 1  
Continued

Study	Intervention <sup>a</sup>	WB measure <sup>b</sup>	<i>n</i>	<i>r</i>	Depression status	Age <sup>c</sup>	Self-selection	Intervention delivery	Intervention duration	Comparison group type <sup>a</sup>	Moderators	
											Intervention delivery	Comparison group type <sup>a</sup>
Fordyce (1977, Study 3)	Fordyce's happiness program	Happiness measures	68	0.45	nondepressed	YA	self-selected	self-admin.	5-7 weeks	no-treat ctrl		
Fordyce (1983, Study 4)	Fordyce's happiness program	Happiness measures; Self-Description Inventory	98	0.32	nondepressed	YA	non-self-selected	self-admin.	8-12 weeks	placebo		
Fordyce (1983, Study 6)	Fordyce's happiness program	Happiness measures	57	0.31	nondepressed	YA	non-self-selected	self-admin.	5-7 weeks	placebo		
Freedman et al. (1996)	Forgiveness	Hope scale	12	0.84	depressed	MA	self-selected	individual therapy	> 12 weeks	no-treat ctrl		
Froh et al. (2008)	Gratitude	global life appraisals; PA; BMSLSS	141	0.02	nondepressed	C/A	non-self-selected	group-admin.	≤ 4 weeks	no-treat ctrl		
Goldstein (2007)	Cultivating sacred moments	SWLS; Ryff's PWB	73	0.00	nondepressed	YA	self-selected	self-admin.	≤ 4 weeks	TAU		
Green (2006)	Life coaching/goals	PA; SWLS; Ryff's PWB; Hope Scale	50	0.33	nondepressed	MA	self-selected	group-admin.	8-12 weeks	no-treat ctrl		
Grossman et al. (2007)	Mindfulness	PA	52	0.32	depressed	MA	self-selected	group-admin.	8-12 weeks	TAU		
King et al. (2000)	Positive writing	PA	55	0.19	nondepressed	YA	non-self-selected	self-admin.	≤ 4 weeks	neutral ctrl		
King (2001)	Positive writing	PA; SWLS; Life Orientation Test	35	0.13	nondepressed	YA	non-self-selected	self-admin.	≤ 4 weeks	neutral ctrl		
Kremers et al. (2006)	Self-Management	Social Production Function Index Level Scale	119	0.27	nondepressed	OA	self-selected	group-admin.	5-7 weeks	no-treat ctrl		
Lichter et al. (1980, Study 1)	Discussing beliefs	pro-happy beliefs; Affectometer 1; domain satisfaction scores	33	0.56	nondepressed	—	non-self-selected	group-admin.	≤ 4 weeks	no-treat ctrl		
Lichter et al. (1980, Study 2)	Rehearsal of positive statements	Affectometer 1; domain satisfaction scores	48	0.63	nondepressed	YA	non-self-selected	self-admin.	≤ 4 weeks	no-treat ctrl		
Low et al. (2006)	Positive writing	PA (Vigor subscale of POMS)	35	0.09	—	—	self-selected	self-admin.	≤ 4 weeks	—		

Table 1  
Continued

Study	Intervention <sup>a</sup>	WB measure <sup>b</sup>	n	r	Depression status	Age <sup>c</sup>	Moderators			Comparison group type <sup>d</sup>
							Self-selection	Intervention delivery	Intervention duration	
Lyubomirsky et al. (2004, Study 1)	Kindness	SHS; global happiness item; delighted-terrible scale; SWLS; PA	84	0.00	nondepressed	YA	non-self-selected	self-admin.	5-7 weeks	no-treat ctrl
Lyubomirsky et al. (2004, Study 2)	Gratitude	SHS; global happiness item; delighted-terrible scale; SWLS; PA	147	0.00	nondepressed	YA	non-self-selected	self-admin.	5-7 weeks	no-treat ctrl
Lyubomirsky et al. (2008)	Optimism or gratitude	SHS; SWB (pleasant affect; unpleasant affect reversed; SWLS)	315	0.16	nondepressed	YA	self-selected	self-admin.	8-12 weeks	—
MacLeod et al. (2008, Study 1)	Goals	PA; SWLS	64	0.24	nondepressed	YA	self-selected	group-admin.	≤4 weeks	no-treat ctrl
MacLeod et al. (2008, Study 2)	Goals	PA; SWLS	20	0.52	nondepressed	MA	self-selected	self-admin.	5-7 weeks	no-treat ctrl
Otake et al. (2006)	Counting kindnesses	SHS	119	0.20	nondepressed	YA	non-self-selected	self-admin.	≤4 weeks	no-treat ctrl
Rashid et al. (2006)	PPT	Students LS Scale; PPTI Child Version	22	0.32	nondepressed	C/A	non-self-selected	self-admin.	8-12 weeks	no-treat ctrl
Reed et al. (2006)	Forgiveness	Ryff's PWB (Environmental Mastery)	20	0.52	depressed	MA	self-selected	individual therapy	>12 weeks	TAU
Ruini et al. (2006)	WBT	Ryff's PWB; 4 scales of WB in SQ	111	0.06	nondepressed	C/A	non-self-selected	self-admin.	8-12 weeks	TAU
Seligman (2004)	PPT	SWLS	185	0.16	depressed	YA	self-selected	self-admin.	>12 weeks	no-treat ctrl
Seligman et al. (2005)	Gratitude/personal strength activities	Steen Happiness Index	411	0.06	depressed	—	self-selected	self-admin.	≤4 weeks	placebo
Seligman et al. (2006, Study 1)	PPT	SWLS	34	0.20	depressed	MA	self-selected	group-admin.	5-7 weeks	no-treat ctrl
Seligman et al. (2006, Study 2)	PPT	PPTI; SWLS	32	0.40	depressed	YA	self-selected	individual therapy	8-12 weeks	TAU

Table 1  
Continued

Study	Intervention <sup>a</sup>	WB measure <sup>b</sup>	<i>n</i>	<i>r</i>	Depression status	Age <sup>c</sup>	Self-selection	Moderators		
								Intervention delivery	Intervention duration	Comparison group type <sup>d</sup>
Sheldon et al. (2002)	Goal training	PA; Ryff's PWB; self-actualization questionnaire	78	0.00	nondepressed	YA	non-self-selected	group-admin.	≤ 4 weeks	neutral ctrl
Sheldon et al. (2006)	Gratitude	PA	67	0.28	nondepressed	YA	non-self-selected	self-admin.	≤ 4 weeks	placebo
Smith et al. (1995)	Fordyce's happiness program/meditation	Happiness Inventory; Psychap Measure	36	0.80	nondepressed	YA	non-self-selected	group-admin.	5–7 weeks	no-treat ctrl
Spence et al. (2007)	Life coaching/goals	PA; SWB; Ryff's PWB	57	0.01	nondepressed	MA	self-selected	individual therapy	8–12 weeks	no-treat ctrl
Tkach (2006)	Kindness	PA; SWLS; SHS; Ryff's PWB	285	-0.04	nondepressed	YA	non-self-selected	self-admin.	8–12 weeks	neutral ctrl
Watkins et al. (2003, Study 4)	Gratitude	PA	156	0.16	nondepressed	YA	non-self-selected	self-admin.	≤ 4 weeks	neutral ctrl
Wing et al. (2006)	Positive writing	SWLS	175	0.00	nondepressed	MA	self-selected	self-admin.	≤ 4 weeks	neutral ctrl
Zautra et al. (2008, Study 1)	Mindfulness	PA	71	0.15	nondepressed	MA	self-selected	group-admin.	8–12 weeks	placebo
Zautra et al. (2008, Study 1)	Mindfulness	PA	20	0.22	depressed	MA	self-selected	group-admin.	8–12 weeks	placebo

Note. Dash (—) indicates information could not be found, and the study was excluded from the respective moderator analysis. Positive effect sizes indicate superiority of PPI over comparison group for increasing WB. Negative effect sizes indicate superiority of comparison group over PPI for increasing WB.

<sup>a</sup>CBT = cognitive behavioral therapy; PPT = positive psychotherapy; WBT = well-being therapy.

<sup>b</sup>BMSLSS = Brief Multidimensional Students' Life Satisfaction Scale; LS = life satisfaction; PA = positive affect; PPTI = Positive Psychotherapy Inventory; PWB = Psychological Well-Being Scale; SHS = Subjective Happiness Scale; SWB = Subjective Well-Being; SWLS = Satisfaction With Life Scale; WB = well-being.

<sup>c</sup>C/A = child/adolescent (up to 17 years old); YA = young adult (18 to 35 years old); MA = middle adult (35 to 59 years old); OA = older adult (60 years old and up).

<sup>d</sup>Ctrl = control; TAU = treatment as usual.



Table 2  
Studies Examining the Effect of PPI on Depression

Study	Intervention <sup>a</sup>	Depression measure <sup>b</sup>	n	r	Depression status	Age <sup>c</sup>	Moderators				Comparison group type <sup>d</sup>
							Self-selection	Intervention delivery	Intervention duration	Intervention delivery	
Bédard et al. (2003)	Mindfulness	BDI-II	13	0.56	depressed	MA	self-selected	group-admin.	8–12 weeks	—	
Cheavens et al. (2006)	Hope therapy	CES-D	32	0.35	depressed	MA	self-selected	group-admin.	8–12 weeks	no-treat ctrl	
Davis (2004)	Life review therapy	Zung	14	0.81	—	OA	self-selected	individual therapy	≤4 weeks	—	
Della Porta et al. (2008)	Gratitude	BDI-II	130	-0.11	nondepressed	YA	non-self-selected	self-admin.	≤4 weeks	placebo	
Della Porta et al. (2008)	Gratitude	BDI-II	32	-0.14	depressed	YA	non-self-selected	self-admin.	≤4 weeks	placebo	
Fava et al. (1998)	WBT	CID; Kellner's SQ	20	0.32	depressed	YA	self-selected	individual therapy	>12 weeks	TAU	
Fava et al. (2005)	CBT/WBT	CID; Kellner's SQ	16	0.40	nondepressed	MA	self-selected	individual therapy	>12 weeks	TAU	
Fordyce (1983, Study 4)	Fordyce's happiness program	Depression Adjective Check List	98	0.21	nondepressed	YA	non-self-selected	self-admin.	8–12 weeks	placebo	
Fordyce (1983, Study 6)	Fordyce's happiness program	Depression Adjective Check List	57	0.26	nondepressed	YA	non-self-selected	self-admin.	5–7 weeks	placebo	
Freedman et al. (1996)	Forgiveness	BDI	12	0.75	depressed	MA	self-selected	individual therapy	>12 weeks	no-treat ctrl	
Grossman et al. (2007)	Mindfulness	HADS	52	0.30	depressed	MA	self-selected	group-admin.	8–12 weeks	TAU	
Lichter et al. (1980, Study 2)	Rehearsal of positive statements	BDI	48	0.50	nondepressed	YA	non-self-selected	self-admin.	≤4 weeks	no-treat ctrl	
Lin et al. (2004)	Forgiveness	BDI-II	14	0.47	depressed	MA	self-selected	individual therapy	5–7 weeks	TAU	
Lyubomirsky et al. (2008)	Optimism or gratitude	CES-D	315	0.03	nondepressed	YA	self-selected	self-admin.	8–12 weeks	—	
Rashid et al. (2006)	PPT	Children's Depression Inventory	22	0.04	nondepressed	C/A	non-self-selected	self-admin.	8–12 weeks	no-treat ctrl	

Table 2  
Continued

Study	Intervention <sup>a</sup>	Depression measure <sup>b</sup>	n	r	Depression status	Age <sup>c</sup>	Moderators			Comparison group type <sup>d</sup>
							Self-selection	Intervention delivery	Intervention duration	
Reed et al. (2006)	Forgiveness	BDI-II	20	0.53	depressed	MA	self-selected	individual therapy	> 12 weeks	TAU
Ruini et al. (2006)	WBT	Kellner's SQ	111	-0.15	nondepressed	C/A	non-self-selected	self-admin.	8-12 weeks	TAU
Seligman (2004)	PPT	CES-D	185	0.15	depressed	YA	self-selected	self-admin.	> 12 weeks	no-treat ctrl
Seligman et al. (2005)	Gratitude/personal strength activities	CES-D	411	0.10	depressed	—	self-selected	self-admin.	≤ 4 weeks	placebo
Seligman et al. (2006, Study 1)	PPT	BDI-II	34	0.25	depressed	MA	self-selected	group-admin.	5-7 weeks	no-treat ctrl
Seligman et al. (2006, Study 2)	PPT	HRSD; Zung	32	0.51	depressed	YA	self-selected	individual therapy	8-12 weeks	TAU
Smith et al. (1995)	Fordyce's happiness program/meditation	BDI	36	0.73	nondepressed	YA	non-self-selected	group-admin.	5-7 weeks	no-treat ctrl
Surawy et al. (2005, Study 1)	Mindfulness	HADS	17	-0.28	depressed	—	self-selected	group-admin.	8-12 weeks	no-treat ctrl
Zautra et al. (2008, Study 1)	Mindfulness	depressive symptoms questionnaire	71	-0.01	nondepressed	MA	self-selected	group-admin.	8-12 weeks	placebo
Zautra et al. (2008, Study 1)	Mindfulness	depressive symptoms questionnaire	20	0.23	depressed	MA	self-selected	group-admin.	8-12 weeks	placebo

Note. Dash (—) indicates information could not be found, and the study was excluded from the respective moderator analysis. Positive effect sizes indicate superiority of PPI over comparison group for decreasing depressive symptoms. Negative effect sizes indicate superiority of comparison group over PPI for decreasing depressive symptoms.

<sup>a</sup>CBT = cognitive behavioral therapy; PPT = positive psychotherapy; WBT = well-being therapy.

<sup>b</sup>BDI = Beck Depression Inventory; CES-D = Center for Epidemiology-Depression Scale; CID = Clinical Interview for Depression; HADS = Hospital Anxiety and Depression Scale; HRSD = Hamilton Rating Scale for Depression; SQ = Symptom Questionnaire.

<sup>c</sup>C/A = child/adolescent (up to 17 years old); YA = young adult (18 to 35 years old); MA = middle adult (35 to 59 years old); OA = older adult (60 years old and up).

<sup>d</sup>Ctrl = control, TAU = treatment as usual.

Meta-Analysis Results

Overall, PPIs were indeed significantly more effective than comparison groups for boosting WB and for ameliorating depression. Table 3 shows a stem-and-leaf display of all effect sizes, and Table 4 summarizes the meta-analytic findings. The relevant statistics for all the moderator analyses are presented in Tables 5 and 6.

Well-Being

Forty-nine independent studies were meta-analyzed for WB, totaling 4,235 participants (median  $n = 64$  per study). The  $r$  effect sizes ranged from  $-.31$  to  $.84$ , with 96% of effect sizes in the predicted, positive direction. The unweighted mean  $r$  (.29) was close in magnitude to the median  $r$  (.24) and was highly significant based on both the fixed effects (one-tailed  $p = 0$ ) and the random effects (one-tailed  $p = 4 \times 10^{-9}$ ) models. Although the file drawer problem (indicated by the asymmetric funnel plot of the stem-and-leaf display; Light & Pillemer, 1984), was likely present, it was not large enough to render the overall results nonsignificant. Indeed, the fail-safe  $N$  indicated that 2,519 studies averaging null results must exist to render this finding nonsignificant; this number greatly exceeds the tolerance level of 255 unpublished null studies that possibly exist. Furthermore, the set of effect sizes was heterogeneous ( $\chi^2_{(48)} = 230.92$ , one-tailed  $p = 9 \times 10^{-26}$ ), suggesting the presence of moderator variables.

Depression

The meta-analysis for depression encompassed 25 separate studies, with a median of 32 participants per study and a grand total of 1,812 participants. The  $r$  effect sizes spanned from  $-.28$  to  $.81$ , with 80% of effect sizes in favor of PPI. The unweighted mean  $r$  of .31 was close to the median  $r$  (.26) and was highly significant based on both the fixed effects (one-tailed  $p = 2 \times 10^{-12}$ ) and the random effects (one-tailed  $p = .0001$ ) models. The file drawer problem was unlikely to threaten the significant results, given that the fail-safe  $N$  was 420, which exceeded the tolerance level of 135. Moreover, as in the case of well-being, the set of effect sizes was heterogeneous

Table 3  
Back-to-Back Stem-and-Leaf Display of all Effect Sizes

WELL-BEING ( $k = 49$ )		DEPRESSION ( $k = 25$ )	
Leaf	Stem	Leaf	
4, 0	0.8	1	
5	0.7	3, 5	
3	0.6		
8, 6, 5, 2, 2	0.5	0, 1, 3, 6	
5, 4, 0, 0	0.4	0, 7	
8, 7, 3, 2, 2, 2, 1	0.3	0, 2, 5	
8, 7, 7, 4, 2, 0, 0, 0	0.2	1, 3, 5, 6	
9, 6, 6, 6, 5, 3, 1	0.1	0, 5	
9, 6, 6, 4, 2, 1, 0, 0, 0, 0, 0	0.0	0, 3, 4	
	-0.1	1, 4, 5	
	-0.2	8	
1	-0.3		

Note. "k" is the number of studies included in the meta-analysis.

**Table 4**  
*Summary of Overall Meta-Analysis Findings*

Variable	Sample size		Unweighted <i>r</i> effect size				<i>p</i>		Test of heterogeneity <sup>a</sup>			
	No. of studies	Total <i>n</i>	Median	Mean [95% CI] <sup>b</sup>	Median	Min, max	SD	Fixed	Random	Fail-safe <i>N</i> (tolerance)	$\chi^2$	<i>P</i>
Well-Being	49	4,235	64	.29 [.21, .37]	0.24	-.31, .84	.24	0	$4 \times 10^{-9}$	2,519 (255)	230.92	$9 \times 10^{-26}$
Depression	25	1,812	32	.31 [.17, .43]	0.26	-.28, .81	.29	$2 \times 10^{-12}$	.0001	420 (135)	146.32	$2 \times 10^{-19}$

*Note.* All *p* values are one-tailed.

<sup>a</sup>Degrees of freedom is the number of studies minus 1.

<sup>b</sup>Confidence intervals are computed based on the stringent random effects model.

( $\chi^2_{(24)} = 146.32$ , one-tailed  $p = 2 \times 10^{-19}$ ), indicating that moderators may account for the variation in effect sizes.

### *Participant Moderators*

*Depression status.* Depressed individuals benefited more from PPIs than nondepressed individuals, according to the fixed effects moderator analysis. However, the random effects moderator analysis did not find a significant moderating effect for depression status. The mean effect sizes, and other relevant statistics for this and all other moderators, are displayed in Tables 5 and 6.

*Self-selection.* Individuals who elected to participate in a PPI—perhaps expecting that the intervention would make them happier or less depressed—were more likely to experience greater gains in WB and depression compared with their non-self-selected counterparts, based on the fixed effects model. However, the moderating effect of self-selection was not significant for WB or depression according to the random effects model.

*Age.* Both the fixed effects and random effects models revealed that the benefits of PPIs increase with age. Although there were not enough studies to include the “older adult” group in the moderator analysis for depression, the other age groups nevertheless showed larger decreases in depression as a linear function of age.

### *Methodological Moderators*

*Intervention format.* Intervention format had a significant moderating effect on the effectiveness of PPIs, based on both the fixed effects and the random effects models. Specifically, the mean  $r$  effect size was greatest for individual therapy, followed by group-administered PPIs, then self-administered PPIs.

*Intervention duration.* Longer interventions produced greater gains in WB based on the fixed effects model, and this effect approached significance according to the random effects model (one-tailed  $p = .09$ ). For depression, however, the moderating effect of intervention duration was not significant based on both the fixed effects and random effects models.

*Comparison group type.* The fixed effects analysis revealed that the type of comparison group used in a PPI moderated the gains in WB but not when computed using the random effects analysis. In particular, studies that compared a PPI to a no-treatment control group showed the greatest boost in WB. Positive interventions that were compared with “treatment as usual” showed the second greatest benefit, suggesting that PPIs may be more effective than standard treatments. Finally, PPIs also produced greater boosts in WB compared with neutral control and placebo activities. The type of comparison group did not have a moderating effect on shifts in depression, based on both the fixed effects and the random effects models. This indicates that participation in PPIs may be more effective for relieving depression than participation in a no-treatment control group, placebo activity, or treatment as usual.

## Clinical Practices

Do positive psychology interventions effectively boost well-being and ameliorate depression? The overwhelming evidence from our meta-analysis suggests that the

**Table 5**  
*Summary of Moderator Findings for Well-Being*

Moderator	No. of studies	Total <i>n</i>	Unweighted mean <i>r</i>	Unweighted median <i>r</i>	$\lambda$ weight	Moderator analysis	
						Fixed	Random
<b>Participant moderators</b>							
<i>Depression status</i>							
Depressed	12	863	0.33	0.27	+1	$z = 4.39^{***}$	$r = .12$
Nondepressed	34	3258	0.26	0.22	-1		
<i>Self-selection</i>							
Self-selected	25	1944	0.33	0.27	+1	$z = 2.28^{**}$	$r = .17$
Non-self-selected	24	2291	0.24	0.20	-1		
<i>Age</i>							
Child/adolescent ( $\leq 17$ years old)	3	274	0.14	0.06	-3	$z = 1.47$	$r = .35^{**}$
Young adult (18-35 years old)	27	2710	0.23	0.20	-1		
Middle adult (36-59 years old)	13	603	0.39	0.33	+1		
Older adult (60 years old)	3	169	0.50	0.38	+3		
<b>Methodological moderators</b>							
<i>Intervention format</i>							
Individual therapy	7	171	0.50	0.44	+1	$z = 1.88^*$	$r = .42^{***}$
Group-administered	14	779	0.34	0.30	0		
Self-administered	28	3285	0.20	0.16	-1		
<i>Intervention duration</i>							
$\leq 4$ weeks	20	2023	0.23	0.18	-3	$z = 1.73^*$	$r = .20$
5-7 weeks	9	633	0.36	0.31	-1		
8-12 weeks	14	1290	0.24	0.27	+1		
$> 12$ weeks	6	289	0.47	0.41	+3		
<i>Comparison group type</i>							
No-treatment control	20	1372	0.37	0.32	+3	$z = 5.63^{***}$	$r = .20$
Neutral control	8	1006	0.14	0.12	+1		
Placebo	10	1156	0.18	0.25	-1		
Treatment as usual (TAU)	7	324	0.29	0.32	-3		

\*  $p < .05$  (one-tailed). \*\*  $p < .01$  (one-tailed). \*\*\*  $p < .001$  (one-tailed).

Table 6  
Summary of Moderator Findings for Depression

Moderator	No. of studies	Total <i>n</i>	Unweighted mean <i>r</i>	Unweighted median <i>r</i>	$\lambda$ weight	Moderator analysis	
						Fixed	Random
<b>Participant Moderators</b>							
<i>Depression Status</i>							
Depressed	14	894	0.32	0.31	+1	$z = 2.36^{**}$	$r = .17$
Nondepressed	10	904	0.21	0.13	-1		
<i>Self-Selection</i>							
Self-selected	17	1272	0.35	0.32	+1	$z = 4.42^{***}$	$r = .23$
Non-self-selected	8	534	0.20	0.13	-1		
<i>Age<sup>a</sup></i>							
Child/adolescent ( $\leq 17$ years old)	2	133	-0.06	-0.06	-1		
Young adult (18-35 years old)	11	987	0.27	0.25	0		
Middle adult (36-59 years old)	9	250	0.42	0.40	+1	$z = 4.95^{***}$	$r = .45^*$
<b>Methodological moderators</b>							
<i>Intervention format</i>							
Individual therapy	7	128	0.57	0.56	+1		
Group-administered	8	275	0.30	0.28	0		
Self-administered	10	1409	0.09	0.07	-1		
<i>Intervention duration</i>							
$\leq 4$ weeks	5	635	0.29	0.10	-3		
5-7 weeks	4	141	0.46	0.37	-1		
8-12 weeks	11	783	0.18	0.21	+1		
$> 12$ weeks	5	253	0.46	0.40	+3	$z = 1.23$	$r = .04$
<i>Comparison group type<sup>b</sup></i>							
No-treatment control	8	386	0.35	0.30	+1		
Placebo	7	819	0.08	0.10	0		
Treatment as usual (TAU)	7	265	0.35	0.40	-1	$z = .44$	$r = -.02$

<sup>a</sup>Older adult<sup>a</sup> was excluded in this analysis because there was only 1 study ( $n = 14$ ) in that category.

<sup>b</sup>Neutral control<sup>b</sup> was excluded from this analysis because no studies had a "neutral control" comparison group.

\* $p < .05$  (one-tailed). \*\* $p < .01$  (one-tailed). \*\*\* $p < .001$  (one-tailed).

Table 7  
*Binomial Effect Size Displays of the Benefits of PPI*

	Lower well-being	Higher well-being	Total
Effect of PPI on well-being ( $r = .29$ )			
PPI	35	65	100
Control	65	35	100
Total	100	100	200
Effect of PPI on depression ( $r = .31$ )			
PPI	34	66	100
Control	66	34	100
Total	100	100	200

answer is “yes.” The combined results of 49 studies revealed that PPIs do, in fact, significantly enhance WB, and the combined results of 25 studies showed that PPIs are also effective for treating depressive symptoms. The magnitude of these effects is medium-sized (mean  $r = .29$  for WB, mean  $r = .31$  for depression), indicating that not only do PPIs work, they work well.

The practical importance of these effect sizes is illustrated using a binomial effect size display, as shown in Table 7. In a hypothetical group of 200 individuals—half the group treated with a PPI, and half the group untreated—65 individuals treated with a PPI would experience gains in WB, compared with only 35 of the individuals in the control group. Similarly, 66 PPI-treated individuals would experience decreased depression, relative to only 34 individuals in the control group.

It is likely that—in addition to learning how to cope with negatives—clients will greatly benefit from attending to, appreciating, and attaining life’s positives. Thus, practitioners are encouraged to incorporate elements of positive psychology into their clinical work. A variety of PPIs have now been found effective, including positive behaviors like engaging in enjoyable activities (Fordyce, 1977) and using one’s signature strengths in new ways (Seligman, Steen, Park, & Peterson, 2005). Cognitive strategies, such as replaying positive experiences and self-monitoring instances of well-being, have also been shown to boost happiness and alleviate depression (Fava, Rafanelli, Cazzaro, Conti, & Grandi, 1998). Finally, the practice of emotional skills—including mindfulness and acceptance—can have a positive impact on a client’s psychological well-being (Bédard et al., 2003; Grossman, Tiefenthaler-Gilmer, Raysz, & Kesper, 2007; Zautra et al., 2008).

Our moderator analyses also point to specific clinical practices. First, depression status moderated the effectiveness of PPIs, such that depressed individuals experienced enhanced WB and reduced depressive symptoms relative to nondepressed ones. This finding could be accounted for by a floor effect—that is, depressed individuals may simply have more room to improve—or it may have a substantive explanation. In any case, our result challenges the notion that depressed people might benefit *less* from PPIs, because their characteristic cognitive, affective, and behavioral deficits prevent them from taking full advantage of the relevant positive activities. Accordingly, practitioners are advised to implement PPIs in the treatment of both clinically depressed and nondepressed clients, as both are likely to garner the benefits. PPIs can be especially effective for treating residual symptoms (Fava et al., 1998) and preventing future relapse for formerly depressed clients (Seligman et al., 2006).



Second, self-selected individuals—those who possibly were more motivated or who expected the intervention to make them happier—benefited more from PPIs than did their non-self-selected peers. We did not find this surprising, as those with higher levels of motivation or more positive, optimistic expectancies would be expected to work harder and longer at following the instructions of a PPI, to show greater commitment, and to take their assigned task more seriously. Accordingly, practitioners will do well to bolster motivation and provide ample encouragement to clients, particularly to those who are initially reluctant to engage in treatment.

Third, the benefits of PPIs increased linearly with age, perhaps due to the greater wisdom and more effective emotional regulation and self-regulation associated with older age (Carstensen, Isaacowitz, & Charles, 1999; Linley et al., 2007). Older participants may also have treated the PPI with greater seriousness and maturity and applied more effort in carrying out its recommendations. Thus, practitioners may see more improvement when offering PPIs to older, rather than younger, clients. Younger individuals, as well as those who may be less emotionally invested in their treatment, should be encouraged to devote more effort and commitment.

Fourth, the format of the treatment also moderated the effectiveness of PPIs: Individual therapy was most effective, followed by group-administered PPIs, then self-administered PPIs. Hence, practitioners offering PPIs as part of individual therapy, and secondarily group therapy, can expect the highest benefits for their clients. The duration of PPIs also moderated their benefits, such that longer interventions were relatively more likely to produce greater gains in WB. Longer durations give participants an opportunity to convert the positive activities they are learning into habits.

Please bear in mind that these findings should be interpreted cautiously, as this meta-analysis is not comprehensive (i.e., does not include all PPI studies ever conducted). In addition, causal conclusions cannot be drawn regarding the moderators because the studies were not randomly assigned to particular moderator levels (Rosenthal, 1991b, p. 81).

Finally, we offer three suggestions for clinical practice based on the extant research on PPIs, although these are not directly derived from our meta-analysis.

- Several studies have found that exerting high levels of effort to practice a happiness-boosting strategy, and continuing to practice it even after the intervention is over, results in greater improvements in WB and depression (e.g., Lyubomirsky et al., 2008; Seligman et al., 2005). Thus, clinicians should encourage their clients to regularly practice and keep a record of positive strategies, to incorporate these strategies into their everyday lives, and to turn these strategies into habits.
- It also appears that a “shotgun” approach, in which individuals practice multiple PPI activities, may be more effective than engaging in only one activity (e.g., Fordyce 1977, 1983; Seligman et al., 2005). Accordingly, practitioners may see the most benefit in their clients when assigning multiple and different positive activities.
- Members of individualist cultures, whose values and cultural prescriptives are highly supportive of the pursuit of individual happiness, have been found to benefit more from PPIs than members of collectivist cultures (Lyubomirsky et al., 2008). As a result, clinicians are advised to consider a client’s cultural background, as well as his or her unique inclinations, when implementing PPIs. For instance, a client from a collectivist culture may experience greater boosts in

well-being when practicing prosocial and other-focused activities (e.g., performing acts of kindness, writing a letter of gratitude), compared with individual-focused activities (e.g., reflecting on personal strengths).

The field of positive psychology is young, yet much has already been accomplished that practitioners can effectively integrate into their daily practices. As our meta-analysis confirms, positive psychology interventions can materially improve the well-being of many.

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