

## Efficacy of positive psychological interventions in anxiety treatment

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### ABSTRACT

Psychiatry traditionally emphasizes psychopharmacology and psychotherapy as the primary modalities of treatment. Recently, however, positive psychological interventions are increasingly recognized as a treatment modality that aims to improve a patient's general wellness. Our goal is to review published data on the efficacy of positive psychological interventions (PPI) in the treatment of anxiety. A systematic literature search was conducted on PubMed, Web of Science, and PsycINFO. The keywords used were "positive psychology" and "treatment of anxiety." The search involved all articles published until 2019. To meet inclusion criteria, articles needed to report using positive psychological interventions with patients diagnosed with anxiety or suffering from anxiety symptoms. The main outcome measure was a change in anxiety levels post-intervention. Our initial literature search of 1010 articles was narrowed down to 6 papers that met the inclusion criteria. Interventions used were body-mind-spirit therapy, online positive psychology modules, self-help books, positive activity intervention, future-directed therapy, and mindfulness-based therapies. Pre- and post-treatment anxiety was measured using scales such as State Anxiety Inventory, Depression Anxiety Stress Scale-Short form, Overall Anxiety Severity, Impairment Scale, Hospital Anxiety and Depression Scale, Liebowitz Social Anxiety Scale–Self-Report, Beck Anxiety Inventory, Social Interaction Anxiety Scale, Profile of Mood States, Brief Symptom Inventory, and Revised Children's Manifest Anxiety Scale. In all six included studies, PPI decreased anxiety symptoms with variable effect sizes. The review suggests that PPI offers therapeutic benefits to patients diagnosed with anxiety symptoms. Thus, more research is needed to examine the feasibility of incorporating PPI into the traditional mental health care.

**Keywords:** positive psychology, anxiety, review

### INTRODUCTION

Positive psychology is a domain of psychology that studies positive human functioning and flourishing.<sup>1</sup> Through its emphasis on positive emotions, positive individual traits, and positive institutions, positive psychology aims to promote personal emotional

well-being and happiness. Martin Seligman identified six virtues and 24 character strengths that an individual can exhibit that enable human thriving.<sup>2</sup> The character strengths identified are measurable traits that differ from one individual to another and are widely recognized across almost every culture in the world. Five character strengths—creativity, curiosity, open-mindedness, love of learning, and perspective—are identified for the virtue of *wisdom and knowledge*.<sup>2</sup> Four character strengths—authenticity, bravery, persistence, and zest—are identified for the virtue of *courage*.<sup>2</sup> The virtue of *humanity* is identified with three character strengths:

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**DOI:** 10.12746/swrccc.v10i43.951

kindness, love, and social intelligence.<sup>2</sup> Three character strengths identified for the virtue of *justice* are fairness, leadership, and teamwork.<sup>2</sup> The four character strengths identified for the virtue of *temperance* are forgiveness, modesty, prudence, and self-regulation.<sup>2</sup> The five character strengths identified for the virtue of *transcendence* are appreciation of beauty and excellence, gratitude, hope, humor, and religiousness.<sup>2</sup>

Recent studies have demonstrated the role that positive psychology has in influencing one's ability to cope with adverse and stressful events,<sup>3,4</sup> which suggests that positive psychology interventions may be of therapeutic interest in ameliorating anxiety symptoms in patients. While many models of psychotherapy may not be labeled explicitly as positive psychology interventions, many of these do target and influence the 24 character strengths identified by Seligman. The goal of our study was to perform a systematic literature review of studies that used psychotherapeutic interventions that target one or more of positive psychology's 24 character strengths in the treatment of anxiety.

## METHODS

Systematic literature searches were performed on PubMed, Web of Science, and PsycINFO for publications in the past thirty years. The search phrase used was "positive psychology AND treatment of anxiety." Inclusion criteria included English language publications and positive psychology interventions that targeted anxiety symptoms. Articles that did not measure anxiety levels both pre-and post-intervention were excluded.

Subsequent screening by title first, abstract second, and full text last excluded duplicates and articles that did not mention a positive psychology intervention for anxiety. Agreement among reviewers was obtained for article inclusion and exclusion.

## DATA EXTRACTION

Data were extracted from the eligible manuscripts into pre-defined data fields. Sample size, the scale used to measure depression symptoms severity, mean post- vs. pre-intervention changes in anxiety scores and standard deviation of post- vs. pre-intervention

changes in anxiety scores of the intervention (i.e. positive psychology) and control groups were extracted from the eligible full-text articles. When only the standard deviations of marginal means were available, the standard deviations of mean differences were imputed using the methods described in Cochrane Handbook.<sup>5</sup> In addition, the following data of the intervention group were extracted as potential covariates of the above outcomes: mean age of participants, the proportion of females, proportion of participants received  $\geq 12$  years of education, the proportion of participants who were employed, the proportion of participants who had a partner / were married. Furthermore, the year of publication and duration of intervention were extracted as potential covariates. Only two articles reported outcomes of delayed follow-up after an intervention. As such, a meta-analysis was not performed on the delayed outcomes of the interventions on anxiety.

## DATA ANALYSIS

A DerSimonian-Laird random-effects meta-analysis was performed using the 'meta' package (version 4.11-0) in R statistical software (version 3.6.2) to examine the pooled standardized intervention vs. control group difference in post- vs. pre-intervention change of anxiety scores. The consistency of the meta-analysis findings was examined in a series of leave-one-out sensitivity analyses.<sup>6</sup> Given that under-reporting and publication bias could result in biased (i.e., smaller) estimates, publication bias was examined using funnel plots and to impute effect-sizes of missing (i.e., unpublished/unreported) studies via the trim-and-fill method.<sup>7,8</sup> Heterogeneity of effect sizes was quantified by calculating the Higgins'  $I^2$  statistic.<sup>9,10</sup> Even though we intended to perform meta-regression analyses to account for heterogeneity, this was not possible due to the minimal heterogeneity of observed effect sizes.

## RESULTS

The initial electronic database search yielded 1010 articles before being narrowed to 6 papers that fully met the selection criteria (Table 1). The total sample size for all 6 articles was 469, with individual studies ranging from a sample size of 28 to 167. Four articles

**Table 1. Studies on Positive Psychology Interventions**

Reference	Title	Sample	Intervention	Important Measures	Main Findings
Liu 2008 <sup>11</sup>	A study on the efficacy of body-mind-spirit group therapy for patients with breast cancer	n = 28 Participants were diagnosed with breast cancer. Patients did not have a specific anxiety diagnosis.	Body-mind-spirit therapy integrating positive psychology and forgiveness and Eastern/Chinese philosophy	State Anxiety Inventory	Greater reduction in anxiety levels in body-mind-spirit therapy compared to standard physician care
Manicavasagar 2014 <sup>12</sup>	Feasibility and Effectiveness of a Web-Based Positive Psychology Program for Youth Mental Health: Randomized Controlled Trial	n = 167 Participants were minors aged 12–18 years old.	Bite Back website positive psychology program with interactive exercises to improve well-being	Depression Anxiety Stress Scale-Short form  Short Warwick-Edinburgh Mental Well-Being Scale	Significant reductions were seen in stress and depression levels with participation in the Bite Back program
Mira 2018 <sup>13</sup>	Exploring the Incorporation of a Positive Psychology Component in a Cognitive Behavioral Internet-Based Program for Depressive Symptoms. Results Throughout the Intervention Process	n = 103 Participants were diagnosed with depression, not anxiety.	Four CBT focused modules and four positive psychology (PP) focused modules increasing meaningful experiences and learning how to live	Overall Anxiety Severity and Impairment Scale  Positive and Negative Affect Scale	OASIS measure decreased during both the CBT and PP modules while PANAS+ measure showed improvement upon completion of the PP modules only
Taylor 2018 <sup>14</sup>	Upregulating the positive affect system in anxiety and depression: Outcomes of a positive activity intervention	n = 29 Participants all had been diagnosed with anxiety.	Positive Activity Intervention had modules including “Gratitude: Counting One’s Blessings” and “Optimism: Best Possible Future” all focused on bettering oneself	Overall Anxiety Severity and Impairment Scale	Greater improvement in well-being and a decrease in anxiety in the positive activity intervention group compared to those in the control group

*(continued)*

**Table 1. Studies on Positive Psychology Interventions (continued)**

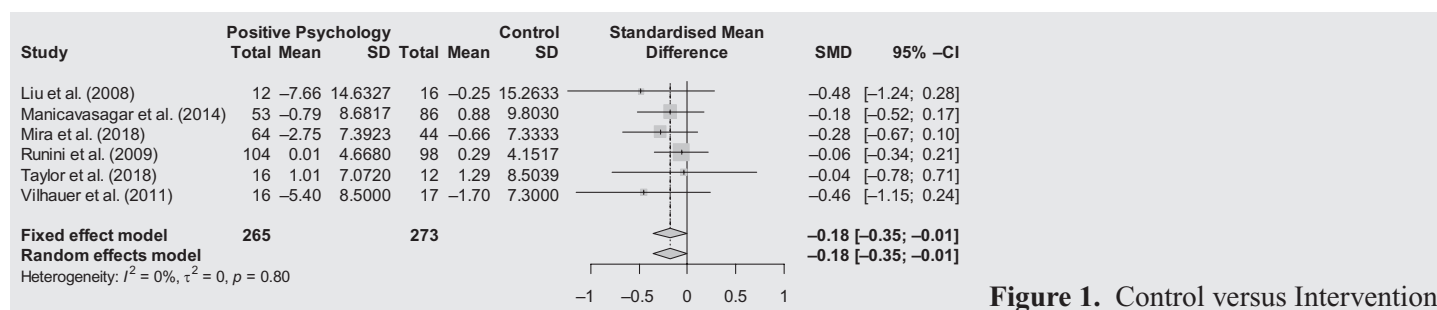
Reference	Title	Sample	Intervention	Important Measures	Main Findings
Vilhauer 2011 <sup>15</sup>	Treating Major Depression by Creating Positive Expectations for the Future: A Pilot Study for the Effectiveness of Future-Directed Therapy (FDT) on Symptom Severity and Quality of Life	n = 38 Participants were diagnosed with depression, not anxiety.	Future-Directed Therapy focused on the process of change and how thought process directly affects the future and increasing positive thinking about the future	Beck Anxiety Inventory	Future-directed therapy had a significant reduction in anxiety symptoms pre- and post-intervention.
Ruini 2009 <sup>16</sup>	School intervention for promoting psychological well-being in adolescence	n = 104 Participants were students in 9 <sup>th</sup> and 10 <sup>th</sup> grade in Northern Italy.	Identifying positive and negative emotions, recording them, and then cognitive restructuring through role play.	Revised Children's Manifest Anxiety Scale	Significant p-value (p < 0.5) that supports a positive effect of the well-being therapy on anxiety

had an adult sample (>18 years old); the remaining two had participants under 18 (ages 12, 16). In five of the included studies, participants presented with anxiety symptoms, while one study by Taylor et al. reported an official diagnosis of anxiety disorders. These interventions decreased anxiety symptoms in all the studies.

**POST- VS. PRE-INTERVENTION DIFFERENCE**

Positive psychology interventions were observed to significantly decrease standardized anxiety scores compared to the controls (pooled Cohen's d = -0.18,

[-0.35, -0.01], p = 0.041) (Figure 1). The included six studies used six different measures of anxiety. As a result, it was not possible to conduct sensitivity analyses categorized based on the anxiety scale. Excluding any one of the six studies<sup>11-16</sup> resulted in the loss of significance of the pooled estimate (Table 2). Furthermore, the funnel plot of effect sizes revealed the possibility of publication bias (Figure 2). To address the impact of publication bias on the pooled outcomes, two effect sizes of potentially unreported studies were imputed using the trim-and-fill method, and the data were re-analyzed, including these two effect sizes. Previously observed statistical significance of the



**Figure 1. Control versus Intervention.**

**Table 2. Results of Leave-one-out Sensitivity Analyses**

Omitted Study	SMD	95% -CI	p-value	$\tau^2$	$I^2$ (%)
Liu (2008)	-0.1627	[-0.3389; 0.0135]	0.0703	0	0
Manicavasagar (2014)	-0.1795	[-0.3777; 0.0187]	0.076	0	0
Mira (2018)	-0.1533	[-0.3450; 0.0383]	0.1169	0	0
Runini (2009)	-0.2518	[-0.4710; -0.0327]	0.0243	0	0
Taylor (2018)	-0.1868	[-0.3631; -0.0105]	0.0379	0	0
Vilhauer (2011)	-0.1606	[-0.3378; 0.0165]	0.0755	0	0
<b>Pooled estimate</b>	<b>-0.1788</b>	<b>[-0.3505; -0.0072]</b>	<b>0.0411</b>	<b>0</b>	<b>0</b>

pooled effect was not seen following this statistical correction for publication bias (pooled Cohen’s  $d = -0.14$ ,  $[-0.31, 0.02]$ ,  $p = 0.086$ ). There was minimal heterogeneity between the examined effect sizes ( $\tau^2 = 0.00$ ;  $I^2 = 00.0\%$ ,  $p = 0.804$ ) (see Table 2 and Figures 1 and 2).

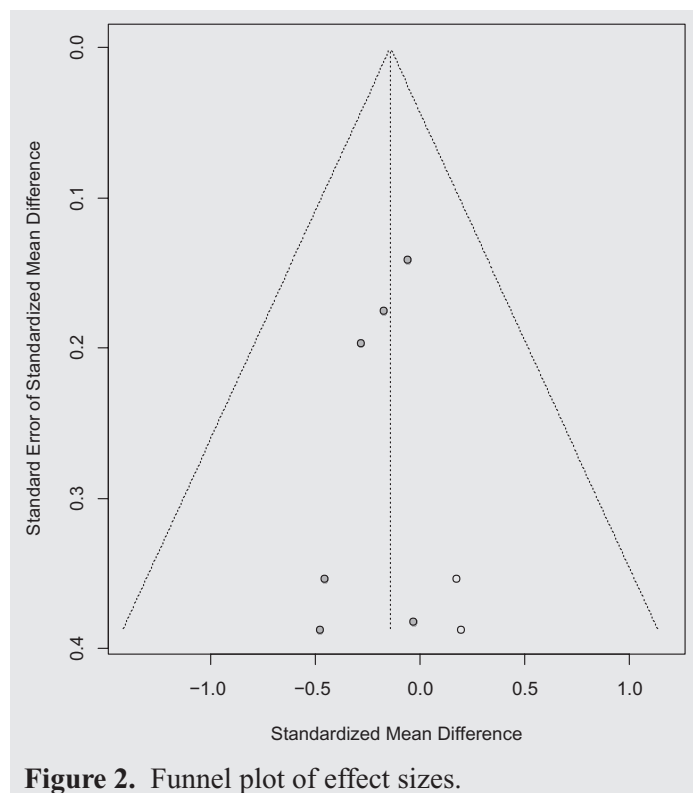
**DISCUSSION**

The six studies demonstrate the therapeutic benefit of focusing on positive psychology character strengths

in psychotherapeutic interventions and its role in alleviating anxiety symptoms. Improvement in anxiety symptoms was achieved regardless of the nature of the PPI used. These interventions included promoting spirituality, forgiveness, gratitude, hope, acts of kindness, and optimism.<sup>11–16</sup> Positive psychological interventions were found to be superior to cognitive behavioral therapy (CBT) in promoting positive affect.<sup>13</sup> Moreover, PPI are usually very feasible. They are usually composed of few in-person or virtual sessions or can be delivered via online programs or self-help books. With such feasibility, PPI can help addressing the lack of mental health providers in some communities.

Studies have shown that an individual’s personality has a neurocognitive basis and that many personality traits are correlated with certain psychiatric disorders.<sup>17,18</sup> Personality traits are not merely abstractions of human behavior, but rather are measurable traits of therapeutic interest that are malleable, with the ability to change just as the brain can undergo plastic changes. It is equally important to treat psychopathologies and promote protective factors during the treatment of psychiatric disorders.

Generalized anxiety disorder is a chronic disorder, and for many patients, this means the requirement of lifelong medication management. However, due to the unwanted side effects and financial burden that pharmaceutical interventions can pose to anxiety patients, this is not ideal. Thus, it should be a fundamental goal of psychotherapy to better prepare and equip patients with long-term changes in their resilience that will aid them when encountering life stressors. A recent study that sought to determine whether positive psychology interventions have lasting effects on an individual’s



**Figure 2.** Funnel plot of effect sizes.

happiness demonstrated that specific positive psychology exercises could increase happiness and decrease depressive symptoms 6 months post-intervention.<sup>2</sup> Another study showed the long-term benefit that a positive psychology intervention had on positive thinking and coping skills.<sup>3</sup> The results of these two studies illustrate the lasting benefits of bolstering positive psychology character strengths as therapeutic targets for patients. It is undoubtedly difficult to ‘cure’ patients’ anxiety due to the inevitable stressors that they will continue to encounter throughout their lifetimes. However, the utilization of positive psychological interventions could provide long-term improvements to patients’ quality of life.

This literature review has some limitations. First, patients with only comorbid anxiety and depression disorders were excluded. Second, interventions varied significantly among the included studies, which does not allow for reaching a conclusion about the effectiveness of a particular intervention. Third, some of the included interventions use some CBT techniques, such as changing thought processes. Thus, it is hard to recognize how much therapeutic benefits were obtained from CBT versus the new interventions themselves.

## CONCLUSIONS

Positive psychological interventions are beneficial in alleviating anxiety symptoms from the studies evaluated in the review. There is a need for more studies to assess the efficacy and the feasibility of incorporating specific interventions into the traditional mental health care.

**Article citation:** Jeng V, Pham T, Baronia R, Kahathuduwa C, Amor W, Ibrahim Y. Efficacy of positive psychological interventions in anxiety treatment. *The Southwest Respiratory and Critical Care Chronicles* 2022;10(43):11–17

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**Submitted:** 12/20/2021

**Accepted:** 3/24/2022

**Conflicts of interest:** none

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