ARE STRENGTH BASED POSITIVE INTERVENTIONS EFFECTIVE IN ELICITING POSITIVE BEHAVIORAL OUTCOMES? A META-ANALYTIC REVIEW

by

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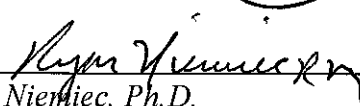Doctor of Philosophy

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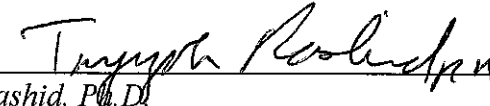
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Abstract

Are Strength Based Positive Interventions Effective in Eliciting Positive Behavioral

Outcomes? A Meta-Analytic Review

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Recent research on the effectiveness of strengths-based positive interventions (SBPIs) has

focused on experiential outcomes such as depression and subjective well-being. Though such

interventions have been suggested as an alternative to more traditional techniques that focus on

deficit reduction, less is known about the effectiveness of these interventions for eliciting

positive behavioral outcomes. The current meta-analysis was conducted with the aim of

evaluating the extent how well SBPIs perform as methods of directly eliciting positive

behavioral changes. A lengthy list of terms that could potentially indicate a focus on a personal

strength was developed, and a systematic literature search was conducted using the PsycINFO,

Medline, and Cochrane Central Register of Controlled Trials databases spanning all records from

initiation of the database until February 2018. Twenty-three analyses were available across 17

articles that examined group differences in what was deemed a behavioral outcome. An analysis

of pre-test data suggested that there was no difference between groups, mean g = -0.03. At post-

test, the studies on average yielded a small, statistically significant effect size on average, g =

0.22, p = .02, 95% CI = [.03, .41]. This finding suggests that SBPIs were effective in eliciting

small amounts of behavioral change relative to control conditions. However, there is currently no basis for drawing conclusions regarding when, and for whom, SBPIs may be most helpful. The number of studies included in the meta-analysis was small and indicates the need for more research to be conducted in this area. Future studies that examine the use of SBPIs should focus on behavioral outcomes, rather than or in addition to, affective experiences of depression and well-being.

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Extended Literature Review

Positive psychology is the scientific study of the positive aspects of how human beings' function (Seligman & Csikszentmihalyi, 2000). It aims, therefore, to identify and enhance human strengths and virtues that contribute to well-being, and help individuals flourish and thrive (Froh, 2004). The ultimate goal of positive psychology is to develop an empirically supported and publicly accessible framework for enhancing quality of life on both the individual and societal level (Seligman & Csikszentmihalyi, 2000). The intent to enhance positive functioning very quickly led to the development of various interventions for improving functioning that will be referred to here as positive interventions (Seligman, Steen, Park, & Peterson, 2005). In particular, the development of a taxonomy of character strengths (Peterson & Seligman, 2004) inspired the development of a variety of techniques that capitalize on those strengths, techniques that in this document will be referred to as strength-based positive interventions (SBPIs). Among interventions that focus on positive aspects of functioning, it is the SBPIs that are most closely related to positive psychology.

The study of these SBPIs was inspired by early work to identify a comprehensive set of measurable strengths of character that contribute to the well-lived life (Peterson, 2006). Peterson and Seligman (2004) identified 24 character strengths--appreciation of beauty, bravery, citizenship, creativity, curiosity, fairness, forgiveness and mercy, gratitude, hope, humor, integrity, judgment, kindness, leadership, love, love of learning, modesty and humility, persistence, perspective, prudence, self-regulation, social intelligence, spirituality, and zest--that they believed individuals could realize within themselves, and use in order to live a more fulfilled life. A key hypothesis that has come out of the positive psychology movement is that

personal strengths can be used to improve personal functioning. This is the basic assumption underlying the use of SBPIs.

Unfortunately, almost all studies of SBPIs have focused exclusively on measures of emotional state such as level of depression, happiness, and subjective well-being. While results have been positive, if SBPIs are to be accepted as clinical interventions, it is also important to demonstrate they can contribute to positive behavior change. To address this research gap, the proposed study is a meta-analysis conducted with the aim of synthesizing research that evaluates whether SBPIs are effective methods of eliciting positive behavioral changes.

As background to the study, this literature review will cover the following topics. First, the positive psychology movement will be reviewed. The second section summarizes critical analysis of the positive psychology movement. The third section outlines the VIA Classification of Strengths and Virtues, one of the key products of the positive psychology movement, including criticisms of this model. The fourth section summarizes what we know about positive interventions to date, as well as a critique of these interventions. The final section addresses how some of the aforementioned criticisms of positive interventions will be addressed by the present study.

Positive Psychology

Positive psychology was founded by Martin Seligman based on the assumption that people want to lead meaningful and fulfilling lives and cultivate what is best within themselves (Seligman & Csikszentmihalyi, 2000). Seligman suggested that the field of psychology had become too preoccupied with the study of psychopathology, focusing only on people's deficits, and largely neglected people's positive qualities and strengths (Seligman & Csikszentmihalyi, 2000; Seligman et al., 2005; Sheldon & King, 2001). Proponents of positive psychology "believe

that a complete science and a complete practice of psychology should include an understanding of suffering and happiness, as well as their interaction, and validated interventions that both relieve suffering and increase happiness—two separable endeavors" (Seligman et al., 2005, p. 875). Positive psychology was intended to supplement, not replace, what is known about human suffering, weakness, and disorder. Seligman and Csikszentmihalyi (2000) proposed that if psychologists wished to improve the human condition, it would not be enough just to help those who suffer; it was also necessary to provide guidance for normally functioning individuals to reach a richer and more fulfilling existence.

In their seminal article, *Positive Psychology: An Introduction*, Seligman and Csikszentmihalyi (2000) presented three "pillars" of the positive psychology movement: (1) the study of positive emotions; (2) the study of positive character traits, especially strengths and virtues, but also abilities; and (3) positive institutions that support the development of positive emotions and traits. These three pillars help to define positive psychology as "an umbrella term for the study of positive emotions, positive character traits, and enabling institutions" (Seligman et al., 2005, p. 410). According to Seligman and Csikszentmihalyi (2000), the proximal goal of positive psychology was to understand how to foster these phenomena, while the ultimate goal was to develop an empirically supported and publicly accessible framework for enhancing quality of life on both the individual and societal levels.

Since Seligman first suggested the modern field of positive psychology in his 1998 presidential address to the American Psychological Association (Froh, 2004), positive psychology has accumulated a significant research base. This includes thousands of articles, journals dedicated to the study of positive psychology (e.g., *Journal of Positive Psychology*, *Journal of Happiness Studies*, *Psychology of Well-Being*), special issues of other research

journals (e.g., *International Journal of Behavioral Medicine*, *American Psychologist*), and hundreds of books. The International Positive Psychology Association held its inaugural conference in 2009 and meets biennially to present the latest research in positive psychology from a global perspective. Among other achievements, this research has led to the development of measures for assessing positive emotions and character traits, and to the development, dissemination, and evaluation of interventions aimed at cultivating these constructs (Seligman et al., 2005).

Criticisms of Positive Psychology

Since its inception, positive psychology has been extensively criticized by those within and outside the psychology community. These criticisms have focused largely on (1) the claim that positive psychology is a new field within psychology; (2) methodological and empirical issues including a lack of empirical support; (3) the dangers of an excessive focus on the positive; (4) the claim that traditional psychology ignores positive functioning; and (5) the failure to consider cultural diversity adequately.

Historical Roots

The contemporary field of positive psychology was founded in 1998 as an initiative of Martin Seligman, the then-president of the American Psychological Association. A number of psychologists (e.g., Held, 2002, 2004, 2005; Froh, 2004; Lazarus, 2003; Rathunde, 2001; Taylor, 2001) have noted, however, that substantial components of positive psychology date back at least to the humanistic psychology movement. For example, Abraham Maslow wrote extensively in the 1950s about positive motivation, positive growth, and positive emotions (Waterman, 2013). Of note, the last chapter of one of Maslow's book was titled "Toward a Positive Psychology," which laid out a research agenda similar to Seligman's (Taylor, 2001). Going back even further,

Seligman's first pillar of positive psychology, the focus on positive experiences, directly descends from William James (Froh, 2004). Seligman did reference humanistic psychology in some of his writings (e.g., Seligman & Csikszentmihalyi, 2000). However, he devalued the earlier movement and distinguished it from positive psychology, alleging that humanistic psychology had failed to accumulate an empirical basis. Held (2004) hypothesized that Seligman's disregard of humanistic psychology may be understood in the context of his attempt to establish positive psychology as a new field of study, distinct from pre-existing schools of thought.

Critics of Seligman's attempt to distinguish the two movements responded that humanistic psychology had, in fact, accumulated a significant research base, especially in terms of the qualitative and phenomenological research favored by many of the humanists. Moreover, they argued that, regardless of the quality or quantity of the research conducted, the founders of humanistic psychology laid the ideological and theoretical foundation for the positive psychology movement (Froh, 2004).

Waterman (2013) recently evaluated the claim that humanistic and positive psychology are distinct and concluded there are important differences in their views of human nature. Humanistic and existential psychologists were strongly influenced by existential philosophy, and so tended to assume that the individual creates all meaning in life. In contrast, positive psychologists have been more strongly influenced by Aristotelian thinking, which emphasizes the pursuit of what is best in their nature, including the fulfillment of personal talents and strengths. Seligman (2011) specifically proposed that human flourishing, a concept that was first discussed by Aristotle, consistently emerges from five sources: positive emotions, engagement, relationships, meaning, and accomplishments (PERMA). Though this PERMA model has been

widely adopted among those influenced by positive psychology, Waterman (2013) argued there is little evidence to support it as a comprehensive model of positive functioning. Humanists in contrast would typically suggest that the definition of happiness is up to each of us, and no universal framework for understanding happiness is possible.

Ultimately, Seligman and his colleagues (2005) did acknowledged that positive psychology has roots in other schools of thought, and denied they attempted to claim to have invented a psychology of the good life or to be the first to study it scientifically. The best way to conceptualize the value of the overarching term positive psychology currently is as a term to bring together previously disparate lines of theory and research on living a fulfilling life.

Methodological Issues

Positive psychologists have also been criticized for their claim of superior methodological sophistication as the primary distinction between positive psychology and its predecessors (e.g., Lazarus, 2003; Tennen & Affleck, 2003). Lazarus (2003) noted the widespread use of observational and cross-sectional research methods to study positive psychology concepts such as happiness and discussed the need for longitudinal studies on these topics to establish temporal precedence and causality. His concern was that cross-sectional research cannot adequately assess causal hypotheses about the relationship between emotions, health, and well-being.

Lazarus (2003) also took issue with the use of checklists and questionnaires that are administered cross-sectionally to measure emotions, as they are insufficient for describing the ebb and flow of emotions over time (see also Tennen & Affleck, 2003). Others have objected to assessment practices common in positive psychology. Wong and Roy (2017) noted a heavy reliance on simple and unvalidated measures of complex human phenomena, including

instruments that have not been subjected to standard psychometric evaluation. They claimed this was true of most of the measures used in positive psychology research, and suggested research that relies on poorly constructed instruments represents a waste of resources.

Another example of poor methodological rigor in positive psychology research is evidenced in a paper by Frederickson and Losada (2005) published in *American Psychologist* concluding that a ratio of experiences of positive to negative affect at or above 2.9013 would indicate individuals in flourishing mental health. In response, Brown, Sokal, and Friedman (2013) demonstrated that this conclusion was based on both conceptual and mathematical errors. Fredrickson (2013) responded by pointing to ample evidence supporting a relationship between higher positivity ratio values and various beneficial outcomes. The response ignored the importance of the critical ratio to the article's inclusion in a journal as prestigious as *American Psychologist*, and in the wake of the critique, the original paper was partially withdrawn. Sokal later raised concerns that such a flawed paper was able to pass the reviewers at the most prestigious American journal of psychology without anyone calling its findings into question (http://retractionwatch.com/2013/09/19/fredrickson-losada-positivity-ratio-paper-partially-withdrawn/).

Dangers of an Excessive Focus on the Positive

Another common critique of positive psychology has underestimated the importance of negative emotionality, suggesting the potential for positive outcomes to result from negative emotions (Bohart, 2002; Held, 2004; Wong, 2011). Held (2004) thought the positive psychology movement sends a very polarizing message, that "positivity is good and good for you; negativity is bad and bad for you" (p. 12). In contrast, research suggests that negative emotions such as a guilt, regret, frustration, and anger can motivate individuals toward positive change (Wong,

2011). It has also been suggested it would be a mistake to assume that all positivity is in fact positive. Efforts should be made to understand when positive beliefs are associated with good outcomes, and when they may not be (Aspinwall & Staudinger, 2003).

Lazarus (2003) also criticized positive psychology's efforts to dichotomize positive and negative perspectives and experiences. First, he argued that positive events can include both positive and negative emotional aspects. Second, positive emotions can lead to negative emotions. For example, one person's happiness could be a major source of another's unhappiness, and the reverse could also be true.

It is important to note that not all positive psychologists have adopted such dichotomous views, and that even Seligman has proven not to be as extreme in his expressed opinions. For example, in an endnote to *Authentic Happiness*, Seligman wrote that "in some situations negative thinking leads to more accuracy," and that "positive psychology aims for the optimal balance between positive and negative thinking" (Seligman, 2002, pp. 288-289). Similarly, in *Learned Optimism*, Seligman wrote that the born optimist pays the price of "benign illusions [and] a weaker sense of responsibility … Optimism's benefits are not unbounded. Pessimism has a role to play … we must have the courage to endure pessimism when its perspective is valuable" (Seligman, 1990, p. 292).

Positive Psychology as a New Field

Some critics of positive psychology have also taken issue with the notion that positive psychology is a distinct field of study from the rest of psychology. One example of divisive language has been recorded in Seligman's (1999) APA Presidential Address, where he categorized the focus of nearly the entire field of psychology as "a science largely about healing, concentrating on repairing damage within a disease model" (p. 560). Seligman and

Csikszentmihalyi (2000) posited this preoccupation with illness left little room for topics such as well-being. This sentiment was furthered when Peterson (2006) subsequently attempted to modify the scope of this characterization by referring to *psychology as usual* as psychology focused on the negative. Another example can be seen in the last chapter of the 2002 *Handbook of Positive Psychology*, which was titled "The Future of Positive Psychology: A Declaration of Independence" (Snyder & Lopez, 2002, p. 751). In this chapter, the authors referred to the rest of psychology as relying on the weakness or pathology model, and proposed the handbook was intended to be "yet another marker of this declaration of independence" (p. 752). Similarly, Seligman et al. (2005) stated that the studies of positive and negative aspects of human psychology represented "two separate endeavors" (p. 875).

Again, it is important to note that not all positive psychologists have advocated for such a separatist view. Even Seligman (2005) suggested that the goal of the positive psychology movement is to facilitate a more comprehensive and balanced understanding of the human experience, as to supplement psychology's understanding of pathology rather than to replace it.

Cultural Diversity Issues

Lastly, critics have pointed out that while positive psychology aims to develop a science of positive functioning that is valid across cultures, the bulk of positive psychology research has been conducted using privileged Western samples (Fernández-Ríos & Novo, 2012). A bibliometric analysis of PPIs that employed randomized controlled trials (RCTs) from 1998 to 2017 found that 78.2% of the studies of the188 RCTs from 24 countries were conducted in western countries. (Hendriks, Warren, Schotanus-Dijkstra, Hassankhan, Graafsma, Bohlmeijer, & de Jong, 2019). All these countries are highly industrialized and democratic, and study populations are often highly educated and have a high income. This is particularly problematic

according to the critics in that positive psychology tends to assume Western ideals of individualism. This assumption results in cultural myopia in its focus on increasing personal happiness and on building of character strengths, without giving due consideration to cultural differences or alternative routes to flourishing (Christopher & Hickinbottom, 2008; Christopher, Richardson, & Slife, 2008; Held, 2005; Joshanloo, 2014; Kristjánsson, 2010). As Seligman and colleagues (2005) themselves noted, many of their successful interventions were documented only in samples that were largely well-educated, White, and financially comfortable.

While it is true that much of the positive psychology research has involved samples that are relatively homogenous compared to the scope of theory in positive psychology, the theoretical framework is often based on literature from a variety of cultures (Dahlsgaard, Peterson, & Seligman, 2005). In addition, there is now a substantial and growing body of cross-cultural research on positive psychology (e.g., Brdar & Kashdan, 2010; Duan, Ho, Tang, Li, & Zhang, 2014; Littman-Ovadia & Lavy, 2012), and research suggests that there has been a steady increase in publications from non-Western countries since 2012, suggesting a possible trend towards the globalization of positive psychology research (Hendriks et al., 2019). It should be noted, however, that a recent study demonstrating consistency in scores on measures of character strengths across cultures raised concerns about the degree to which existing samples in positive psychology are capable of strong tests of cross-cultural consistency (McGrath, 2014). Such samples are largely collected online, a vehicle that even in non-Western countries is likely to collect WEIRD samples (Henrich, Heine, & Norenzayan, 2010): Westernized, Educated, Industrialized, Rich, and Democratic. It is uncertain, then, to what extent the findings would generalize, especially to non-literate cultures or even to Americans of lesser means.

The VIA Classification of Strengths and Virtues

The development of a useful classification system for human strengths was identified as an important early goal for the positive psychology movement. Christopher Peterson was charged with leading this project. It was originally called the Values in Action (VIA) project, though VIA has since become an orphaned acronym.

The first goal of the VIA project was the development of a comprehensive model of character strengths. Character strengths have been defined as "positive traits reflected in thoughts, feelings, and behaviors" (Park et al., 2004, p. 603). Peterson and Seligman (2004) identified ten criteria for character strengths:

- Strengths contribute to the pursuit of optimal functioning and well-being.

- Strengths are morally valued apart from any particular benefit.

- The display of a strength is beneficial to witnesses.

- Antonyms cannot be expressed as desirable.

- Strengths can be measured in one's behavior or actions.

- Strengths are distinct from one another.

- There are past and present persons who epitomize character strengths.

- Strengths can manifest to a substantial degree early in one's development.

- It is possible for a person to be devoid of certain strengths.

- Institutions have been created with a dedication to cultivating strengths and virtues (e.g. art institutions, religious institutions).

Niemiec (2013) identified several additional properties shared by the character strengths:

- Character strengths are a subset of personality variables and are susceptible to changes in their display across different contexts.

- Character strengths are measurable, and the VIA-IS has been important to the scientific measurement and study of character.

- Character strengths are conceptualized as dimensional rather than categorical.

- Character strengths are interdependent and rarely manifest in isolation. Rather, they are conceptually linked to one another. The interactions among character strengths may enhance the expression of some strengths and hinder the expression of others.

- Character strengths can be developed through intentional activities. The focus is on removing engrained patterns of behavior and adopting new patterns.

- Character strengths should be used in a balanced manner.

- Character strengths have important consequences. The expression of character strengths, especially signature strengths, likely result in many benefits as well as unique consequences.

In terms of identifying candidates to be considered for inclusion in the model, the moral implications of strengths were considered particularly important. Peterson and Seligman (2004) considered this attribute the most important for distinguishing character strengths from personal talents or abilities. Related to this focus on the moral element, the authors considered the existence of paragons, role models for the strength, and in the existence of social practices and rituals across cultures that are intended to cultivate the development of some attribute as good markers for a true character strength (Park & Peterson, 2008). As the result of a three-year process that involved over 50 experts on positive functioning, the final list included 24-character strengths (Peterson & Seligman, 2004).

Character strengths have been described as the psychological elements that allow individuals to display virtues, or human goodness (Peterson & Seligman, 2004). The strengths are each considered reflective of one of six broad virtues: Wisdom & Knowledge, Courage,

Humanity, Justice, Temperance, and Transcendence. The six virtues were identified through a review of moral texts from eight cultural traditions: Confucianism and Taoism in China; Buddhism and Hinduism in South Asia; and Athenian philosophy, Judaism, Christianity, and Islam in the West (Dahlsgaard et al., 2005). These traditions were selected for their enduring influence on modern value systems and for the availability of seminal texts addressing the nature of virtue. This combination of 24 key character strengths reflecting six social virtues is referred to as the VIA Classification of Strengths and Virtues.

The six virtues and their corresponding strengths include the following:

- Wisdom and knowledge: creativity, curiosity, open-mindedness/judgment, love of learning, and perspective.

- Courage: authenticity/honesty, bravery, perseverance, and zest

- Humanity: kindness, love, and social intelligence

- Justice: fairness, leadership, and teamwork

- Temperance: forgiveness, modesty, prudence, and self-regulation

- Transcendence: appreciation of beauty and excellence, gratitude, hope, humor, and spirituality/religiousness.

Research suggests that character strengths can be clearly identified, cultivated, used, and strengthened through regular practice, and therefore have been incorporated in interventions aimed and enhancing life satisfaction (Proyer, Gander, Wellenzohn, & Ruch, 2015).

Though people vary in their tendency to demonstrate the various strengths, it is hypothesized that each person can express any of the 24-character strengths in the VIA Classification depending on the situation. However, some strengths are easier and more natural for the individual to express, and these are referred to as the individual's signature strengths.

Other strengths are believed to arise in particular situations where they are needed, and so are expressed to a lesser degree or with lower frequency. Character is not viewed as a fixed state, but rather as a dynamic construct. Research on the use of the 24-character strengths has found that using one's strengths has a positive and long-lasting impact on happiness (Lavy, Littman-Ovadia, & Bareli, 2014; Proyer, Wellenzohn, Gander, & Ruch, 2014; Proyer et al., 2015).

The VIA Inventory of Strengths

To contribute further to the study of character and virtues, the VIA Inventory of Strengths (VIA-IS; Peterson & Seligman, 2004) was developed as a measure of the 24-character strengths for adults. The instrument was originally 240 items long, though in recent years a 120-item version has been developed based on corrected item-total correlations. Since the test's development in 2004, over four million people have taken the VIA-IS and it has been translated into 38 languages (http://www.viacharacter.org/www/Character). The VIA-IS is available to the public, free of charge, online through the VIA Institute website (www.viacharacter.org).

Despite the importance and success of the VIA-IS, the inventory can be criticized on several grounds (McGrath, 2019):

(1) Peterson and Seligman (2004) did not identify criteria used for item selection other than that the items did not detract from scale reliability.

(2) Scale scores correlate substantially, potentially because of poor discrimination among scales.

(3) All items are positively keyed, allowing a response bias to result in very high scores.

(4) Though virtue measurement is a topic of some interest (e.g., Curren & Kotzee, 2014), direct measures of the virtues were never developed.

(5) The six-virtue hierarchical model, which was based on a text analysis of materials from various moral traditions (Dahlsgaard et al., 2005), does not emerge in empirical studies of the

24-character strengths (McGrath, 2014). The most reliable model to date has consisted of three global factors that can be called Caring, Inquisitiveness, and Self-Control (McGrath, 2015).

(6) Problems were identified with several of the scales in particular. Some items on the Spirituality scale focused on religious practices. This was seen as an obstacle to the instrument's universal adoption, both because of privacy issues and because it biased the scale towards an ecclesiastical conception of spirituality. The Self-Regulation scale also had several items gauging health habits that could be considered sensitive or even protected information in employment settings. Finally, the Leadership scale proved less cohesive than most (McGrath, 2014), because many of the items reflected fairness while in a leadership position rather than general leadership abilities.

It should also be noted that a variety of authors have objected to the assumption underlying the instrument that higher scores are consistent indicators of better functioning. It has been suggested that overuse of a character strength can be just as problematic as its underuse, (Grant & Schwartz, 2011; Niemiec, 2014). In his classic reference on the nature of virtue, the *Nicomachean Ethics* (Bartlett & Collins, 2007), Aristotle proposed—though the principle existed earlier in Greek thinking—that virtuous action represented a middle way between deficiency and excess, a concept now frequently referred to as the *golden mean*.

Similar statements have been made about character and signature strengths. Schwartz and Sharpe (2006) highlighted the need for wisdom to discern how different strengths may be most effective in different contexts, and Peterson (2006) suggested psychopathology could be understood in terms of overuse and underuse of strengths. For example, he described the absence or insufficiency of curiosity as disinterest, a tendency that could lead to stagnation in

relationships, work, and school, which could manifest in a variety of clinical symptoms and syndromes. Its exaggeration, which Peterson labeled "morbid curiosity," he described as excessive inquisitiveness with a tendency to sacrifice sensitivity, social boundaries, and other interests in order to satisfy one's curiosity. The result is often defensiveness and vigilance among the targets of that curiosity. Morbid curiosity might manifest in individuals who demonstrate an obsessional preoccupation with others.

Niemiec (2014) suggested the limits of overuse and underuse of a character strength may vary depending on the situation. Alternatively, Freidlin, Littman-Ovadia, and Niemiec (2017) recently developed an instrument called the Strengths Use Questionnaire that measures the general tendency for an individual to overuse or underuse the 24 strengths. They found that individuals who primarily used their character strengths optimally were more satisfied, while individuals who primarily underused or overused their strengths were more depressive.

Positive Interventions

Positive interventions are treatment methods or activities aimed at cultivating positive feelings, positive behaviors, or positive cognitions, and much of the research conducted in the field of positive psychology has focused on the effectiveness of these interventions. It should be noted that many such interventions predated the positive psychology movement. As mentioned, positive psychology overlaps substantially with previous movements including humanistic psychology, and many interventions developed within the positive psychology movement overlap with techniques developed and practiced elsewhere including mindfulness from the Buddhist tradition, goal pursuit from cognitive therapy, and exploring values from acceptance and commitment therapy (Schueller, Kashdan, & Parks 2014). Other interventions that predate the current positive psychology movement include those that use humor, forgiveness, savoring

and gratitude, among others (Schueller et al., 2014). Positive psychology has, however, enhanced interest in the use and development of such interventions.

Seligman and colleagues (2005) provided examples of several positive interventions that specifically emerged out of positive psychology, a subset of positive interventions that can be called positive psychology interventions. These included:

- *Gratitude visit*: Participants were given one week to write and then deliver a letter of gratitude in person to someone who had been especially kind to them but had never been properly thanked.

- *Three good things in life*: Participants were asked to write down three things that went well each day and their causes every night for one week. In addition, they were asked to provide a causal explanation for each good thing.

- *You at your best*: Participants were asked to write about a time when they were at their best and then to reflect on the personal strengths displayed in the story. They were told to review their story once every day for a week and to reflect on the strengths they had identified.

- *Using signature strengths in a new way*: Participants were asked to complete the VIA-IS online and were provided individualized feedback about their top five strengths. They were then asked to use one of these top strengths in a new and different way every day for one week.

- *Identifying signature strengths*: This exercise was a variant of the one just described, without the instruction to use signature strengths in new ways. Participants were asked to take the survey, to note their five highest strengths, and to use them more often during the next week.

As evidenced by the last two interventions described, a common feature among positive interventions, at least those that have emerged out of positive psychology, is the enhancement of

personal strengths as a means of improving personal functioning. This subset of positive

interventions represent SBPIs (Gander, Proyer, Ruch, & Wyss, 2013; Proyer, Gander,

Wellenzohn, & Ruch, 2015). As noted previously, the SBPIs represent the clearest product of the

development of positive psychology interventions. SBPIs were developed under the assumption

that strengths are malleable, so that enhancement of those strengths is reasonable and a potential

contributor to flourishing (Proyer et al., 2015).

To summarize, positive interventions have a long history. The emergence of positive

psychology has encouraged development of a number of new interventions that could be called

positive psychology interventions. Of these, perhaps the most clearly related to positive

psychology are the SBPIs.

Critique of Positive Psychology Interventions

Like positive psychology in general, positive psychology interventions have been a target

for criticism. These criticisms have focused largely on (1) a lack of definitional consensus; (2)

potential risk factors associated with the interventions; (3) methodological and empirical issues;

and (4) excessive focus in the outcomes on experiential variables such as self-reported

depression and well-being.

Wong and Roy (2017) found a good deal of variation in definitions of positive

psychology interventions. Seligman and Csikszentmihalyi (2000) originally defined positive

psychology interventions as those aimed at cultivating thriving in individuals, families, and

communities. Positive psychotherapy, presumably the context in which positive clinical

interventions would be implemented, was defined as aiming to increase positive emotions,

character strengths, and meaning (Seligman, Rashid, & Parks, 2006). Parks and Biswas-Diener

(2013) broadened this definition in terms of three broad foci for positive intervention: (1)

interventions that focus on positive topics, (2) interventions that utilize a positive mechanism or target a positive outcome variable, and (3) interventions that aim to promote wellness, rather than fix weakness. Hayes (2013) suggested that the positive function of a positive psychology intervention depends on the context, in that the person's context dictates adaptive ways to relate to both positive and negative emotions. Finally, Rashid et al. (2014) described positive psychotherapy as considering both symptoms and strengths in a realist way without minimizing or discounting either. The practitioner could be hard-pressed to decipher what positive psychology interventions really entail from this diversity of definitions.

The definition of positive psychology interventions offered by Sin and Lyubomirsky (2009), "treatment methods or intentional activities that aim to cultivate positive feelings, behaviors, or cognitions," provides a useful framework for discussing some of the issues in understanding interventions inspired by positive psychology. The definition combines "treatment methods" and "intentional activities." The latter would seem more casual, with the likely goal of achieving self-improvement. The former represents a more formal class of interventions that are likely to have the amelioration of negative conditions as their goal. The scope of positive psychology interventions could be seen as encompassing both clinical and counseling/coaching efforts.

It has been suggested that some positive psychology interventions carry risk factors that have yet to be evaluated (Wong & Roy, 2017). For example, Coyne (2014) raised concerns that depressed patients will perceive the focus on the positive as pressure on them to think good thoughts, be optimistic, and just "snap out" of their depression. There are also risk factors related to excessive optimism. For example, unrealistic optimism about one's future health outcomes has been associated with higher risk in the context of poorer knowledge of and attention to health

risk information and more risky behavioral intentions (Wong & Roy, 2017). On the other hand, some research suggests that unrealistic optimism actually does predict greater longevity (e.g., Peterson & Bossio, 2001; Taylor, Kemeny, Reed, Bower, & Gruenewald, 2000).

Third, several authors have criticized the quality of the existing research on positive psychology interventions. Issues include reliance on small sample sizes and the attendant lack of statistical power (Wong & Roy, 2017). Biswas-Diener (2015) noted that an evaluation of the replicability of studies published in *The Journal of Positive Psychology* resulted in a grade of C for the journal, suggesting that many of the studies in the journal are unlikely to replicate, and there has been little evidence of change in the replicability of studies in this journal over time.

Two recent meta-analytic reviews of selected clinical trials illustrate some of the methodological issues. Sin and Lyubomirsky (2009) reviewed results from 51 interventions and found moderate-sized enhancement of well-being and improvement in depressive symptoms. Bolier et al. (2013) evaluated results from 39 studies. They found mean d values varying between 0.20 and 0.34 for subjective well-being, psychological well-being, and depression. Both studies have since been extensively criticized. Coyne (2014a) thought Bolier et al. underemphasized the poor quality of the studies that primarily contributed to the positive findings. The same author (Coyne, 2014b) criticized the former review for, among other issues, combining studies using random and non-random assignment, combining studies that used varying standards for depression, failing to include any evaluation of the quality of the studies they reviewed, and using relatively poor indicators of effect homogeneity and publication bias.

One concern can be added to those raised by Coyne (2014a, b), which is the exclusive focus in the outcomes reviewed on experiential variables such as self-reported depression and well-being. The definition of positive psychology interventions offered by Sin and Lyubomirsky

focuses on both internal experiences (feelings and cognitions) as well as behavior. This aspect of the definition expands on the original conception of positive psychology, which focused on enhancing positive experiences and traits, to include improvements in behavior explicitly. In fact, though, an initial review of the literature on positive psychology interventions indicated that the substantial majority of studies conducted to evaluate such interventions were consistent with the original emphasis on experience over behavior. Specifically, in many studies outcome measures exclusively focused on experiences of depression, happiness, and well-being. In contrast, very few studies have explored the effectiveness of positive interventions for behavior change. Quinlan, Swain, and Velle-Brodrick (2012) provided recommendations for improving the quality of character strength interventions based exclusively on the impact of treatment on well-being. Schueller et al. (2014) considered the improvement of well-being a definitional component of a positive psychological intervention, though they explicitly acknowledged the importance of changing thoughts and behaviors for achieving that goal. However, as Sin and Lyubomirsky's (2009) definition of positive interventions suggests, effective interventions should have broader impacts than affect. In particular, behavioral change represents a key goal for any psychological intervention.

The Present Study

The purpose of the present study was to evaluate available evidence for SBPIs as a tool specifically for behavior change using meta-analysis. In taking on such a project, several questions concerning its scope had to be addressed. The first was whether to try to limit the review to literature that clearly emerged under the influence of the positive psychology movement. Schueller et al. (2014) criticized Bolier et al.'s (2013) review for excluding studies because they did not explicitly reference positive psychology as an inspiration. Doing so, they

suggested, created an arbitrary criterion, with studies evaluating the same intervention potentially included or excluded based on the stated inspiration for the study. The resulting effect sizes also do not represent a comprehensive representation of the SBPI literature and reduce the ability to draw accurate conclusions from the findings. More recent reviews evaluating the effect of positive interventions on well-being and optimism have not been limited to studies conducted in the context of positive psychology (Malouf & Schutte, 2016; Weiss, Westerhof, & Bohlmeijer, 2016). The current study will follow recent trends and include studies that base positive interventions on strength enhancement regardless of the influence of the positive psychology movement.

However, this expansion beyond positive psychology creates an obligation to identify the boundaries for the set of attributes to be considered personal strengths. For example, the ability to be reflective is not a strength in itself in the classic VIA taxonomy, but is clearly consistent with the concept of a character strength and would merit being considered a target for a SBPI. What characterizes a SBPI as an intervention would be that it targets specific elements of the stable positive functioning of the individual rather than symptom relief.

If SBPIs are to become more widely adopted by clinicians and coaches, it is important to evaluate their effectiveness across the spectrum of therapeutic goals or self-growth efforts, and behavior change is a key component of that spectrum. The current meta-analysis will therefore be conducted with the aim of evaluating the extent to which research exists evaluating SBPIs as methods of directly eliciting positive behavioral changes, and the extent to which existing interventions are effective for that purpose. Results from this study are intended to complement previous reviews that have focused on improved experience as an outcome of such interventions.

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Are Strength Based Positive Interventions Effective in Eliciting Positive Behavioral

Outcomes? A Meta-Analytic Review

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Abstract

Recent research on the effectiveness of strengths-based positive interventions (SBPIs) has focused on experiential outcomes such as depression and subjective well-being. Though such interventions have been suggested as an alternative to more traditional techniques that focus on deficit reduction, less is known about the effectiveness of these interventions for eliciting positive behavioral outcomes. The current meta-analysis was conducted with the aim of evaluating the extent how well SBPIs perform as methods of directly eliciting positive behavioral changes. A lengthy list of terms that could potentially indicate a focus on a personal strength was developed, and a systematic literature search was conducted using the PsycINFO, Medline, and Cochrane Central Register of Controlled Trials databases spanning all records from initiation of the database until February 2018. Twenty-three analyses were available across 17 articles that examined group differences in what was deemed a behavioral outcome. An analysis of pre-test data suggested that there was no difference between groups, mean g = -0.03. At post-test, the studies on average yielded a small, statistically significant effect size on average, g = 0.22, p = .02, 95% CI = [.03, .41]. This finding suggests that SBPIs were effective in eliciting small amounts of behavioral change relative to control conditions. However, there is currently no basis for drawing conclusions regarding when, and for whom, SBPIs may be most helpful. The number of studies included in the meta-analysis was small and indicates the need for more research to be conducted in this area. Future studies that examine the use of SBPIs should focus on behavioral outcomes, rather than or in addition to, affective experiences of depression and well-being.

Are Strength Based Positive Interventions Effective in Eliciting Positive Behavioral

Outcomes? A Meta-Analytic Review

Positive psychology has been defined as the scientific study of the positive aspects of human functioning (Seligman & Csikszentmihalyi, 2000). It aims, therefore, to identify and enhance human strengths and virtues that contribute to well-being, and help individuals flourish and thrive (Froh, 2004). The ultimate goal of positive psychology is to develop an empirically supported and publicly accessible framework for enhancing quality of life on both the individual and societal level (Seligman & Csikszentmihalyi, 2000). Researchers and clinicians interested in positive psychology very quickly turned to the development of interventions for improving functioning that will be referred to here as positive interventions. For example, in the first study examining interventions inspired by positive psychology, Seligman, Steen, Park, and Peterson (2005) evaluated several week-long positive interventions, including *gratitude visit* (writing and then delivering a letter of gratitude to someone the individual had never properly thanked) and *three good things in life* (writing down three things that went well each day and their causes every night).

Various definitions have been offered for positive interventions. Seligman and Csikszentmihalyi (2000) originally defined them as "effective interventions to build thriving in individuals, families, and communities" (p. 5). Parks and Biswas-Diener (2013) identified three broad foci for positive intervention: "(1) interventions that focus on positive topics, (2) interventions that operate by a positive mechanism or that target a positive outcome variable, and (3) interventions that are designed to promote wellness, rather than fix weakness" (p. 141). Sin and Lyubomirsky (2009, p. 468) defined positive interventions as "treatment methods or intentional activities that aim to cultivate positive feelings, behaviors, or cognitions." This

definition explicitly suggests positive psychology interventions include both clinically relevant interventions ("treatment methods") and more informal strategies such as coaching ("intentional activities"). Positive psychotherapy, a clinical subset of positive interventions, has been defined as aiming at "directly and primarily building positive emotions, character strengths, and meaning" (Seligman, Rashid, & Parks, 2006, p. 775).

Positive interventions are thought to differ from traditional forms of intervention in that the latter are often focused on symptom reduction or compensation for deficits. Positive interventions instead try to enhance positive elements of daily functioning, with the expectation that doing so will both produce positive benefits such as enhanced well-being and enhance the resources available to the individual for addressing personal deficits.

A particularly fertile source for new positive interventions has been research and model-building connected with the concept of character strengths. Character strengths have been defined as "positive traits reflected in thoughts, feelings, and behaviors" (Park, Peterson, & Seligman, 2004, p. 603). The most extensive model of these strengths is offered by the VIA Classification of Strengths and Virtues (Peterson & Seligman, 2004). The result of a three-year process that involved over 50 experts on positive functioning, the classification includes 24-character strengths—appreciation of beauty, bravery, creativity, curiosity, fairness, forgiveness, gratitude, honesty, hope, humility, humor, judgment, kindness, leadership, love, love of learning, perseverance, perspective, prudence, self-regulation, social intelligence, spirituality, teamwork, and zest. The strengths are each considered reflective of one of six broad virtues: Wisdom & Knowledge, Courage, Humanity, Justice, Temperance, and Transcendence. Intervention strategies that focus on character strengths can be referred to as strength-based positive interventions (SBPIs).

Ruch, Niemiec, McGrath, Gander, and Proyer (2019) have recently drawn a distinction between generic and personalized SBPIs. The former are based on the assumption that certain strengths, such as gratitude, are particularly beneficial, and so focus specifically on one or a small set of strengths. The latter are based on the assumption that the most beneficial strengths to enhance vary from person to person. These SBPIs usually involve some sort of assessment to identify which of a larger set of strengths are most useful as the target of intervention for each participant. For example, the treatment may begin with participants completing the VIA Inventory of Strengths (Peterson & Seligman, 2004), a measure of the VIA Classification strengths. Based on the participant's results, a subset of the 24 strengths is chosen, and the individual is instructed to engage in some activity focusing on those strengths. For example, Seligman et al. (2005) involved using test results to identify strengths that participants were told to use in a new way for the following week.

It should be noted that many positive interventions and SBPIs predated the positive psychology movement and are conducted outside the context of positive psychology. Examples of the former include mindfulness-based stress reduction (Kabat-Zinn, 2003), goal pursuit (Emmons & King, 1988), and exploring values (Hayes, Strosahl, & Wilson, 1999); examples of the latter include generic interventions that focus on attributes such as humor, forgiveness, savoring, and gratitude, among others (Emmons & Crumpler, 2000; Enright & Fitzgibbons, 2000; Malouff & Schutte, 2016; Martin, Kuiper, Olinger, & Dance, 1993; Weiss, Westerhof, & Bohlmeijer, 2016). However, the emergence of positive psychology has spurred the development of many more positive interventions, SBPIs in particular, and personalized SBPIs even more so (Niemiec, 2018). A substantial literature has now emerged evaluating the effectiveness of these

types of interventions (e.g., Gander, Proyer, Ruch, & Wyss, 2013; Proyer, Gander, Wellenzohn, & Ruch, 2015; Seligman et al., 2005).

In recent years, six reviews have been published specifically looking at positive interventions. Sin and Lyubomirsky (2009) conducted a meta-analysis of 51 comparisons from 49 studies published between 1977 and 2008. Studies were included if they compared a positive intervention that was primarily intended to increase positive feelings, behaviors, or cognitions to at least one comparison group; if measures of well-being or depression were collected pre- and post-intervention; and if sufficient information was available to generate a correlation between group and outcome. They did not limit the type of comparison condition and did not require random assignment to group. Interventions designed to improve physical well-being or that involved physical activity were excluded. Mood induction studies were also excluded, as their aim is to boost temporary mood rather than stable feelings of well-being. Based on their 51 comparisons, Sin and Lyubomirsky concluded that positive psychology interventions significantly enhanced well-being (mean r = .29) and decreased depressive symptoms (mean r = .31).

Bolier, Haverman, Westerhof, Riper, Smit, & Bohlmeijer (2013) conducted a similar meta-analysis of randomized controlled studies and evaluated the results of 40 articles describing 39 studies from 1998 (the beginning of the positive psychology movement) to November 2012. Studies were again included if they examined the effects of a positive psychology intervention, as defined in accordance with Sin and Lyubomirsky (2009); were developed within the theoretical orientation of positive psychology, as reported in the introduction section of the article; randomly assigned participants to active and control treatments; had results published in a peer-reviewed journal; noted changes in well-being or symptoms of depression (diagnosis or

symptoms); and included sufficient statistics to calculate a standardized mean difference. Bolier et al. (2013) concluded that positive psychology interventions were effective for the enhancement of subjective psychological well-being, and for reducing symptoms of depression, with mean *d* values varying between 0.20 and 0.34.

A third summary by Quinlan, Swain, and Vella-Brodrick (2012) was the first to focus specifically on SBPIs. The authors restricted their review to studies that involved personalized selection from a menu of strengths, most of which used the VIA Classification strengths as their starting point. Quinlan et. al. (2012) only included studies conducted outside of a clinical setting and focused on well-being. In addition, they prioritized studies that have included pre- and post-intervention measurement, a comparison group, and one or more effect sizes (partial eta squared) comparing the two groups. However, the authors included one unpublished study that did not include pre-intervention measures, and two studies that did not include control groups. They also allowed for the inclusion of studies with non-random assignment. Even so, Quinlan et. al., (2012) found only eight studies meeting their criteria. The authors found that all studies reported significant positive results in terms of well-being and academic self-efficacy. No effect sizes were calculated for this review.

Ghielen, van Woerkom, and Meyers (2017) conducted a follow-up to the Quinlan et al. (2012) article, reviewing a subsequent 18 studies, two of which were unpublished. Inclusion criteria were similar to those listed for Quinlan et al. (2012), though they allowed studies conducted in clinical settings and did not restrict the set of outcome variables. As in the previous study, no effect sizes were calculated, though some of the source articles provided effect sizes. The authors found results were consistently supportive for a variety of outcomes, but when available effect sizes tended to be small to moderate.

A meta-analysis conducted by Schutte and Malouff (2018) was similarly intended to build on the review by Ghielen et al. (2017). They focused specifically on SBPIs using signature strengths. Signature strengths have been defined as character strengths that are easier, more energizing, and more natural for an individual to express (Peterson & Seligman, 2004). To be included, studies must have had an intervention that involved the identification and increased use of signature strengths; did not combine the signature strengths intervention with other positive psychology interventions; and included a control condition as well as sufficient statistical results to calculate an effect size suitable for meta-analysis. The authors included studies with non-random assignment and looked at random assignment as a moderator. Schutte and Malouff (2018) noted that many outcomes may result from signature strengths interventions (e.g., increases in positive affect, decreases in symptoms of depression, increases in life satisfaction, etc.), and wanted to examine each type of outcome separately. Therefore, a study must have reported an outcome of a type included in at least one other study eligible for inclusion, so that at least two effect sizes were available for any outcome. The meta-analysis was based on 29 effect sizes from 14 articles and included several types of outcomes. In nine studies, signature character strength interventions had a significant impact on positive affect or happiness, with a weighted Hedges' *g* of 0.32. Across seven studies, signature strength interventions significantly reduced depression compared to control, with a weighted Hedges' *g* of 0.21. Across seven analyses, signature strengths had a significant impact on increasing life satisfaction, with a weighted Hedges' *g* of 0.42.

Lastly, Chakhssi, Kraiss, Sommers-Spijkerman, and Bohlmeijer (2018) conducted a systematic review and meta-analysis of the effect of positive psychology interventions on well-being and distress in clinical samples with psychiatric or somatic disorders. Studies were

included in the meta-analysis if they included a positive psychology intervention consistent with the criteria described by Sin and Lyubomirsky (2009); had adult participants (18 years or older) with clinical psychiatric or somatic disorders; used an outcome measure of social, emotional, or psychological well-being; had a control condition; provided an effect size or sufficient information to calculate an effect size; and were published in an English-language peer-reviewed journal between January 1998 and May 2017. The authors included studies with non-random assignment. Like Sin and Lyubomirsky, they excluded interventions focusing on physical exercise, reminiscence, mindfulness, and/or meditation. At post-intervention, positive psychology interventions showed significant, small effect sizes for well-being (Hedges' $g = 0.24$) and depression ($g = 0.23$) compared to control conditions when omitting outliers. Significant moderate improvement was observed for anxiety ($g = 0.36$).

Several authors have criticized the quality of these reviews. Coyne (2014a) noted that Bolier et al. (2013) underemphasized the poor quality of the studies they included in their meta-analysis. The same author (Coyne, 2014b) also criticized Sin and Lyubomirsky (2009) for, among other issues, combining studies using random and non-random assignment, combining studies that used varying standards for depression, failing to include any evaluation of the quality of the studies they reviewed, and using relatively poor indicators of effect homogeneity and publication bias.

Another concern one can raise about existing research on interventions derived from positive psychology is an over-emphasis on certain classes of outcomes. Specifically, Coyne (2014a, b) criticized both Bolier et al. (2013) and Sin and Lyubomirsky (2009) for focusing

exclusively on experiential variables such as self-reported depression and well-being.[1] This issue applies to several of the other reviews summarized as well. Quinlan et al. (2012) provided recommendations for improving the quality of SBPIs based exclusively on the impact of treatment on well-being. Schueller, Kashdan, & Parks (2014) considered the improvement of well-being a definitional component of a positive psychological intervention, though they explicitly acknowledged the importance of changing thoughts and behaviors for achieving that goal. Schutte and Malouff (2018) noted that future research should focus on a broader variety of outcomes, such as work-related outcomes or health-related behavior outcomes.

The breadth of outcomes examined in positive intervention research is important, because the popularity of positive psychology has in part resulted from a belief that positive psychology interventions offer a viable alternative to traditional strategies that focus on correcting deficiencies or symptoms in the individual. The purpose of the present study was to conduct a meta-analysis evaluating evidence that SBPIs and PPIs are particularly useful for encouraging behavioral change. In taking on such a project, several decisions had to be made about its scope. The first decision had to do with whether to limit the review to literature that clearly emerged under the influence of the positive psychology movement. Schueller et al. (2014) criticized Bolier et al.'s (2013) review for excluding studies that did not explicitly reference positive psychology as an inspiration. Doing so, they suggested, created an arbitrary boundary to inclusion, with studies evaluating the same intervention included or excluded primarily based on what the authors chose to state in their articles. The current study included studies that base

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[1]Conceptually, depression has both affective/experiential and behavioral components. When represented by a single score, though, it is unclear the extent to which scores on depression measures reflect both elements of the construct. Prior studies have reported substantial correlations ($> .50$) between measures of depression and measures of well-being and happiness, for example (Ryff & Keyes, 1995; Watson & Naragon-Gainey, 2009).

positive interventions on strength enhancement regardless of reference to the positive psychology movement. Any study that targeted an enduring element of the participant's positive functioning was considered for inclusion.

The second decision was whether to limit inclusion to SBPIs and PPIs, or to include positive interventions in general. The decision was made to limit inclusion, for several reasons. First, the availability of lists of terms that were inspired by positive psychology or that specifically reference character strengths simplified the search process of finding interventions that focused on enhancing positive aspects of human functioning, but still allowed the search to predate the positive psychology movement. Second, many mental health professionals have advocated what could be considered positive forms of intervention across the history of psychotherapy. As noted earlier, positive psychology has focused particular attention on SBPIs as a framework for intervention.

Third, the review was not limited to studies examining what could be considered clinical or health service interventions. SBPIs are extensively used in settings that can more accurately be described as counseling or coaching (Linley & Harrington, 2005; Park & Peterson, 2008). Sin and Lyubomirsky (2009) explicitly noted that although PPIs may be an option for treating a variety of mental disorders, they can be particularly useful for addressing a paucity of positive affect, engagement, and life meaning in non-clinical samples. Consistent with popular use, this review combines results across treatment settings. To summarize, the focus of this meta-analysis was on the use of SBPIs, broadly conceived, to enhance outcomes likely to be indicative of behavioral functioning across both clinical and non-clinical settings.

<center>**Method**</center>

Search Strategy

A lengthy list of terms that could potentially indicate a focus on a character strength was developed through a review of literature and discussion among contributors to the study (see Appendix). A systematic literature search was conducted using the PsycINFO, Medline, and Cochrane Central Register of Controlled Trials databases spanning all records from initiation of the database until February 2018. Identified studies had to include one or more terms in the Appendix plus one or more of the following terms: *therapy, psychotherapy, treatment, intervention,* or *trial.* The initial search generated 769,202 references (see Figure 1).

The following criteria for inclusion were adopted:

(1) The reference was published in a peer-reviewed, English-language venue.

(2) The study included an intervention that focused on at least one of the strengths listed in the Appendix.

(3) The study included a comparison condition. Random assignment was not required.

(4) At least one outcome measure reflected a change in participant behavior rather than an emotional experience or attitude. This was conceptualized as an observable change in behavior.

(5) Sufficient statistics were reported to enable the calculation of a standardized mean difference between the active and comparison conditions, or study authors were able to provide sufficient statistics upon request.

An initial review by the first author excluded 178,773 citations because they were not in a peer-reviewed source or were not written in English. Another 9,413 were excluded from the Cochrane Central Register of Controlled Trials because results were not yet available. The first

author reviewed the titles and abstracts of the remaining 581,016 titles and excluded 498,367 studies that were duplicates, off-topic, or not empirical studies. The abstracts for the remaining 82,649 publications were screened again by the first author, and 79,601 studies were excluded because they clearly did not meet inclusion criteria.

The full texts of the remaining 3,048 articles were reviewed by the first author. Of those, 2,655 were excluded because they clearly did not meet all the inclusion criteria. Next, 393 full-text articles were each assessed for eligibility by two of five doctoral students in clinical psychology who were involved in research on character strengths and virtues. Disagreements between the reviewers were resolved by a third reviewer. This process excluded 376 articles. Of these articles, 316 were excluded due to the absence of any clearly behavioral criterion. The final pool consisted of 17 articles. Examples of observable behavioral changes that were identified as meeting inclusion in the study included academic engagement, learning behaviors, prosocial behaviors, externalizing behaviors, goal attainment, career exploration, work performance, and alcohol consumption. See Table 1 for the full list of included behavioral change measures.

Data Extraction

The first author extracted the data. Twenty-three analyses were available across the 17 articles that examined group differences in what was deemed a behavioral outcome. Additionally, the following potential moderators were extracted by the first author and one doctoral student, for each of the studies:

- Age: child, adolescent/emerging adult, or adult
- Sample: school students, college students, student athletes, adults, or medical
- Setting: academic, community sample, or clinical sample
- Live versus on-line intervention

- Self-guided versus supervised intervention

- Group versus individual intervention

- Self-selected to participate versus enrolled in the intervention (e.g., children in a classroom)

- Random versus non-random assignment to condition

    In addition, two doctoral students independently evaluated each study for risk of bias. Seven potential contributors to bias were evaluated according to the guidelines provided by the Cochrane Collaboration's tool for assessing risk of bias (Higgins, Altman, Gøtzsche, Jüni, Moher, Oxman, . . . 2011): random sequence generation, allocation concealment, blinding of participants and personnel, blinding of neurocognitive outcome assessment, blinding of behavioral outcome assessment, incomplete outcome data, and selective reporting. A detailed explanation of each of these can be found in the appendix. Raters evaluated each study on each of the seven contributors as low, unclear, or high risk of bias. In cases of disagreement, consensus was reached through discussion.

Statistical Analysis

    Statistics were computed using Comprehensive Meta-Analysis, Version 3.0 (Borenstein, Hedges, Higgins, & Rothstein, 2013). Effect sizes were weighted using the inverse-variance method for a random-effects model. Heterogeneity was evaluated using the Q-test and I^2 statistic. Various estimates of publication bias were considered, including the funnel plot, the trim and fill procedure, the rank correlation between effect size and standard errors, Egger's regression intercept, and the fail-safe N. Meta-regression analyses were conducted to evaluate potential moderating effects of variables related to participant demographics and study design.

Results

For the studies included in the meta-analysis, the average length of a SBPI was about 9 weeks (median = 7 weeks; range = 2-32 weeks). The average sample size was 242.64 post-test participants (median = 53; range = 20-2,517 participants). Thirteen of the 17 studies used random assignment. In two studies (Akhtar & Boniwell, 2010; Ouweneel et al., 2013) the method of assignment was not adequately described. One study (Littman-Ovadia et al., 2014) utilized a quasi-blind condition in which psychologists were informed that some of their clients would be assigned to the comparison group and that they were to conduct their counseling sessions as usual. Quinlan et al., (2014) included a classroom in the intervention group in each school chosen non-randomly. Specifically, one class from each of the six schools was assigned to the intervention group while a further three classes from three of the schools were assigned to the control group. Assignment to condition was not random within schools that had two classrooms, as the school principals nominated class groups to conditions. See Table 1 for a summary of the articles.

An analysis of pre-test data suggested that there was no difference between groups, mean $g = -0.03$. At post-test, the studies on average yielded a small, statistically significant effect size on average, $g = 0.22$, $p = .02$, 95% CI = [.03, .41]. This finding suggests that SBPIs were effective in eliciting small amounts of behavioral change relative to control conditions. A forest plot of results across studies is presented in Figure 2. The effect sizes for each behavioral outcome were calculated and are displayed in Table 2. SBPIs had a significant effect on behavior ($p < .05$) in only three studies.

It should be noted that in 11 of the 23 studies, treatment was administered in clusters of participants (e.g., classrooms), while 12 provided treatment individually. Individuals within the

same cluster represent non-independent observations, which can result in underestimated standard errors and inflated effect sizes when statistics are computed as if they were independent (Ahn, Myers, & Jin, 2012). Therefore, studies in which treatment is administered in clusters should correct for this group effect. Research suggests correcting the effect size computed at the cluster level, and its associated variance from the clusters, using an intraclass correlation (Hedges, 2009). This statistic, which estimates the level of dependence among clustered observations, was not reported in any of the studies that provided treatment in groups included in the current meta-analysis. The What Works Clearinghouse (2008) recommended using a default intraclass correlation value of .10 for behavioural outcomes. Since the number of participants in the clusters were also never reported, but the number of clusters was, the average number of participants per cluster was used. When this analysis was computed for the current study, it had little effect on the random effects estimate of g, which remained .22, but the confidence interval shifted slightly, [.03, .41], suggesting an even smaller overall effect when correcting for the group effect.

Risk of Publication Bias

A funnel plot was created to examine potential publication bias (see Figure 3). Five studies fell outside of the expected range, and plot asymmetry was tested using various methods. The trim and fill method estimated that four additional studies were missing from the left side (lower effect sizes) of the funnel. This suggests the presence of publication bias, as well as a revised estimate of the true effect size to $g = 0.05$. Of note, the trim and fill method does not take into account reasons for funnel plot asymmetry other than publication bias. Therefore, the corrected intervention effect estimates from this method should be interpreted with caution (Higgins & Green, 2011). The method is also known to perform poorly in the presence of

substantial between-study heterogeneity (Peters, Sutton, Jones, Abrams, & Rushton, 2007; Terrin, Schmid, Lau, & Olkin, 2003). All other methods reviewed did not show the presence of bias. Specifically, neither the post rank correlation, $z = 1.02$, $p = .15$, nor the Egger's test, $t(15) = 0.96$, $p = .35$, was significant. The fail-safe N value generated was 79, suggesting that more than four times the number of observed studies would have to have been missing to increase the p value above .05. Taken together, these results indicate that there is not a high likelihood that publication bias inflated the mean effect size in favor of the intervention condition.

A qualitative assessment of risk of bias using the Cochrane criteria was conducted, a summary of which is presented in Table 2. Selection bias results from problems in the method used to generate the participant assignment (i.e., random vs non-random) and concealment bias arises from a systematic difference in how participants are assigned to treatment groups and comparison groups. Performance bias results from problems in the measures used to blind study participants from the knowledge of which intervention they received, while detection bias results from problems in the measures used to blind outcome assessors from knowledge of which intervention a participant received. Attrition bias is a systematic error caused by unequal loss of participants across conditions. Lastly, reporting bias arises from the selective revealing or suppression of information by participants. If a sufficient information was provided to judge whether a certain source of bias was present, it was labeled "unclear," and if it was not applicable to the study is was labeled "N/A." Most studies were adequately blinded, with the vast majority randomizing appropriately. Performance bias was deemed high in four studies. Detection bias was largely not applicable, though it was deemed high in two studies. Attrition bias was either low or unclear, and reporting bias was largely unclear, though it was high for one study. It should be noted that the Cochrane standards are quite stringent. They require that

double-blind procedures be used, and that authors report enough information to determine the degree to which allocation assignment could have been foreseen at any time during the study, which is often not a requirement for publication.

Moderating Variables

There was evidence of a high degree of heterogeneity. Estimates of g across studies varied between -0.61 and 1.19, Q (16) = 70.26, $p < .01$, $I^2 = 77.23$. A simple meta-regression was conducted for each potential moderator (live vs. online, age group, setting, self-guided vs. instructed, group vs. individual)l. Analyses from a simultaneous regression evaluating potential moderators indicated that none of the moderators examined was significant at $p < .05$. Only one potential moderator, academic versus clinical setting, even came close to approaching significance ($p = .06$). When analyses were conducted individually, no moderators approached significance. Therefore, no further efforts were made to account for the marked heterogeneity of the results.

<div align="center">

Discussion

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Across 17 studies, SBPIs had a small, statistically significant effect on behavioral outcomes, with a mean effect size of $g = 0.22$. While this mean effect is considered small by Cohen's benchmarks (Cohen, 1988), it is consistent with results from other meta-analyses that focused on similar behavior change variables. For example, Knight, Patterson, and Dawson (2017) found a mean g for interventions targeting work engagement of 0.29. Tanner-Smith and Risser (2016) reported a mean g for brief alcohol interventions and reductions in self-reported alcohol use among adolescents of 0.25. Durlak, Weissberg, Dymnicki, Taylor, and Schellinger (2011) found a mean g of 0.27 for school-based interventions used to enhance academic performance. Thus, the associations between SBPIs and behavioral outcomes observed in the

current meta-analysis are consistent with results for other intervention approaches. When correcting for group effect, however, the confidence interval shifted slightly, [.03, .41], suggesting that the overall effect is potentially even smaller than initially observed.

This study was intended to provide evidence-based answers to help clinicians determine if utilizing SBPIs with clients looking to make behavioral modifications is appropriate. This question regarding the ability of SBPIs to elicit behavior change has important implications for recommendations about the use of these interventions and could help to identify the contexts in which SBPIs could be most or least likely to benefit treatment recipients. When 393 full-text articles were assessed for eligibility by two reviewers, 316 were excluded due to the absence of any clearly behavioral criterion. Most studies focused exclusively on affective and experiential variables such as depression, subjective well-being, and psychological well-being. Ultimately, with a pool of 17 studies, there is currently no basis for drawing firm conclusions regarding when, and for whom, SBPIs may be the most appropriate behavior change techniques.

In conceiving positive psychology, Seligman and Csikszentmihalyi (2000) delineated a fundamental commitment of the field to maintain positive psychology as a science that is subject to the same rigor and standards as any social science. As discovered during the large literature search conducted for this meta-analysis, research on positive psychological interventions, and SBPIs in particular, has focused almost entirely on affective experiences, such as depression and well-being, and has largely neglected indicators of behavioral change. Therefore, future research should look specifically at how these interventions affect behavior.

Limitations

The quality of the meta-analysis is only as good as the quality of the reviewed studies, and as mentioned above, some had methodological flaws. With regards to publication bias, it

could be helpful if future studies were clearer in terms of the Cochrane bias criteria, though the funnel plot conducted for this study did not suggest the overall presence of bias. In addition, because the initial search generated such a large number of references ($n = 769{,}202$), many studies were reviewed by a single person. A double review was only performed on 393 full-text articles. With such a large number of references, it is also possible that studies that met criteria for the meta-analyses were unintentionally missed, and therefore not included. Finally, the number of studies that ultimately met inclusion for the meta-analysis was quite small ($n = 17$) due to the lack of behavioral outcomes. Thus, the results must be interpreted cautiously given that the findings reported here are based on a small number of studies.

Conclusions

While much interventional research has focused on the effectiveness of SBPIs on depression and subjective well-being, less is known about the effectiveness of these intervention in eliciting positive behavioral outcomes. At this point, the most appropriate conclusion from the available research that SBPIs can be effective in eliciting positive behavioral outcomes. However, the number of studies included in the meta-analysis was small and suggests the need for more research to be conducted in this area. Future studies that examine the use of SBPIs should focus on behavioral outcomes, rather than or in addition to, affective experiences of depression and well-being.

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Table 1
Summary of Analyses Included in the Meta-Analysis.

Authors	Intervention/Activity	Length of Intervention	Behavioral Measure	Age	Sample	Setting	Live vs Online	Self-guided vs. Supervised	Group vs Individual Training	Self-Selected vs. Non	Random Assignment vs. Non
Walker & Lampropoulos (2014)	PP homework-volunteering	2 weeks, 4 hours	Behavioral Activation for depression Scale (BADS)	adol/emerging adult	43 college students with mild depression	academic	live	self-guided	individual	self-selected	random
Sergeant & Mongrain (2014)	optimism based PPI	3 weeks	Orientation to Happiness Scale (OTH) -engagement	adult	166 adults interested in becoming happier	community	online	self-guided	individual	self-selected	random
Ouweneel et al. (2014)	Thoughts of Gratitude	5 weeks	Utretch Work Engagement Scale-Student: academic engagement	adol/emerging adult	50 college students	academic	online	supervised	individual	self-selected	random
Ouweneel et al. (2014)	Acts of Kindness	5 weeks	Utretch Work Engagement Scale-Student: academic engagement	adol/emerging adult	50 college students	academic	online	supervised	individual	self-selected	random
Akhtar & Boniwell (2010)	PPI for alcoholism	8 weeks	alcohol consumption	adol/emerging adult	20 mental health/"substance misuse"	clinical	live	supervised	group	non self-selected	unclear
da Costa Rolo & Goild (2007)	fostering hope	6 weeks, 12 sessions	athletic performance	adol/emerging adult	43 student athletes	academic	live	supervised	individual	self-selected	random
da Costa Rolo & Goild (2007)	fostering hope	6 weeks, 12 sessions	academic performance	adol/emerging adult	43 student athletes	academic	live	supervised	individual	self-selected	random
Mitchell et al. (2009)	internet strengths intervention	3 weeks	Orientation to Happiness Scale (OTH) -engagement	adult	40 adults	community	online	supervised	individual	self-selected	random
Style & Boniwell (2010)	group life coaching	6 weeks, 6 sessions	Orientation to Happiness Scale (OTH) -engagement	adult	31 adults	community	live	supervised	group	self-selected	random
Littman-Ovadia et al. (2014)	Strengths Based Career Counseling (SBCC)	4 sessions	Career Exploration Scale	adult	61 unemployed adults	community	live	supervised	individual	non self-selected	quasi-random
Ouweneel et al. (2013)	PPI: self-enhancement intervention	8 weeks	Utretch Work Engagement Scale	adult	311 adults	community	online	supervised	individual	self-selected	unclear
Jaser et al. (2014)	PPI	8 weeks	diabetes tx adherence: daily blood glucose monitoring	adol/emerging adult	38 individuals with diabetes	clinical	live	supervised	individual	self-selected	random
Abbott et al. (2009)	Resilience Online (ROL)	10 weeks	work performance	adult	53 sales managers	community	online	supervised	individual	non self-selected	random
Grant et al. (2009)	Coaching	10 weeks	Global Attainment Scale (GAS)	adult	82 executives/senior managers	community	live	supervised	both	non self-selected	random
Shoshani et al. (2016)	Maytiv Program	30 weeks, 15 2-hour sessions	attendance	child	2517 students	academic	live	supervised	group	non self-selected	random
Shoshani et al. (2016)	Maytiv Program	30 weeks, 15 2-hour sessions	GPA	child	2517 students	academic	live	supervised	group	non self-selected	random

Authors	Intervention/Activity	Length of Intervention	Behavioral Measure	Age	Sample	Setting	Live vs Online	Self-guided vs. Supervised	Group vs Individual Training	Self-Selected vs. Non	Random Assignment vs. Non
Shoshani et al. (2016)	Maytiv Program	30 weeks, 15 2-hour sessions	behavioral engagement- child report	child	2517 students	academic	live	supervised	group	non self-selected	random
Shoshani et al. (2016)	Maytiv Program	30 weeks, 15 2-hour sessions	behavioral engagement- teacher report	child	2517 students	academic	live	supervised	group	non self-selected	random
Quinlan et al. (2014)	strengths based program	6 weekly sessions	classroom engagement	child	187 students	academic	live	supervised	group	non self-selected	non-random
Roth et al. (2017)	PPI	10 weeks, 50min/weekly	externalizing problems	child	42 students	academic	live	supervised	group	non self-selected	random
Shoshani & Slone (2017)	Maytiv Preschool Program	32 weeks, 5 activities/week	Approaches to Learning Scale (ALS)	child	315 students	academic	live	supervised	group	non self-selected	random
Shoshani & Slone (2017)	Maytiv Preschool Program	32 weeks, 5 activities/week	prosocial behavior	child	315 students	academic	live	supervised	group	non self-selected	random
Peters et al. (2017)	internet PPI	7 weeks	Fibromyalgia Impact Questionnaire (FIQ)	adult	126 chronic pain	clinical sample	online	supervised	individual	self-selected	random

Note. PP = positive psychology; PPI = positive psychology intervention; Sample = post-test active and control participants.

Table 2. *Qualitative Assessment of Risk of Bias.*

Study	Selection Bias	Concealment Bias	Performance Bias	Detection Bias	Attrition Bias	Reporting Bias
Walker & Lampropoulos (2014)	low	low	low	N/A	low	unclear
Sergeant & Mongrain (2014)	low	low	low	N/A	low	unclear
Ouweneel et al., (2014)	low	low	low	N/A	unclear	unclear
Akhtar & Boniwell (2010)	unclear	unclear	high	high	unclear	unclear
Rolo & Goild (2007)	low	low	high	N/A	unclear	unclear
Mitchell et al., (2009)	low	low	low	N/A	low	unclear
Jaser et al., (2014)	low	high	high	N/A	low	unclear
Abbott et al., (2009)	low	low	unclear	N/A	low	high
Grant et al., (2009)	low	low	unclear	N/A	low	unclear
Ouweneel et al., (2013)	unclear	low	low	N/A	low	unclear
Littman-Ovadia et al., (2014)	high	low	low	N/A	unclear	unclear
Style & Boniwell (2010)	low	low	low	N/A	unclear	unclear
Shoshani et al., (2016)	low	high	high	high	low	unclear
Quinlan et al., (2014)	high	unclear	unclear	N/A	low	unclear
Roth et al., (2017)	low	low	low	unclear	unclear	unclear
Shoshani & Slone (2017)	low	low	unclear	unclear	low	unclear
Peters et al., (2017)	low	low	low	N/A	low	unclear

Figure 1. Flow diagram.
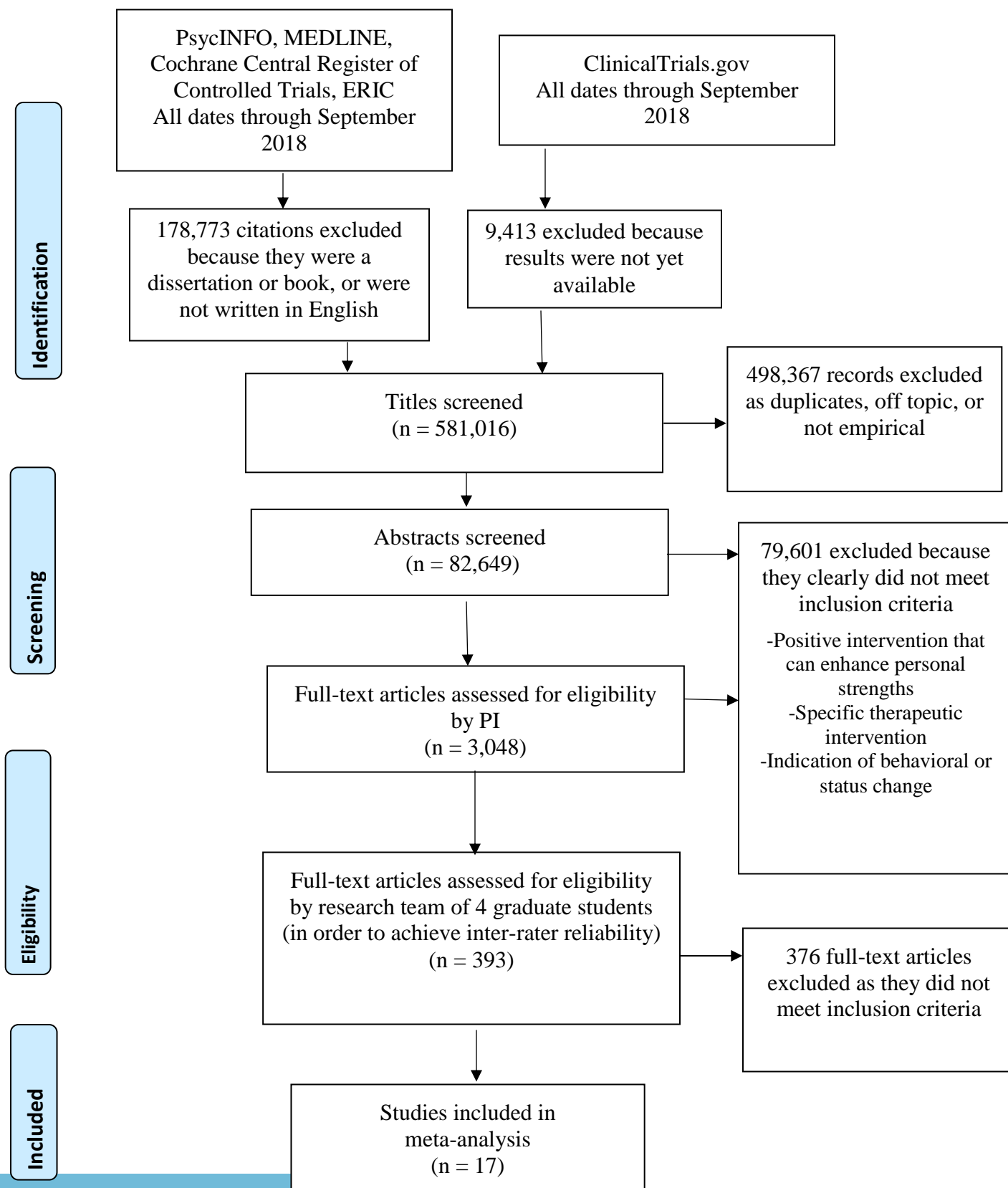
Figure 2. Forest plot.

Study name	Statistics for each study					Hedges's g and 95% CI
	Hedges's g	Standard error	Lower limit	Upper limit	p-Value	
Walker & Lampropoulos (2014)	0.416	0.303	-0.177	1.010	0.169	
Sergeant & Mongrain (2014)	0.066	0.156	-0.239	0.372	0.670	
Ouweneel et al. (2014)	0.284	0.283	-0.271	0.839	0.315	
Akhtar & Boniwell (2010)	-0.611	0.439	-1.472	0.249	0.164	
da Costa Rolo & Gold (2007)	0.264	0.301	-0.325	0.854	0.380	
Mitchell et al. (2009)	0.356	0.316	-0.263	0.976	0.260	
Style & Boniwell (2010)	0.204	0.367	-0.514	0.922	0.578	
Littman-Ovadia (2014)	0.254	0.254	-0.243	0.752	0.316	
Ouweneel et al. (2013)	0.182	0.127	-0.066	0.431	0.150	
Jaser et al. (2014)	-0.589	0.325	-1.225	0.047	0.070	
Abbott et al. (2009)	-0.441	0.274	-0.978	0.096	0.107	
Grant et al. (2009)	1.191	0.333	0.537	1.844	0.000	
Shoshani et al. (2016)	0.038	0.040	-0.040	0.116	0.343	
Quinlan et al. (2014)	0.418	0.163	0.099	0.738	0.010	
Roth et al. (2017)	0.091	0.303	-0.502	0.686	0.763	
Shoshani & Slone (2017)	0.836	0.117	0.606	1.066	0.000	
Peters et al. (2017)	0.314	0.190	-0.059	0.686	0.099	
	0.222	0.096	0.034	0.409	0.020	

Favors Control   Favors Active
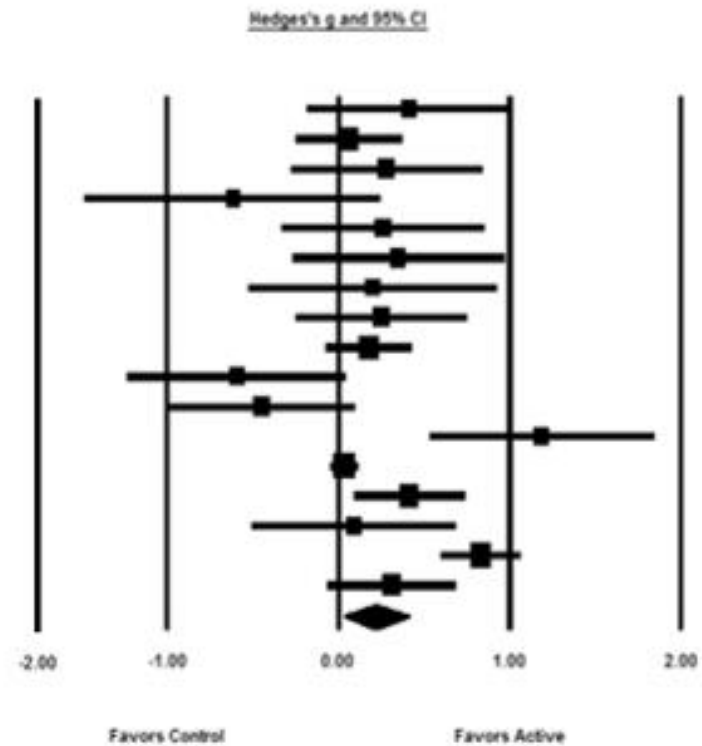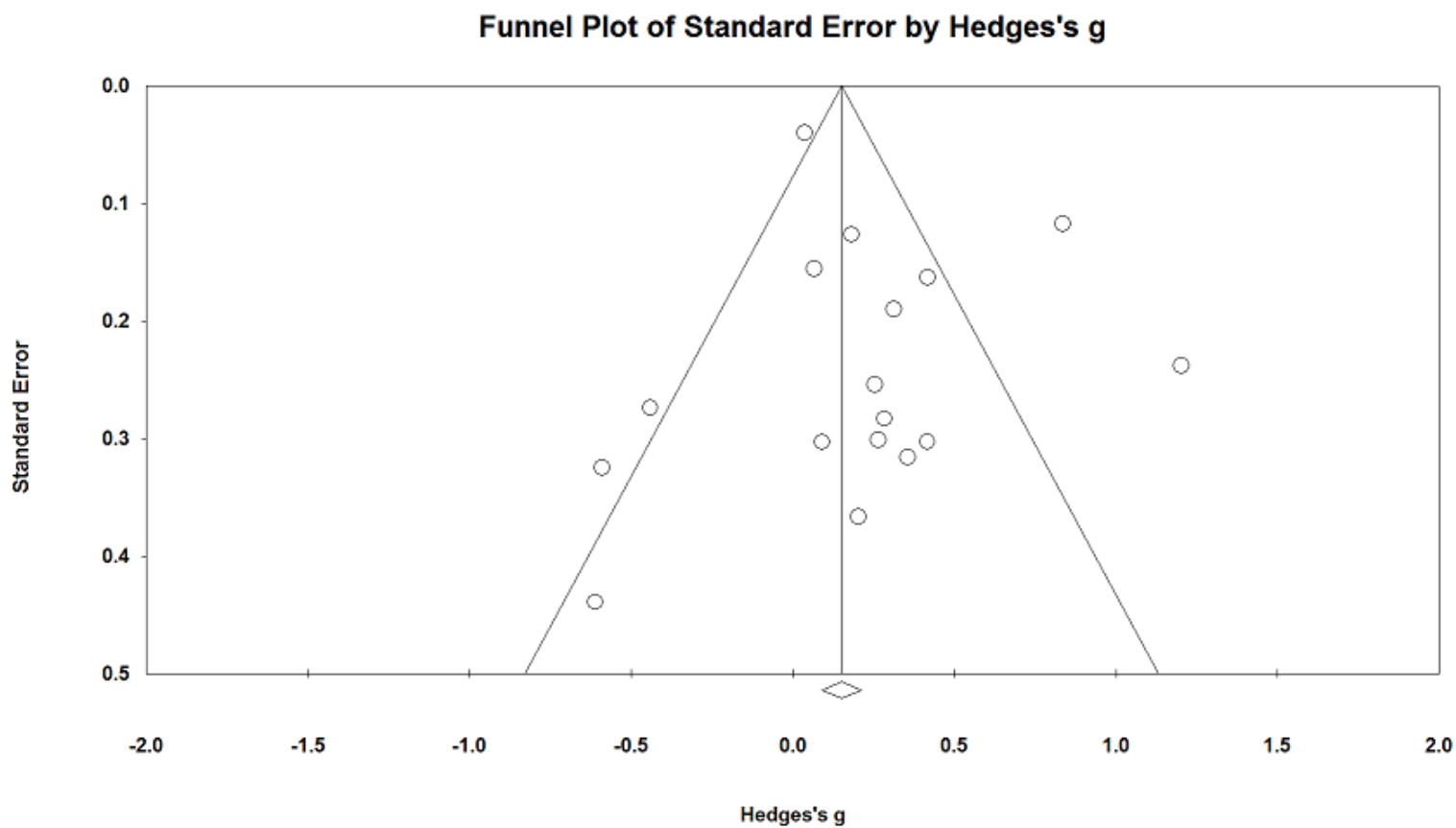
Figure 3. Funnel plot.

Funnel Plot of Standard Error by Hedges's g

Appendix

Character Strength Terms

General Terms:
- *positive psychology*
- *virtue*
- *character strength*

Peterson and Seligman (2004):
- *beauty*
- *bravery*
- *creativity*
- *curiosity*
- *fairness*
- *forgiveness*
- *gratitude*
- *honesty*
- *wisdom*
- *knowledge*
- *courage*
- *hope*
- *humility*
- *humor*
- *judgment*
- *kindness*
- *leadership*
- *love*
- *learning*
- *humanity*
- *justice*
- *perseverance*
- *perspective*
- *prudence*
- *self-regulation*
- *social intelligence*
- *spirituality*
- *teamwork*
- *zest*
- *temperance*
- *transcendence*

Kesebir and Kesebir (2008):
- *character*
- *conscience*
- *decency*
- *dignity*
- *ethics*
- *morality*
- *rectitude*
- *righteousness*
- *uprightness*
- *virtue*
- *honesty*
- *patience*
- *honor*
- *truthfulness*
- *kindness*
- *sincerity*
- *courage*
- *generosity*
- *mercy*
- *wisdom*
- *humility*
- *faithfulness*
- *charity*
- *humbleness*
- *bravery*
- *thoughtfulness*
- *grace*
- *helpfulness*
- *courtesy*
- *love*
- *perseverance*
- *modesty*
- *politeness*
- *fidelity*
- *justice*
- *gratitude*
- *diligence*
- *thankfulness*
- *gentleness*
- *sacrifice*
- *benevolence*
- *fortitude*
- *purity*
- *temperance*
- *faith*
- *hospitality*
- *appreciation*
- *compassion*
- *integrity*
- *fairness*
- *tolerance*
- *selflessness*
- *discipline*
- *dependability*
- *reliability*
- *loyalty*
- *trustworthiness*
- *forgiveness*
- *respect*
- *determination*

Cawley, Martin, and Johnson (2000):
- *empathy*
- *order*
- *serenity*
- *resourcefulness*

Franklin (1928):
- *silence*
- *frugality*
- *chastity*

- *resolution*
- *moderation*

Comte-Sponville (2001):

- *politeness*
- *fidelity*
- *prudence*
- *temperance*
- *courage*
- *justice*

- *generosity*
- *compassion*
- *mercy*
- *gratitude*
- *humility*
- *simplicity*

- *tolerance*
- *purity*
- *gentleness*
- *good faith*
- *humor*
- *love*

Bennett (1995):

- *responsibility*

Neimiec (2018; personal communication, October 16, 2014):

- *divergent thinking*
- *originality*
- *empathy*
- *altruism*

- *prosocial*
- *equity*
- *conscientiousness*
- *elevation*

- *meaning*
- *goodness*

Rashid (personal communication, October 29, 2014)

- *abidance*
- *accepting*
- *amiability*
- *contentment*
- *duty*
- *equanimity*
- *finesse*
- *flexibility*

- *harmony*
- *introspection*
- *intuition*
- *mellowness*
- *nimbleness*
- *pacifism*
- *piety*
- *quaintness*

- *rhythm*
- *salubriousness*
- *savoir-faire*
- *social tactfulness*
- *self-acceptance*
- *serendipity*
- *soulfulness*
- *tolerance*