

**POSITIVE PSYCHOLOGY INTERVENTIONS
TARGETING NEEDY AND SELF-CRITICAL INDIVIDUALS**

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Abstract

This study attempted to replicate previous findings that two week-long, internet-based positive interventions were helpful in increasing happiness and decreasing depressive symptoms for up to 6 months in the general population (Seligman, Steen, Park & Peterson, 2005). These results were generally replicated here, although the benefits were more modest, with participants experiencing significant gains compared to their own baselines but not to the placebo exercise control group. A second control condition was included which controlled for valence, and was as effective as the two positive interventions examined.

The usefulness of these interventions in relation to neediness and self-criticism, two vulnerability markers for depression, was also examined (Blatt, Zohar, Quinlan, Zuroff, & Mongrain, 1995; Rude & Burnham, 1995; Mongrain & Leather, 2006). Neediness was related to increased responsiveness to the exercises. Self-criticism alone had no effect on outcome. Further research on self-help interventions for those vulnerable to depression is warranted.

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Positive Psychology Interventions

Targeting Immature Dependency and Self-Criticism

This research replicated a study (Seligman et al., 2005) that used two positive psychology interventions to increase positive affect and decrease depressive symptoms in a sample of normal adults. The methodology, borrowed from Seligman and colleagues (2005) involved three groups. The first group, (“Three good things”) wrote about three good things that happened each day for a week and why they happened. The second group, (“Using signature strengths in a new way”) completed an inventory providing feedback on their signature strengths, which participants were then asked to use a new way each day for 1 week. The control group (“Early memories”) was required to write about an early memory every day for a week. A second control group (“Early positive memories”) was introduced in the current study to improve on Seligman and colleagues (2005) methodology and better isolate the active ingredients of the experimental conditions. This “enhanced” control group wrote about an early positive memory throughout the week-long intervention, thus controlling for the valence of the active conditions.

A second purpose of the current research was to relate these interventions to measures of neediness and self-criticism (Blatt, Zohar, et al., 1995; Rude & Burnham, 1995), personality traits that have been shown to predict episodes of major depression (Mongrain & Leather, 2006). It was expected that these traits would be associated with

beneficial responses to these positive interventions, which would reveal a promising direction for promoting well being in those in most need, namely those vulnerable to depression.

Positive Psychology

Positive psychology, a field that has been flourishing over the last decade, is essentially the study of positive experiences, positive individual traits, and the positive institutions that help to foster them (Seligman, 2002; Duckworth, Steen, & Seligman, 2005). Its proponents make the case that the positive side of human experience is just as amenable to scientific study, and just as worthy of scientific study, as the pathological side that has been the primary focus of clinical psychology. While clinical psychology aims rightly to reduce suffering, positive psychology aims to supplement this field with the goal of increasing happiness, arguably the ultimate aim of all people, which entails more than just a lack of suffering (e.g. Duckworth et al., 2005; Seligman, 2002; Seligman et al., 2005). As such, the topic of happiness is definitely one worth studying and understanding.

If further justification is needed it can be found in the benefits that happiness incurs. Lyumbomirsky, Sheldon, and Schkade (2005) review the many positive rewards that have been found to be related to high subjective well-being. These include bolstered immune systems (e.g., Dillon, Minchoff, & Baker, 1985; Stone, Neale, Cox, Napoli, Vadlimarsdottir, & Kennedy-Moore, 1994), longer life spans (e.g., Danner, Snowdon, &

Friesen, 2001; Ostir, Markides, Black, & Goodwin, 2000), greater social rewards (e.g., Harker & Keltner, 2001; Marks & Flemming, 1999; Okun, Stock, Haring, & Witter, 1984), greater career success (e.g., Estrada, Isen, & Young, 1994; Staw, Sutton, & Pelled, 1995), and increased prosocial and cooperative behaviour (e.g., Isen, 1970; Kasser & Ryan, 1996; Williams & Shiaw, 1999).

Positive emotion is also worth studying because it may in fact act as an antidote to suffering and maladaptive psychological states. Fredrickson's broaden-and-build theory of positive emotion explains how positive emotions help to combat, prevent, and build resilience against negative emotion (Fredrickson, 2000; 2001). The theory attempts to explain the value of positive emotions along evolutionary lines as this question has been relatively neglected compared to the attention devoted to the significance of negative states (Seligman, 2002). Negative emotions narrow an individual's momentary thought-action repertoire towards a specific set of adaptive actions that aided in the survival of our ancestors, and have been speculated upon since Darwinian Theory (see Seligman, 2002). For example, the emotion of fear is accompanied by changes in the sympathetic nervous system that prepare one to flee, as well as the urge to do so. Fredrickson (2000; 2001) argues that positive emotion, on the other hand, has the opposite effect of decreasing autonomic arousal, and of broadening one's thought-action repertoire encouraging creativity, exploration, and flexibility in thinking. Brain imaging research has also provided biological evidence for a similar broadening process in perceptual

processing and has shown that positive emotion is related to greater brain activity in response to peripheral imagery in a visual task (Schmitz, De Rosa & Anderson, 2009). Thus, positive emotion may not only expand higher order thinking but also the span of visual information that is encoded into awareness.

The undoing hypothesis emanating from Fredrickson's (2000) model posits that positive emotions should be able to undo the lingering effects of negative emotions as the processes involved with negative and positive emotion are incompatible. The momentary thought-action repertoire is narrowed by negative emotion and the broadening effect on thought associated with positive emotion undoes this preparedness for a specific action. Some evidence for this process was obtained in one study (Fredrickson, Mancuso, Branigan, & Tugade, 2000) where anxiety related increases in physiological activity were more quickly returned to baseline in subjects who viewed videotapes inducing emotions of joy and contentment, versus those who viewed videotapes inducing neutral or sad moods.

The tendency of positive emotion to encourage more open and explorative frames of mind also plays an important role in terms of building social, intellectual, and physical resources (Fredrickson, 2000). Fredrickson (2000) provides the example of joy, which is felt in times of perceived safety and encourages play. Play, in its many diverse forms, may build physical strength, social bonds and friendships, and gains in knowledge and intellectual resources. Such resources lead to resilience against negative affect in times of

stress and create an “upward spiral” of positive emotion (Fredrickson, 2000; 2001).

Increases in positive affect lead to further experiences of broadened thought and action which again lead to the building of additional resources (Fredrickson, 2000).

Coping strategies that are associated with psychological resilience, or the ability to “bounce back” from negative events, include the ability to positively reappraise threatening situations as challenges, and the ability to infuse negative events with positive meaning. This was illustrated in a study (Tugade & Fredrickson, 2004) where resilient individuals were able to return to baseline levels of physiological responding more quickly than others after an anxiety provoking speech preparation task. This effect was mediated by the fact that these individuals experienced more positive emotions during the task. When low-resilience individuals were induced to reappraise the task as less threatening, they were able to experience more positive emotions and physiologically resembled high-resilience participants. This study also showed that those who found greater positive meaning in current life problems were more resilient, and this was mediated by the fact that they experienced more positive emotion towards the problem. The positive emotions engendered by their more adaptive appraisals allowed them to bounce back more quickly from their levels of physiological arousal. Importantly, this study suggests that the ability to use positive reappraisals to build positive emotion and hence build resiliency can be taught to those who are not naturally resilient.

Can people become happier? The usefulness of positive interventions has been questioned on the basis that individual levels of positive affect are characterized by stability over time, rather than change. Until recently, there was very little reason to believe that a person could lastingly become happier. This pessimism was driven by adoption and twin studies that provided evidence that happiness levels are highly heritable (e.g., Lykken & Tellegen, 1996). Personality studies also showed that traits that are closely linked to happiness, such as extraversion and neuroticism, are highly stable throughout life (McCrae & Costa, 1990). Also driving this pessimism was the hedonic treadmill theory introduced by Brickman and Campbell (1971) that posited that life circumstances, no matter how negative or positive, were only able to affect happiness levels temporarily. Sensory adaptation is the process by which people become unaware of continuous sensory stimuli, such as the constant hum of an air conditioner, or feel the clothing on their skin. When we realize the sensation is not signalling danger we no longer have to attend to it constantly. All that is necessary is that we attend to changes in the environment so that we can judge whether or not a response is needed. We would notice the sensation of a spider suddenly crawling up our arm. The hedonic treadmill theory contends that there is similarly a process of psychological adaptation. While a change in a life situation can cause a reaction temporarily, once a person gets used to their new circumstances these circumstances tend to fall into the background, causing levels of happiness go back to baseline levels. Evidence for this theory is compelling

(e.g., see Diener, Lucas, & Scollon, 2006). Classic studies showed that lottery winners are no happier than non lottery winners and that those who are paralysed are not substantially less happy than those who are not after a period of adaptation to their new circumstances (Brickman, Coates, and Janoff-Bulman, 1978). Evidence also showed that the blind are no less happy than those who can see (Feinman, 1978), and that people who lose a spouse eventually return to their baseline levels of happiness, (e.g., Bonanno et al., 2002; Bonanno, Wortman, & Nesse, 2004; Lucas, Clark, Georgellis, & Diener, 2003).

However there is now reason to believe that happiness levels can change to an extent. Comparisons of average levels of well-being across nations have shown that factors such as wealth and human rights are related to well-being (e.g., Diener, Diener, & Diener, 1995). There is also evidence of a trend for people to grow happier with age (e.g., Charles, Reynolds, & Gats, 2001; Diener & Suh, 1998; Roberts & Chapman, 2000; Sheldon & Kasser, 2001). Finally, the conclusions reached in the classic Brickman and associates (1978) studies have been recently been challenged. Diener and colleagues (2006), in re-examining the data (Brickman et al., 1978), show that the difference between those who are paralysed and those who are not amounts to almost a full standard deviation, which is rather large. These authors also point to reviews in rehabilitation journals that consistently show those who suffer spinal cord injuries tend to be less happy than the general population (e.g., Dijkers, 1997; 2005; Hammell, 2004). The authors (Diener et al., 2006) conclude that happiness can in fact be lastingly affected by a

significant change in life circumstances and that the original evidence to the contrary was not as strong as initially suspected.

Thus, there seems to be some evidence to suggest that life circumstances can affect happiness. More optimistic yet, is research that claims that people can lastingly affect their levels of happiness through engaging in certain activities. A recent review and analysis of research in the field of happiness has led researchers to suggest that 40% of our capacity for happiness is determined by activities within our direct control (Lyubomirsky, 2008; Lyubomirsky, Sheldon, & Schkade 2005). Lyubomirsky (Lyubomirsky, 2008; Lyubomirsky, Sheldon, & Schkade 2005) acknowledges the large role stable genetic factors play in determining happiness levels, with approximately 50% of the variability in one's chronic or habitual level of happiness being determined by these factors. The other 50% is broken up into two parts, the first being circumstances, which determines a mere 10% of happiness, primarily because of the susceptibility of changes in life circumstances to the effects of adaptation. This leaves 40% of a person's happiness dependent on the activities in which they engage indicating that a large portion of one's happiness can be affected by purposeful activities within one's control. Although adaptation can also dampen the effects of regularly engaging in the same activity the episodic nature of activities as well as the fact that they can be varied in order to keep them fresh makes activities in general much less vulnerable to adaptation.

Positive psychology interventions. Supporting the optimism for the role of intentional activities in the malleability of contentment and well-being is the actual success that positive psychology interventions have had in increasing happiness levels. One early intervention called the Fourteen Fundamentals Program (Fordyce, 1977; 1983) was created from an extensive review of the factors that have reliably been found to separate really happy people from the rest of the population. The fourteen fundamentals were: 1) Be more active and keep busy, 2) Spend more time socializing, 3) Be productive at meaningful work, 4) Get better organized and plan things out, 5) Stop worrying, 6) Lower your expectations and aspirations, 7) Develop positive, optimistic thinking, 8) Get present oriented, 9) Work on a healthy personality, 10) Develop an outgoing, social personality, 11) Be yourself, 12) Eliminate negative feelings and problems, 13) Close relationships are the # 1 source of happiness, and 14) Value happiness (Fordyce, 1977). The program, which provided concrete suggestions on how to implement the factors, was found to be effective in increasing well-being when presented to community college classrooms as part of the coursework. Benefits were noted whether the program duration was 2 weeks or 6 weeks (Fordyce, 1977), whether students were specifically instructed to implement the strategies as part of an assignment or if they decided to implement the program on their own after learning about it in class (Fordyce, 1977), or whether instruction was given in the whole program or only in areas of individual weakness (Fordyce, 1983). Participation in the full program provided gains that were maintained

for up to 18 months (Fordyce, 1983), indicating that happiness and well-being can be reliably increased through relatively simple intentional changes in behaviour and attitude.

Interventions focussing on gratitude have also been successful in increasing happiness levels as described in three such studies reported by Emmons and McCullogh (2003). In the first study, students who listed five things they were grateful for once a week for 10 weeks felt better about life, more optimistic about the coming week, had fewer health complaints, and exercised more throughout the 10-week intervention period than those who wrote about hassles or general events. A second study where participants listed five things they were grateful for on a daily basis for 2 weeks showed increases in positive affect and pro-social behaviours throughout the intervention period, relative to those writing about hassles or writing about how they were better off than others. In a third study, the gratitude intervention, practiced on a daily basis for 3 weeks, was assessed with older adults with neuromuscular diseases. In this sample, participants showed increased positive affect, decreased negative affect, felt better about life, and reported sleeping more soundly throughout the 3-week study period. These changes were apparent to spouses as well. Gratitude interventions may be effective in part because they fight the process of adaptation, forcing people to focus on positive life circumstances, rather than take them for granted (Lyubomirsky, et al., 2005).

The authors (Lyubomirsky, et al., 2005) also report on a separate 6-week gratitude intervention (Lyubomirsky, Tkach, & Sheldon, 2004), where participants were instructed

to count their blessings either once a week, or three times a week. Increases in well-being were experienced over the interval of the intervention only for the group of participants who counted their blessings once a week. Perhaps counting blessings on a less frequent basis kept the task fresh and meaningful for participants, and highlights the need for further refinement in the methodological procedures of positive interventions.

Seligman and associates (2005) tested five happiness interventions via the internet with a convenience sample of 411 participants. These interventions were informed by a theory proposing that happiness is supported by the ability to experience positive emotion, to be meaningfully engaged in different aspects of life, and ultimately to feel that one is serving a higher purpose, though not necessarily a religious one (Seligman, 2002; Duckworth et al., 2005). The happiness interventions consisted of daily exercises performed over a period of 1 week. The placebo control exercise simply consisted of writing about early memories every night for a week. One intervention involved a “Gratitude visit”, where participants given 1 week to write and deliver a letter of gratitude to a person whom they had never properly thanked for being especially kind to them. A second intervention, “Three good things in life” was similar to the gratitude exercises in the previously mentioned studies (Lyubomirsky et al., 2004; Emmons & McCullough, 2003), where participants were asked to write down three good things that happened that day and why they happened for 1 week. The third condition, “You at your best” consisted of participants writing a story about a time when they were at their best.

They were to review the story every day for 1 week and reflect on the strengths they had displayed in the story. The fourth condition, “Using signature strengths in a new way” involved participants taking an online inventory of their character strengths which provided feedback about their top five strengths. The 24 strengths, catalogued by Peterson and Seligman (2004), were picked according to nine criteria, including that it is valued in almost every country in the world, and that it is valued in its own right (See Appendix A for the list of criteria and Appendix B for a list of the 24 strengths). Participants were then asked to use one of those strengths in a new and different way every day for 7 days. The final intervention “Identifying signature strengths” asked participants to take the online character strength inventory and use their top five character strengths more often throughout the week. This condition, unlike “Using signature strengths in a new way” did not include specific instructions to use one of the strengths every day and in a new and different way (Seligman et al., 2005).

Information on happiness and depressive symptoms was collected at pretest, posttest, 1 week, 1 month, 3 months, and 6 months after the administration of these interventions. Interestingly, all participants, including those in the placebo condition, were happier and less depressed immediately after the week of intervention. The “Three good things” and “Using signature strengths in a new way” conditions led to particularly positive results when the changes in affect were considered over a longer period of time. For both conditions, differences in levels of depression and happiness were evident at the

1-month, 3-month, and 6-month assessments. Therefore these two conditions were able to create lasting positive changes in well-being. Benefits were also noted for participants in the “Gratitude visit” condition but were not as long lasting (i.e. increases in happiness and decreases in depressive symptoms were maintained for up to 1 month after the intervention, but were no longer evident at the 3 and 6-month follow-up). The “You at your best” and “Identifying signature strengths” conditions were the least effective in creating change. In summary, the “Using signature strengths in a new way” and “Three good things” interventions were the two most effective exercises, resulting in benefits that were maintained at the 6-month follow-up. Consequently, these two exercises were included for replication in the current work.

This study also strengthened the methodology used by Seligman and associates (2005) by enhancing the demand characteristics associated with the control condition in order to better match the level of demand characteristics associated with the active intervention conditions. In the Seligman et al. (2005) study, instructions for the “Three good things” and “Using signature strengths in a new way” conditions include lengthier, more convincing rationales for how the exercises might work to increase well-being than the instructions for the “Early memories” control condition which stated only that “a careful consideration of our earliest memories may help us to better understand who we are today”. The current control condition made an argument for how reflecting on the past, even for a short period of time, can increase understanding, self-acceptance, and

happiness. This was expected to provide a better rationale for the control group, one that more closely matched the argument provided in the active interventions, thus ensuring that demand characteristics were similar across conditions. Participant responses may be unconsciously affected by their theories about what researchers are expecting or hoping to find, and an attempt was made to ensure that the active interventions did not place more obvious demands on participants regarding happiness and depression than did the control group. The changes made to the control group were also meant to ensure that there were similar levels of hope for positive change across conditions.

A second control condition (“Early positive memories”) was also included in order to examine the general effects of positive thoughts on the effectiveness of these successful interventions. One feature that “Three good things” and “Using signature strengths in a new way” have in common is a conscious daily focussing of attention on positive thoughts. This control condition, which requires participants to focus daily on early positive memories, also shares this feature. If the active interventions prove to be more effective than this control group, we could more confidently conclude that factors specific to the “Three good things” and “Using signature strengths in a new way” exercises are responsible for increasing well-being, rather than valence alone.

Seligman and associates (2005) did test an “Identifying signature strengths” condition in which participants learned about their signature strengths and were encouraged to use them as often as possible. This condition did not result in comparable

gains to the “Using signature strengths in a new way” condition suggesting that the active ingredients in the latter may very well include the daily nature of the exercise and the importance of the requirement to make the task fresh and new every day.

The main purpose of the current study, however, is to add to the body of research on the effectiveness of positive interventions by replicating the Seligman and associates (2005) study, and to further test the applicability of such interventions in relation to variables known to entail vulnerability to depression. Up until now, with few exceptions (see Grant, Salcedo, Hynan, Frisch, & Puster, 1995; Fava, Rafanelli, Cazzaro, Conti, & Grandi, 1998; Seligman, Rashid, & Parks, 2006), studies involving positive interventions have all been conducted on the general population. This makes some sense as positive psychology is interested in improving well-being in all individuals. However, as these positive interventions also affect negative emotions and depressive symptoms, it is important to determine whether or not they may help people who are more vulnerable to human suffering. In fact, people at risk of becoming depressed should be the prime candidates for positive psychology interventions as a main aim of positive psychology is not to cure disorder but to increase well-being and prevent depression before it starts (Seligman, 2002; Duckworth et al., 2005).

Seligman and associates (2006) did examine whether a 6-week positive psychology intervention could decrease depressive symptoms in mildly to moderately depressed young adults. This speaks to the current study by suggesting that these

interventions work not only on the already healthy but can be used to alleviate the suffering of the vulnerable, as well. The therapy combined exercises such as “You at your best,” “Using your signature strengths in a new way,” “Three good things,” and the “Gratitude visit” tested by Seligman and colleagues (2005). Two other exercises in this psychotherapy approach involved an obituary/biography exercise in which participants were asked to write about how they would like to be remembered, and an exercise that promoted the savouring of moments and the active and constructive communication with loved ones. At the end of the intervention, and at a 1-year follow-up, depressive symptoms were reduced and remained significantly lower than for those in the no-treatment control group. A second study targeted severely depressed individuals and found that “Positive Psychotherapy” combining a traditional ‘Rogarian’ focus with an enhanced attention on the positives, and on a client’s strengths led to more cases of remission and more reduction in symptoms than treatment as usual (in which therapists used an eclectic approach and were instructed to provide treatment they felt was most suitable) and treatment as usual plus medication (Seligman et al., 2006). This research provides preliminary evidence that positive interventions may be useful for reducing depressive symptoms in people suffering from this mood disorder.

Fava and associates (1998) compared “well-being therapy”, an intervention aimed at increasing positive affect, to cognitive behavioural therapy, in patients who had remitted from an affective disorder. Both therapies did reduce residual symptoms, which

can sometimes lead to relapses, but well-being therapy was superior in terms of observer ratings of improvement. Therefore, positive interventions can be beneficial to those who are not experiencing an affective disorder currently, but who are nonetheless experiencing subsyndromal symptoms and may be vulnerable to relapse.

Strong support for the therapeutic use of positive psychology interventions and the use of these interventions with depressed populations has come from a recent meta-analysis (Sin & Lyubomirsky, 2009). Fifty-one studies with 4,226 participants from 1977 to 2008 were included in the meta-analysis which sought to determine whether positive psychology interventions are useful for increasing well-being and/or decreasing depressive symptoms. Results indicated that these interventions work well, with medium effect sizes found for both well-being (mean $r = .29$) and depression (mean $r = .31$). Importantly, moderator analyses indicated that depressed individuals were more likely to benefit, providing support for the use of these interventions with depressed populations.

This work provides reason to be optimistic about the usefulness of positive psychology interventions in clinical populations and in vulnerable populations. By increasing the well-being of those who are vulnerable to depression, and hence building resilience and resources, positive psychology interventions could potentially alter the recurrent course of this pernicious disorder for some.

Dependency and Self-Criticism

The current study examined vulnerability to depression in terms of personality orientations that have been empirically associated with this disorder (see Zuroff, Mongrain, & Santor, 2004). Sidney J. Blatt (Blatt, Shula, & Schichman, 1983; Blatt, 1990; Blatt & Zuroff, 1992) outlines two personality orientations, dependent and self-critical, that also define two depressive themes. According to this perspective, personality development occurs as a complex transaction across two developmental lines involving interpersonal and self-esteem needs. Normal progression along those lines leads to the establishment of close, satisfying relationships, and a stable, realistic and essentially positive identity.

Disturbances, usually as the result of negative parent child dynamics, alter the proper development of one or both lines of development (Blatt & Homann, 1992). Those suffering from issues along the interpersonal line (dependency) experience intense fears of abandonment, fear of rejection, and define themselves almost exclusively in terms of their relationships. They are vulnerable to suffering from depression as a result of interpersonal losses (Blatt & Zuroff, 1992). Disruptions along this developmental line is thought to be caused by a parental figure who is generally unavailable, inconsistent, or who controls the child by withdrawing love and care, or through overprotection, preventing the development of autonomy. The child then becomes unable to form a stable mental representation of the caregiver as soothing and consistently available, and

develops feelings of helplessness about getting his or her needs met. This pattern repeats itself in future relationships with the dependant needing constant contact and reassurance in order to feel safe and loved (Blatt & Homann, 1992).

Fixation along the introjective developmental line (self-criticism) results in an over-concern in proving one's worth, sometimes at the expense of building positive interpersonal relationships. This is accompanied by intense self scrutiny and self-criticism, guilt, shame, and feelings of inferiority. Introjective depression is often precipitated by experiences of perceived failure as self-definition is based largely on achievement. This is hypothesised to be caused by parents who are judgemental, cold and hold harsh standards that their children feel they must live up to in order to be loved. The child eventually internalizes these harsh standards as a means of staying connected to their parents (Blatt & Homann, 1992).

Other theorists coming from different frameworks also see depression as consisting of two separate types, one dealing with themes of dependency and relatedness and the other dealing with themes of self-criticism and identity. Beck (1983) made the distinction between sociotropy and autonomy as two prototypic themes in depression. Sociotropy is related to an excessive concern with social relationships, and a high sensitivity to rejection. Autonomy is related to achievement goals, and an obsessive desire for independence, control and autonomy. Arieti, and Bemporad (1978; 1980) see depression as consisting of either a dominant other type, which is characterized by a need

to be passively gratified by a dominant other, or a dominant goal type, characterized by the relentless pursuit of goals in order to be reassured of self-worth and to feel free of guilt. Finally, Bowlby (1980) distinguishes between a type of depression related to anxious-ambivalent attachment which is related to fear of rejection and abandonment, and a type of depression stemming from anxious-avoidant attachment where criticism and rejection by parents leads to a defensive need to be self-reliant and independent. Therefore, some consistency emerges from various theoretical frameworks that there are two separate personality orientations involving a vulnerability to depression, one that deals with concerns about relationships and one that deals with concerns about the self.

The current study will focus on Blatt's (Blatt & Shichman, 1983; Blatt, 1990; Blatt & Homann, 1992; Blatt & Zuroff, 1992) personality styles since they have generated a considerable body of work and empirical support (see Zuroff et al., 2004). The discriminant validity of these personality variables has been obtained in studies examining interpersonal behaviours (e.g. Mongrain, Vettese, Shuster, & Kendal, 1998; Mongrain, 1998; Vettese & Mongrain, 2000; Mongrain, Lubbers, & Struthers, 2004), types of stressors that lead to depression (Zuroff & Mongrain, 1987; Mongrain & Zuroff, 1989; 1994), and responsiveness to therapies (Blatt, Ford, Berman, Cook, & Meyer, 1988; Blatt, 1990; Blatt, Quinlan, Pilkonis, & Shea, 1995; Blatt, Zuroff, Bondi, Sanislow, & Pilkonis, 1998).

Review of research on self-criticism and dependency. The diathesis-stress component of Blatt's model has received some support from studies showing that dependant and self-critical individuals are more likely to become depressed after experiencing congruent types of stressors. For example, dependent people are more sensitive to interpersonal rejection and loss, while self-critical people are likely to feel depressed after the experience of failure (Zuroff & Mongrain, 1987; Mongrain & Zuroff, 1989; 1994). This is consistent with the idea that they have different motivating goals. In a sample of college students, dependency was in fact related to the endorsement of a greater number of interpersonal goals, and to fewer achievement and independence strivings. Self-criticism on the other hand, was related to fewer interpersonal goals, and to a greater number of achievement-related strivings (Mongrain & Zuroff, 1995). It stands to reason that these personality variables would be differentially related to various life events as people respond with more stress to situations that threaten what is most important to them. In fact, Mongrain and Zuroff (1989) showed that dependency was associated with higher levels of perceived stress for hypothetical interpersonal events while the self-critical personality tended to perceive achievement related events as more stressful. In a separate study (Mongrain & Zuroff, 1994) dependency was found to be related to a greater number of negative relationship events and ambivalence over the expression of emotion, which predicted depressive symptoms. Self-criticism in women

was also related to ambivalence and a greater number of academic events, both of which predicted depression.

Dependency and self-criticism are also differentially responsive to treatment. Blatt (1990) examined data from the Meninger Psychotherapy Research Project (e.g., Appelbaum, 1977; Wallerstein, 1986) which examined the therapeutic outcomes of patients undergoing psychoanalysis or supportive-expressive psychotherapy. Patients were characterized as either dependent or self-critical and it was found that the former was more responsive to supportive-expressive psychotherapy and the latter to psychoanalysis. These findings are consistent with the fact that dependent people who invest a great deal in relationships would be responsive to face-to-face supportive-expressive therapy while self-critical patients who are concerned with autonomy and self-definition would be more responsive to psychoanalysis, where the therapist remains more aloof and withdrawn. Blatt et al. (1988) also found that in response to therapy, dependent patients experienced changes in the quality of their relationships while self-critical patients changed in terms of neurotic and psychotic symptoms and aspects of cognitive functioning. Thus the typical pattern of improvement differs between dependent and self-critical patients and occurs in areas of special concern for each. Studies have also shown that self-criticism predicts poorer outcomes in short term treatments (e.g., Blatt, Quinlan, et al., 1995; Blatt et al., 1998) and may be related to poorer therapeutic alliances. These studies highlight the clinical utility of understanding depression in terms of dependency

and self-criticism in terms of suggesting treatments and evaluating responses to treatment.

Self-criticism has been associated with interpersonal stressors that may in part mediate or heighten vulnerability to depression. People judge self-critics to be hostile and withdrawn which provokes rejection (Mongrain et al., 2004). This leads to a vicious cycle with experiences of rejection further confirming the self-critic's negative self view. Self-critics also do not seek social support to help them cope with these feelings, leading them to become more withdrawn and hostile for fear of further experiences of rejection (Mongrain, 1998). For the dependent, the constant demand on others for support and reassurance may lead to problematic interpersonal dynamics. While people may not express hostility to a highly dependent person (Vettese & Mongrain, 2000) they may begin to inwardly feel more hostile in interactions with them, which the dependent person often fails to notice (e.g., Mongrain, et al., 1998). Nonetheless, the emotional and interpersonal correlates of the dependency construct have typically not been found to be as pathological as those obtained for self-criticism, hence a need to distinguish healthy from unhealthy aspects has been identified and will be elaborated below.

Self-criticism and dependency are also differentially related to depression. Self criticism has been found to entail higher negative affect and lower positive affect, a pattern that is prototypical for depression. Dependency is related to high levels of negative affect but not low levels of positive affect in the absence of relevant stressors

(Mongrain, 1998; Mongrain & Zuroff, 1995; Dunkley, Zuroff & Blankstein, 2003). This is consistent with the fact Self-Criticism on the Depressive Experiences Questionnaire (DEQ, Blatt, D’Afflitti, & Quinlan, 1976), which is the most widely used assessment for these personality constructs, is more highly correlated with traditional measures of depression than is the Dependency factor (Blatt, Quinlan, Chevron, McDonald, & Zuroff, 1982; Klein, Harding, Taylor, & Dickstein, 1988; Riley & McCranie, 1990). Given some of the positive interpersonal correlates of the dependency scale of the DEQ (for example, see Mongrain et al., 2004) a call has been made to distinguish healthy from unhealthy levels of this personality orientation (Blatt, Zohar et al., 1995; Rude & Burnham, 1995; Pincus & Gurtman, 1995). In fact, this recent distinction has yielded more fruitful findings relating unhealthy dependence to major depression (Mongrain & Leather, 2006). The overarching conclusion from these studies is that the more submissive, needy aspect of the dependent personality is strongly related to psychopathology (see also Blatt, Zohar, Quinlan, Luther & Hart, 1996), while the more mature aspects may have some adaptive value.

Levels of dependency. The current study will deal specifically with the more maladaptive form of dependency and so research investigating mature versus immature forms of interpersonal relatedness will be discussed here. Blatt, Zohar, and associates (1995) used the facet theory and Smallest Space Analysis (Guttman, 1982) to uncover two separate facets of DEQ dependency. One facet was labelled “relatedness”, and

included items reflecting a more mature level of dependency. A second facet labelled “dependence” reflected feelings of helplessness, fear of abandonment and was more highly related to depressive symptoms. The more immature dependence factor was felt to be a better predictor of depression (Blatt et al., 1996) and has been associated with more problematic patterns of interpersonal functioning (Mongrain & Kellington, 1996).

Other researchers have also recognized that dependency scales measure not only neediness and vulnerability but also some aspects of more normal interpersonal relatedness and attachment to others. Rude and Burnham (1995) factor analyzed the dependency scales from the DEQ (Blatt et al., 1976) and the Sociotropy and Autonomy Scale (Beck, Epstein, Harrison, & Emery, 1983). The factor analysis yielded two factors labelled “connectedness” and “neediness”. Connectedness involves placing value on friendships and being sensitive to the consequences of one’s actions for others. Neediness is related to an anxious fear of rejection and abandonment. Only neediness was significantly correlated with measures of depressive symptoms (Rude & Burnham, 1995).

A factor analysis on the items of a number of widely used dependency measures by Pincus and Gurtman (1995) revealed three distinct factors which they called “love dependency”, “exploitable dependency”, and “submissive dependency”. The love scale reflects a mature form of relatedness that involves the desire to establish close, secure, nurturing relationships. The submissive scale measures the most unhealthy form of dependency, which is characterized by a subservience to more powerful others a needed

source of comfort and guidance. The exploitable scale, an intermediary form of dependency, involves putting other's needs before one's own in order to avoid conflict. Pincus and Wilson (2001) found a love dependency orientation to be related to more adaptive functioning and a submissive orientation to be associated with more pathological functioning (Pincus & Wilson, 2001).

Finally, Schulte & Mongrain (2008) conducted a factor analysis on several measures of dependency replicating Pincus and Gurtman's (1995) three factor solution. The three separate factors, were labelled unhealthy, intermediate, and healthy dependence. The authors (Schulte & Mongrain, 2008) found that in graduate students with a history of major depression, unhealthy dependence was related to higher levels of depression, and a higher likelihood of the recurrence of a major depressive episode over a 2-year follow-up. Healthy dependence was related to lower levels of depression and a marginally lower likelihood of a recurrence of the disorder. For these reasons the current study will focus primarily on "neediness," or the unhealthy form of dependence as it is a more robust predictor of depression.

Overview of the Current Study

As described previously, some positive interventions have been found to reliably increase positive affect and also lower depressive symptoms in normal populations (e.g. Emmons & McCulloch, 2003; Seligman et al., 2005). The few studies aimed at helping those suffering from depression (Grant et al., 1995; Fava et al., 1998; Seligman et al.,

2006) as well as a meta-analysis of positive psychology intervention studies (Sin & Lyubomirsky, 2009) suggest that these interventions can also be helpful in populations with mood disorders. Therefore, there is reason to believe that these may also be beneficial to self-critical and needy individuals, irrespective of their current clinical status.

The current study attempted to add to the body of research on positive interventions by firstly replicating the effects reported by Seligman et al. (2005) while enhancing the original control group by improving rationale, and adding a second control group to test for the effect of a daily focus on the positive. In addition, the effects of these interventions were related to vulnerable personality characteristics. If positive interventions are meant to create greater resiliency against negative affect, those at risk for developing depression should be prime candidates for these interventions. Thus, the current study attempted to replicate the beneficial effects of the “Using signature strengths in a new way” and “Three good things” exercises found in Seligman’s (Seligman et al., 2005) original study, and related these results to measures of neediness and self-criticism to see if people with these vulnerabilities may be particularly helped by these positive psychology interventions.

Predictions for self-critics. “Using your signature strengths in a new way” should be especially beneficial as self-critical individuals spend so much time focusing on their weaknesses and shortcomings. Forcing them to spend time displaying and thinking about

their strengths should provide them with some balance and perspective in terms of their self view. Specific instructions to use their strengths “in a new way” should therefore be particularly beneficial for self-critics.

The “Three good things” exercise should have a more general effect on mood introducing more positive thoughts in the minds of those who tend to over emphasize shortcomings and focus on the negative. Additionally, participants are asked why the three good things occurred. If self-critics can begin to attribute the causality of some of these good things to themselves this should also improve their mood by shifting their attention to their more positive attributes or abilities.

The “Early positive memories” control exercise may also have some beneficial effects for self-critics by generally increasing positive affect, which is usually low in these individuals. However it is reasonable to assume that reflecting positively on a past which is long gone will not be as beneficial as reflecting positively on the self or on the present.

More generally, the fact that all interventions were self-administered may be particularly beneficial to self-critics. Their reduced ability to benefit from short term therapy (e.g., Blatt, Quinlan, et al., 1995; Blatt et al., 1998), may in part be related to interpersonal deficits that hinder the formation of a therapeutic alliance between patient and therapist. This internet-based nature of the exercises eliminates this obstacle and may

lead to more positive results than short-term interventions normally provide for self-critical individuals.

Predictions for neediness. “Using signature strengths in a new way” may help those who are immaturely dependent recognize their competence in various areas, increase feelings of self-efficacy and reduce feelings of helplessness, and encourage more constructive behaviours. This, in turn, could reduce over-reliance on others and reduce interpersonal friction and conflict. As such, this exercise was expected to improve mood in those individuals.

The “Three good things” intervention was expected to lead to greater gains in needy individuals as well. It is quite possible that many of the three good things reported by dependent participants will be relationship-related. In describing *why* these good things happened, it was hoped that needy individuals would take some responsibility for these positive events, and feel more empowered.

The “Early positive memories” control condition was also expected to lead to beneficial results by increasing one’s focus on the positive and providing temporary boosts in mood. However, this effect was not predicted to be as substantial as that found in the active exercise conditions which are based on the tenets of positive psychology and emphasise the good and virtuous aspects of one’s life.

Hypotheses

- 1) The active interventions (“Using signature strengths in a new way,” and “Three good things”) will increase levels of happiness and decrease depressive symptoms relative to baseline, and provide greater gains than those obtained in the “Early memories” control condition as reported by Seligman et al., 2005, as well as the “Early positive memories” control condition. These gains will be noticeable up to 6 months after the 1- week intervention.
- 2) Neediness and Self-Criticism were expected to be related to greater increases in happiness and greater decreases in depressive symptoms following the week-long intervention, and at the 1-month, 3-month and 6-month follow-ups across the two active interventions. In other words, self criticism and neediness was expected to be related to increased responsiveness to “Three good things” and “Signature strengths”. This was expected to translate into significant Time by personality by condition interaction effects in the prediction of changes in affect.

Method

Participants

The initial sample consisted of 1447 primarily white (78%), Canadian (84%) participants. Participant ages ranged from age from 18 to 72, with a mean of 33 years. A large proportion of the sample was female (83%). Participants were recruited primarily

through advertisements on Facebook (See Appendix C). The advertisements appeared to Canadian users of this social networking internet site and asked individuals to participate in an online study examining the effect of mental exercises on well-being and mood.

There were no exclusionary criterion for the study other than being over 18 years of age.

In terms of demographics, 16% of participants had no education past high school, 64% had some college or university education, and 17% had some post graduate education. In terms of income, 40% of participants earned under \$20,000 a year, while 23% earned over \$50,000. Thirty percent of participants were married, and 44% percent had children.¹ The high number of participants in a low socio-economic bracket may be due to the relatively young average age of our sample and the possibility that a number of participants were full-time caregivers. Fifty percent of participants identified themselves as being Christian. The next most commonly endorsed religious affiliations were agnostic (13%) and atheist (8%). As a whole, the sample was distressed, with a mean score on the CES-D suggestive of clinically significant levels of depression, $\bar{x} = 20.39$, $s = 14.62$.

Sample differences between the current study and Seligman and associates, 2005.

Seligman and associates (2005) also obtained a predominantly white sample (77%).

However, their sample was older, with 64% falling between the ages of 35 and also included a higher percentage of male participants (42% versus 17%). They had higher levels of education, with only 4% having no education after high school and 27% having

¹ Questions borrowed from a demographics questionnaire used in the “Positive Psychology Exercise Study” at www.authentic happiness.com (Positive Psychology Center, 2007).

some graduate education. The current sample also differed from the Seligman et al. (1995) study in terms of personal income, where 75% of their sample reported average to above average earnings. As previously noted, a large portion of the current sample (40%) earned under \$20,000 a year. In addition, the sample followed by Seligman and colleagues (2005) was less depressed at baseline, with a mean CES-D score of 15. In summary, the current sample included a greater proportion of females, was younger, less wealthy, less educated, and more distressed than the participants in Seligman et al. (2005).

Participant remuneration. Participants who registered for the study before November 1st, 2007, received \$30 remuneration upon completion of the posttest measures administered at 1 week, after the exercise period. In order to manage costs while increasing sample size, participants registering after this date were not offered \$30 remuneration but were entered into a \$1000 draw upon completion of the posttest measures. In order to encourage participation in follow-up sessions, all participants, regardless of date of entry into the study, were provided with an entry into the \$1000 draw every time they completed follow-up measures at 1, 3, and 6 months posttest. The winner was notified via telephone.

Measures

Depressive Experiences Questionnaire (DEQ; Blatt et al., 1976). The DEQ is a 66-item, 7-point Likert scale commonly used to assess Dependency and Self-Criticism

(see Appendix D). It also measures a third factor, Efficacy, that will not be included in the analyses as it does not measure primary symptoms of depression. Blatt and associates (1976) split a sample of 100 females in half and tested the stability of the factor structure using Tucker's coefficients of congruence. Coefficients of congruence were above .90 for each factor and its split-half. The DEQ has been shown to be replicable across samples, with correlations ranging from .91 to .95 between the three factors in the original sample (Blatt et al., 1976) and those in a large sample of 779 women and 373 men (Zuroff, Quinlan, & Blatt, 1990). This measure has been widely used and is well documented in terms of its convergent, discriminant, and construct validity (Blaney & Kutcher 1991; McCranie & Bass, 1984; Mongrain & Zuroff, 1994; Zuroff & de Lorimier, 1989; Zuroff & Mongrain, 1987; Zuroff, Moskowitz, Wielgus, Powers, & Franko 1983; Zuroff et al., 2004). Test-retest reliability is high for the DEQ with test-retest correlations of .86 over a 3-4 week period (Fuhr & Shean, 1992) and .72-.81 after a 13-week interval (Blatt et al., 1982). Test-retest correlations of .79 were found for Dependency and Self-Criticism after a 1-year interval (Zuroff, Igreja, & Mongrain, 1990). Stability across time and circumstance for Dependency and Self-Criticism has also been illustrated in a sample of students who received midterm grades between the original administration and retesting (Zuroff, et al., 1983). Internal consistency is also high, reported at cronbach's alpha .80 to .81 for Dependency and .75 to .77 for Self-Criticism (Zuroff et al., 1990).

Neediness scores were computed using weighted items from the Dependency scale as reported in Rude and Burnham (1995). Internal reliability for Neediness and Connectedness has been reported to be good, with Cronbach alphas of .89 and .82 respectively (Rude and Burnham, 1995).

Steen Happiness Index (SHI). The SHI was created by Seligman et al. (2005) to serve as a measure of happiness that might be particularly sensitive to upward changes in happiness. It measures happiness in terms of positive emotion, engagement, and meaning in life, the three main contributors to happiness as theorized by Seligman and colleagues (Seligman, 2002; Seligman et al., 2005; Duckworth et al., 2004). The index consists of 20 items that require the participant to choose from one of five statements that most closely reflect how they have felt over the past week. Each choice is assigned a value, with 1 being negative, “Most of the time I am bored” and with 5 being an extreme positive, “Most of the time I am fascinated by what I am doing” (see Appendix D). Scores on this scale were found to be highly correlated with other measures of happiness, to have an internal consistency of $\alpha = .95$, and to have a test-retest reliability of .97 over 1 week (Seligman et al., 2005).

Centre for Epidemiological Studies of Depression Scale (CES-D). The CES-D (Radloff, 1977) is a widely used 20 item inventory designed to measure the incidence of depressive symptoms over the prior week. Each symptom is rated in terms of frequency on 4 point Likert scale, ranging from 0 (less than 1 day) to 4 (most or all of the time).

Much research has illustrated the good internal consistency, reliability, convergent and concurrent validity, and sensitivity of this measure (see Priel & Shahar, 2000; Santor, Zuroff, Ramsay, Cervantes, & Palacios, 1995; Santor, Zuroff, Mongrain & Fielding, 1997). Internal consistency has been reliably found to be good, with Cronbach alpha .84 (Corcoran & Fisher, 1987) and .85 (Radloff, 1977) in the general population and .90 (Radloff, 1977) in a clinical sample. Good split-half reliability, coefficients ranging from .77 to .92, have been reported (Corcoran & Fisher, 1987). The CES-D has been suggested to be more discriminating of individual differences in depressive symptom severity than the commonly used BDI (Santor et al., 1995).

Procedure

Participants were asked to log onto the website for the study, which was entitled Project HOPE (Harnessing One's Personal Excellence), at www.projecthopecanada.com. Once on site, participants registered for the study and completed an online consent form (See Appendix E) outlining the anonymous and confidential nature of their participation, as well as their right to withdraw from the study at any time. In addition, participants were more clearly informed about the time and effort that participation in the study would entail. Information about the study as well as researcher contact information was sent to participants via e-mail.

Participants then completed a battery of tests including baseline measures of happiness (SHI), current depressive symptoms (CES-D), and a measure of self-criticism, and neediness (DEQ).

Participants were then randomly assigned to one of four conditions based on the Seligman (Seligman et al., 2005) study. They were asked to log on daily for 7 days in order to complete their exercise. They were encouraged to continue with the exercises past the 1-week experimental period if they found them to be helpful.

The conditions (see Appendix F for exact instructions) included:

1) “Three good things in life,” hereon referred to as “Three good things” where every night for 1 week participants were asked to log in to the experiment web site and enter three things that went well that day and why they happened.

2) “Using signature strengths in a new way,” hereon referred to as “Signature strengths,” where participants were asked to visit www.authentic happiness.org to take an inventory of character strengths (Peterson, Park, & Seligman, 2005) which identifies and provides feedback on an individual’s top five signature strengths. They were then asked to use one of these strengths in a new and different way every day for the 7 day study period. They were required to log in to the experimental web site every night and describe how they used the strength that day.

3) “Early Memories” (or “inactive control”). In this control group, participants were asked to log in to the web site every night and write about one of their early memories.

4) “Early positive memories,” hereon referred to as “Positive memories” (or “enhanced control”). This additional control group also logged on daily to write about an early memory but was instructed to pick a memory that was positive.

At the conclusion of the week-long exercise period, participants completed outcome measures including the CES-D and the SHI. Depending on when participants entered the study they were either given instructions on how to receive their \$30 payment (either through Paypal, an online payment service, or via a cheque in the mail).

Participants were sent emails at 2 months and 4 months posttest reminding them of their exercise and encouraging them to continue with them if they found them to be beneficial. Participants were also sent reminder emails 1 week prior to their 1-month, 3-month, and 6-month online follow-up assessments. The follow-ups involved completing outcome measures including the CES-D and the SHI. Upon completion of each follow-up assessment, participants were entered into a \$1000 raffle.

Results

Attrition

There were a total of 1447 participants who filled out the initial questionnaires and were assigned to an exercise condition. Of these, 344 (24%) participated at every

follow-up and filled out both the CES-D and the SHI at 6 months. Another 11 filled out the CES-D each time but failed to complete the SHI at the 6-month follow-up. Repeated measures analyses used to explore longitudinal effects used a pairwise deletion procedure for missing data, and therefore only participants who completed test measures at all 5 time points were included. T tests show that those who dropped by the 6-month follow-up were, at baseline, more depressed (CES-D; $t(1444) = 2.071, p = .04$), less happy (SHI; $t(1444) = -3.655, p = .000$), more self-critical (DEQ; $t(1441) = 2.619, p = .009$), and more needy (DEQ; $t(1440) = 2.762, p = .006$). Results will need to be interpreted in light of this attrition pattern. Drop-out rates also did not differ significantly by condition, $\chi^2(3) = 4.772, p = .19$.

Replication of Seligman et al., 2005

Happiness. In order to determine whether “Three good things” and “Signature strengths” were effective in increasing happiness levels over the 6-month study period, an overall repeated measures analysis of variance (ANOVA) was conducted (four conditions by five time periods) for the SHI. A significant main effect for Time was found, $F(4, 337) = 8.528, p = .000, \eta_p^2 = .092$, indicating that participants significantly increased in self-reported levels of happiness over time. A significant Time by condition interaction was also found, $F(12, 1017) = 2.345, p = .006, \eta_p^2 = .027$, indicating that the conditions were related to varying changes in happiness over time.

Planned contrasts were conducted which compared happiness scores at each follow-up to baseline scores within each group. Results showed that “Early memories” control participants tended to increase in happiness at 1 week ($p = .07$, $d = .10$; trend), but returned to baseline levels at the 1, 3, and 6-month follow-ups ($ps > .10$). Thus, as expected, the control condition did not lead to any lasting change in terms of happiness. The “Positive memories” condition showed a trend towards significant increases in happiness at 1 week ($p = .06$, $d = .11$), and showed significant increases at 1 month ($p < .001$, $d = .27$), 3 months ($p = .001$, $d = .25$), and 6 months ($p = .01$, $d = .20$; See Figure 1). Thus, our results indicate that our enhanced control condition actually resulted in lasting gains in happiness.

For “Three good things”, happiness increased significantly at the 1-week follow-up ($p = .004$, $d = .15$), and continued to be elevated at the 3-month ($p = .001$, $d = .22$), and 6-month ($p = .02$, $d = .16$), follow-ups (See Figure 1)². For “Signature strengths” happiness significantly increased compared to baseline levels at posttest ($p = .000$, $d = .29$), at 1 month ($p = .03$, $d = .16$), and at 6 months ($p = .01$, $d = .24$; See Figure 1)³.

In summary, the Seligman and colleagues (2005) findings for happiness were mostly replicated. While the control group tended to experience increases in happiness

² Changes in happiness for the “Three good things” condition were not significantly different from baseline at 1 month ($p = .42$).

³ There was a trend towards significant increases in happiness in the “Signature strengths” condition at the 3 month follow-up ($p = .06$).

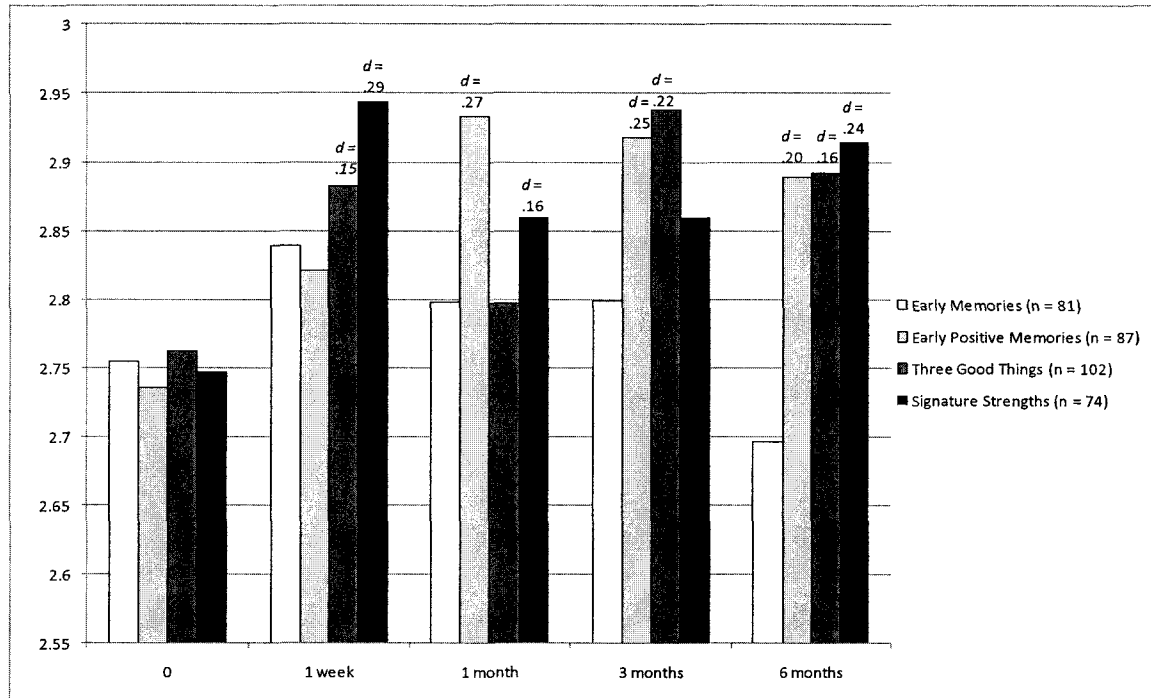


Figure 1. Average happiness scores on the Steen Happiness Index (SHI) over the 6-month study period. Effect sizes are noted where means differed significantly from baseline ($p < .05$).

levels after completing the 1-week exercise period (as was found by Seligman et al., 2005), these benefits faded away by the 1-month follow-up. The two active interventions resulted in increases in happiness, evident 6 months later. Interestingly, the enhanced control condition also led to increases in happiness that were significant over time.

Depressive symptoms. Parallel analyses were conducted with the CES-D scores to determine how the interventions affected depressive symptomatology. An overall repeated measures ANOVA was conducted (4 conditions by 5 time points) with the CES-D as the outcome measure. All participants evidenced significant decreases in depressive symptoms over the 6-month study (effect for Time, $F(4, 348) = 4.570, p = .001, \eta_p^2 = .050$). However, contrary to the findings obtained by Seligman et al., 2005, there was no Time by condition interaction effect, $F(12, 1050) = 1.480, p = .13$, indicating that changes in the CES-D did not differ according to condition. As with happiness, comparisons were made within each group to determine if participants differed from their baseline levels in terms of depressive symptoms at the various follow-ups. These planned comparisons were carried out despite having only a trend for Time by condition interaction effect in order to test a priori assumptions spelled out in the hypothesis section. Furthermore, a less stringent test including all data up to the 3-month follow-up (ANOVA with 4 conditions and 4 time periods) indicated both a main effect for Time ($F(3, 529) = 7.870, p = .000, \eta_p^2 = .043$), and a significant Time by condition effect ($F(9, 1593) = 2.155, p = .02, \eta_p^2 = .012$), suggesting group differences in the short run.

Depression scores for the “Early memories” control group did not change from baseline levels at any of the follow-ups, $ps > .10$, indicating that the exercise was ineffective in lowering depressive symptoms (See Figure 2). For the “Positive memories” enhanced control group, there was a trend towards fewer depressive symptoms at posttest ($p = .07$, $d = .15$). Furthermore, participants in this condition were significantly less depressed a 1 month ($p = .004$, $d = .25$). However, the contrasts at the 3-month and 6-month follow-up failed to reach significance ($ps = .14$, and $.24$ respectively; See Figure 2). While not long lasting, the enhanced control condition reduced depressive symptoms for up to 1 month.

For “Three good things”, depressive symptoms were significantly dropped below baseline levels at posttest ($p < .001$, $d = .29$), 3 months ($p = .02$, $d = .23$), and at 6 months ($p = .02$, $d = .20$; See Figure 2)⁴. As with happiness, and as found in Seligman et al., (2005), the “Three good things” exercise led to significant decreases in depressive symptoms for up to 6 months. For the “Signature strengths” condition, contrasts were significant between baseline and posttest ($p = .03$, $d = .20$), and between baseline and 3 months ($p = .02$, $d = .26$; See Figure 2)⁵. Thus, this exercise provided some benefits in terms of depressive symptoms, evident at 3 months, but they were not as stable as found by Seligman and colleagues (2005).

⁴ CES-D scores at baseline and 1 month were not significantly different ($p = .40$).

⁵ Depressive symptoms at 1 month ($p = .47$), and 6 months ($p = .15$), were not significantly different from baseline levels.

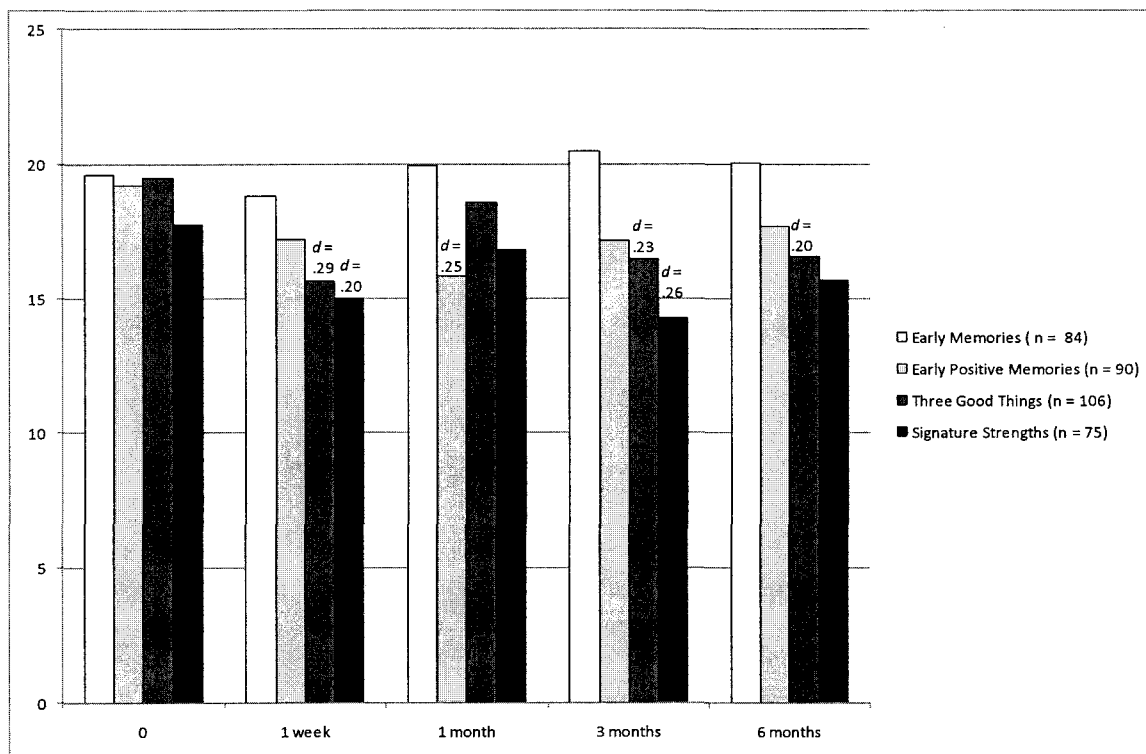


Figure 2. Average depression scores on Centre for Epidemiological Studies of Depression (CES-D) over the 6-month study period. Effect sizes are noted where means differed significantly from baseline ($p < .05$).

In summary, there was some evidence that the positive psychology exercises were effective in reducing depressive symptomatology. Significant decreases in symptoms were evident for up to 3 months for the “Signature strengths” participants and up to 6 months for the “Three good things” group. The “Positive memories” condition led to decreases in depression in the short run (a 1-month period). The next set of analyses sought to directly address whether the active interventions were superior to the control (“Early memories”) and enhanced control (Positive memory) conditions.

Comparison to “Early memories”. Following the procedure outlined in Seligman et al. (2005), each active condition (“Three good things and “Signature strengths”) was compared to each control condition (“Early memories” and “Positive memories”) by way of more specific ANOVAs (2 conditions by 5 time points). Comparisons between “Three good things” and “Early memories” and “Signature strengths” and “Early memories” were conducted for happiness only, as the overall ANOVA comparing all four groups on depression failed to support group differences with a significant Time by condition interaction, $F(12, 1050) = 1.480, p = .13$. In comparing the “Three good things” condition to the “Early memories” condition on levels of happiness, a significant main effect for Time was found $F(4, 178) = 4.309, p = .002, \eta_p^2 = .088$, but the Time by condition interaction was not significant $F(4, 178) = 1.785, p = .13$. In an ANOVA comparing “Signature strengths” and “Early memories” on the SHI, a significant main effect for Time was obtained, $F(4, 150) = 4.254, p = .003, \eta_p^2 = .102$, but the Time by condition

interaction failed to reach significance, $F(4, 150) = 1.892, p = .12$. Thus, unlike findings reported by Seligman and associates' (2005), these ANOVAs failed to support the assumption that "Three good things" and "Signature strengths" would outperform the control condition, "Early memories". Previously reported within group contrasts comparing each group to its own baseline level of happiness suggest that the active interventions are more effective as they lead to improvement over time while the "Early memories" condition does not. However, these differences in effectiveness were not strong enough to be revealed in significant Time by Condition interactions.

Comparisons to "Positive memories". The same approach was taken in order to compare "Three good things" and "Signature strengths" to the added control group "Positive memories." As previously noted, these analyses were conducted for happiness only, as the interaction effect for Time and condition in an ANOVA comparing all four conditions in terms of depression was not significant, $F(12, 1050) = 1.480, p = .13$. For the ANOVA comparing happiness levels between "Three good things" and "Positive memories" there was a significant main effect for Time $F(4, 184) = 6.865, p = .000, \eta_p^2 = .130$, as well as a significant Time by condition interaction $F(4, 184) = 3.497, p = .009, \eta_p^2 = .071$. Significant Time by condition interactions were followed with planned contrasts to determine where significant group differences in terms of amount of change occurred. At 1- month posttest, participants in the "Positive memories" control condition experienced greater increases in happiness relative to baseline than those in the "Three

good things” condition ($p = .006$). These groups did not differ significantly in terms of levels of improvement at other follow-ups ($ps > .10$). Thus, the “Three good things” exercise did not outperform the enhanced control condition in providing benefits in terms of happiness.

In comparing the “Signature strengths” to the “Positive memories” exercises for levels of happiness, a main effect for Time $F(4, 156) = 6.298, p = .000, \eta_p^2 = .139$, as well as a significant Time by condition interaction $F(4, 156) = 2.831, p = .03, \eta_p^2 = .068$, were obtained. Planned contrasts show that individuals in the “Signature strengths” condition experienced greater increases in happiness immediately posttest ($p = .006$). Contrasts were not significant at any other time point ($ps > .10$). Thus the “Signature strengths” exercise did not provide additional benefits to the “Positive memories” condition in increasing happiness over time.

Comparing Control Groups. Finally, an ANOVA comparing both control conditions on happiness found a significant main effect for Time $F(4, 163) = 4.637, p = .001, \eta_p^2 = .102$, as well as significant Time by condition interaction $F(4, 163) = 3.345, p = .01, \eta_p^2 = .076$. Planned contrasts show that the enhanced control condition led to greater increases in happiness scores at 1 month ($p = .01$) and 6 months ($p = .007$) as well as a trend towards greater increases at 3 months ($p = .08$). Thus, there is evidence that our enhanced control condition outperformed the Seligman and associates’ (2005) original control condition in terms of happiness.

In summary, direct comparisons between “Three good things” and “Early memories” and “Signature strengths” and “Early memories” failed to replicate previous findings (Seligman and colleagues, 2005) that suggest that the positive psychology interventions are more effective than the placebo control condition used. It should be noted that planned contrasts within each group revealed that participants in “Three good things” and “Signature strengths” experienced significant improvements in mood (happiness and depression) relative to their own baselines, while those in “Early memories” did not, suggesting that the two former exercises were somewhat more effective. However, for depression these differences were not strong enough to be revealed in the Time by condition interaction in an ANOVA comparing all four conditions. For happiness, group differences were not large enough to be detected in ANOVAs directly comparing each of these conditions to the control. Interestingly, the “Positive memories” control condition did outperform the “Early memories” condition in terms of happiness, and was as effective as “Three good things” and “Signature strengths” in terms of both happiness and depression.

Controlling for the Effects of Remuneration

One possible explanation for why findings in this study were not as impressive as those in the study being replicated (Seligman et al., 2005) in terms of stability of improvements across time relative to baseline as well as in terms of comparisons to the control group may be related to motivational factors. While participants in the study by

Seligman and colleagues (2005) were not paid, approximately 55% of the participants in the current study were. Payment was offered as a means to attract participants and as an incentive to complete a long battery of measures at baseline. (While the current study examined only three measures, it was a part of a larger study called Project Hope that involved a number of other conditions as well as a number of other measures of interest, which all participants completed before they were assigned to a condition.) In order to maximize the number of participants obtained, after the budget for participant remuneration was exhausted, the study remained open but no longer offered payment. Participants motivated by the promise of payment may differ from those motivated by other, more intrinsic factors. In fact, payment status was positively correlated with happiness and negatively correlated with depressive symptoms at baseline (See Table 1). Therefore, those who joined the study without the promise of payment were more distressed and more likely motivated to participate in order to gain relief from distressing symptoms.

To determine the effects of payment status two three-way ANOVAs (4 conditions by 5 time periods by 2 payment statuses) were conducted for the SHI and the CES-D. For happiness, the Time by payment status interaction, $F(4, 333) = .762, p = .55$, as well as the Time by condition by payment status interaction, $F(12, 1005) = .592, p = .85$, were both non-significant. For depressive symptoms, the Time by payment status interaction was non-significant, $F(4, 344) = .383, p = .82$, as was the Time by condition by payment

Table 1

Pearson Correlations^a among Study Variables at Baseline and 1 Week (N = 1447)

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Adherence ^b	1.00										
2. Payment	.43**	1.00									
3. Neediness ^c (n = 1442)	-.04	-.06*	1.00								
4. Self-Criticism ^d (n = 1443)	-.07*	-.11**	.52**	1.00							
5. Age (n = 1424)	.09**	-.00	-.19**	-.11**	1.00						
6. Gender (n = 1410)	.01	.10	-.09**	-.03	.05	1.00					
7. Income (n = 1408)	.01	-.06*	-.19**	-.15**	.39**	-.01	1.00				
8. Happiness (n = 1446) (Baseline) ^e	.07**	.09**	-.51**	-.64**	.08**	.05*	.21**	1.00			
9. Happiness (n = 984) (1 week) ^f	.12**	.10**	-.40**	-.56**	.04	.02	.22**	.84**	1.00		
10. Depressive Symptoms	-.05	-.11**	.48**	.60**	-.05*	.08**	-.19**	-.67**	-.62**	1.00	
(n = 1446) (Baseline) ^g											
11. Depressive Symptoms	-.15**	-.15**	.36**	.48**	-.06*	.05	-.18**	-.58**	-.70**	.70**	1.00
(n = 993) (1 week) ^h											
Means, Frequencies,	3.18	33%	.18	.31	33.50	83% F	\$20000-	2.62	2.76	20.39	17.91
Standard Deviations	2.38	Paid	.84	1.05	11.50		\$30000	.74	.77	14.62	12.77

Note. ^a Phi is used to describe the relationship between Payment and Gender. Point Biserial Correlations are reported to describe all other relationships involving Payment or Gender. ^b Number of nights participants logged on to project website and completed exercise. ^c Neediness subscale and Self-Criticism scale from the DEQ (Blatt, et al. 1976). ^{e, f} From the SHI (Seligman et al., 2005). ^{g, h} From the CES-D (Radloff, 1977). * Significant at $p < .05$. ** Significant at $p < .01$.

status interaction, $F(12, 1038) = .581, p = .86$. These results indicate that there were no significant differences in the way that paid and non-paid participants responded to these exercises over time.

Effects of exercises on those with vulnerability markers for depression

The subsequent analyses examined the role of self-criticism and neediness, vulnerability markers for depression, on changes in mood over time. How do these personality traits affect how people respond to these exercises? In addition, all subsequent analyses control for demographic factors found to be associated with measures of mood at baseline (See Table 1). Seligman and associates (2005) initially controlled for age in their analyses, as it was related to measures of happiness and depression, but found that it did not affect their results and did not report these adjusted statistics. Thus, in keeping with the goal of closely replicating Seligman et al., 2005, previous results did not control for these factors.

Controlling for various demographic factors and study variables. A correlation matrix including sample descriptive statistics, baseline mood measures, and personality variables are presented in Table 1. Being paid was related to various mood and personality factors. Participants who joined the study when payment was offered were less self-critical and needy (DEQ), as well as happier (SHI) and less depressed (CES-D; See Table 1). Presumably, participants who joined the study without any monetary compensation were more interested in seeking relief, while those who were paid were

motivated by the monetary incentive. Participants receiving payment did their exercises more often. Older participants and those who were happier at baseline were also more likely to adhere to the exercises, while self-critical participants had lower levels of adherence. Income and age were both related to mood and personality at baseline. Older participants, and those with higher incomes were less depressed, less needy, less self-critical, and happier. Since payment status, adherence, age, and income were related to baseline measures of mood and personality these factors were controlled for in subsequent analyses examining changes in mood for needy and self-critical individuals.

Neediness, self-criticism, and changes in happiness. An ANOVA (5 time periods by 4 conditions by 2 levels of neediness by 2 levels of self-criticism by 2 payment statuses) with age, income, and adherence as covariates was conducted with happiness as the outcome measure. The 2 levels of neediness and self-criticism were obtained by separating participants into high and low groups, using median splits. There was a main effect for self-criticism ($F(1, 302) = 71.464, p = .000, \eta_p^2 = .191$), as well as a main effect for neediness ($F(1, 302) = 4.601, p = .03, \eta_p^2 = .015$). These traits were associated with lower happiness levels across all time points.

Of particular interest however was whether neediness and self-criticism influenced how people responded to particular exercises. It was hypothesised that high levels of neediness and self-criticism would be related to greater levels of positive change for the positive psychology exercises but not for the control condition exercises.

However, none of the three-way interaction terms for the combined influence of Time, condition, and either neediness or self-criticism were significant (Time by condition by neediness, $F(12, 903) = .777, p = .68$; Time by condition by self-criticism, $F(12, 903) = 1.077, p = .38$.) indicating that being high on either personality style did not entail a different response to particular exercises. Of note, the following unexpected interaction effects were obtained: A Time by payment by neediness, $F(4, 299) = 3.344, p = .01, \eta_p^2 = .043$; and a Time by payment by neediness by self-criticism interaction effect, $F(4, 299) = 2.741, p = .03, \eta_p^2 = .035$.

A closer look into the Time by neediness by payment interaction revealed that needy participants responded to the exercises more favourably when they were paid (See Figure 3). Planned comparisons showed that needy participants who were paid improved significantly more in terms of happiness than those who were not paid at posttest ($p = .001$), 1 month ($p = .01$), and 3 months ($p = .07$; trend). For participants low in neediness, there were no significant differences in improvement in happiness between those who were paid and those who were unpaid ($ps > .10$). This translated into greater increases in happiness for needy people than non-needy people at 1 week ($p = .002$), 1 month ($p = .001$), and at 3 months ($p = .03$), and 6 months ($p = .06$; trend), but only for participants receiving remuneration. For participants who were not paid, there were no differences in the amount of improvement between high and low needy groups at any

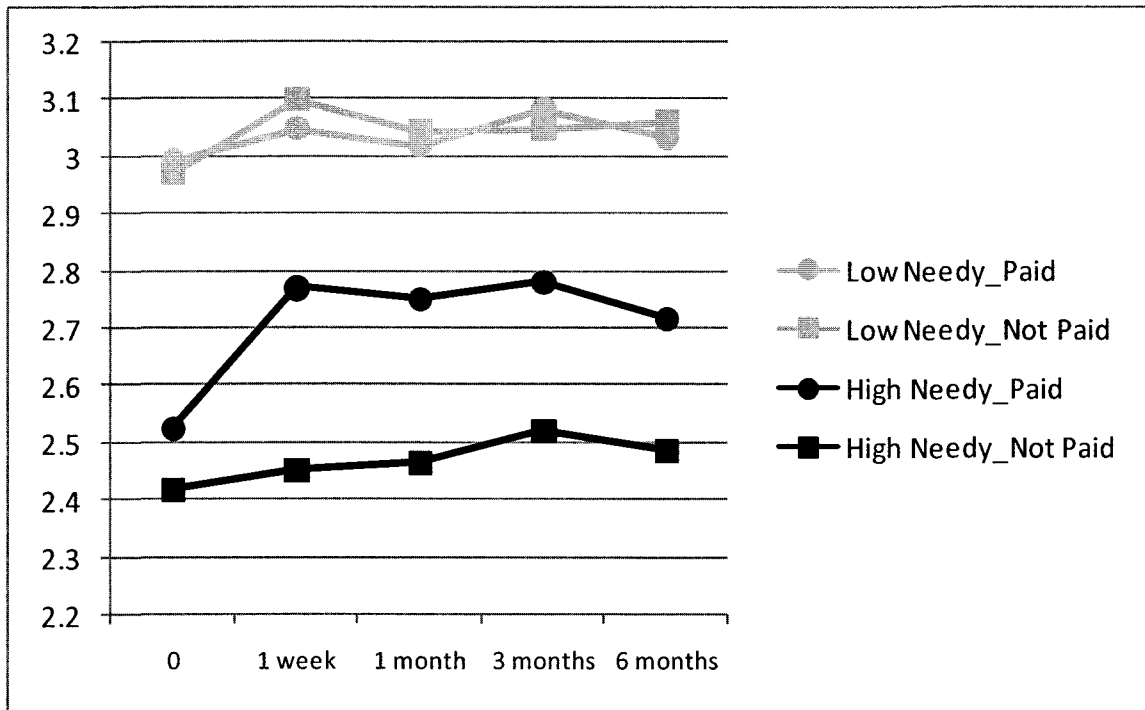


Figure 3. Time by Payment by Neediness Interaction for Steen Happiness Index (SHI) scores. The lines represent mean happiness scores across all time points. Contrasts showed that needy participants who were paid experienced greater increases in happiness between baseline and 1 month, baseline and 3 months, and baseline and 6 months (trend) than needy participants who were not paid. There were no differences between paid and non-paid participants who were low in neediness.

follow-ups ($ps > .10$). In sum, receiving payment was related to greater increases in happiness for needy people, making them improve more than their non-needy peers. The four-way Time by neediness by self criticism by payment interaction was also further explored. As illustrated in Figure 4, those who were needy, and those who were both needy and self-critical showed the most improvement but only if they were paid. This is supported by planned contrasts comparing improvement for participants who were high in self-criticism, high in neediness, or high on both, to participants who were low on both of these vulnerability markers (non-vulnerable participants), when paid and when not paid. When paid, those who were high in neediness alone, and those who were high in both neediness and self-criticism showed more improvement relative to baseline than those who were low in vulnerability traits (low on both neediness and self-criticism)⁶. When not paid, those high on one or both vulnerability markers did not change differently than those who were low on both vulnerability markers⁷. Thus neediness, and neediness in combination with self-criticism, was related to greater

⁶ For paid participants, those high in neediness only experienced significantly greater increases in happiness than those low on both vulnerability traits (non-vulnerable individuals) at 1 week ($p = .000$) and 1 month ($p = .03$), with a trend at 6 months ($p = .07$). Those high on both vulnerability traits showed significantly greater levels of improvement than non-vulnerable participants at 1 month ($p = .002$) and 3 months ($p = .03$), and a trends towards significantly greater levels of improvement at 1 week ($p = .07$), and 6 months ($p = .05$). Those high in only in self-criticism did not significantly differ in terms of improvement from baseline from non-vulnerable individuals at any follow-up ($ps > .05$).

⁷ For non-paid participants, those high in self-criticism only and those high in neediness and self criticism showed no more or less improvement than those low in both traits (non-vulnerable participants; $ps > .10$). Those high in neediness alone showed greater improvement than those low on both vulnerability traits at 6 months only ($p = .04$).

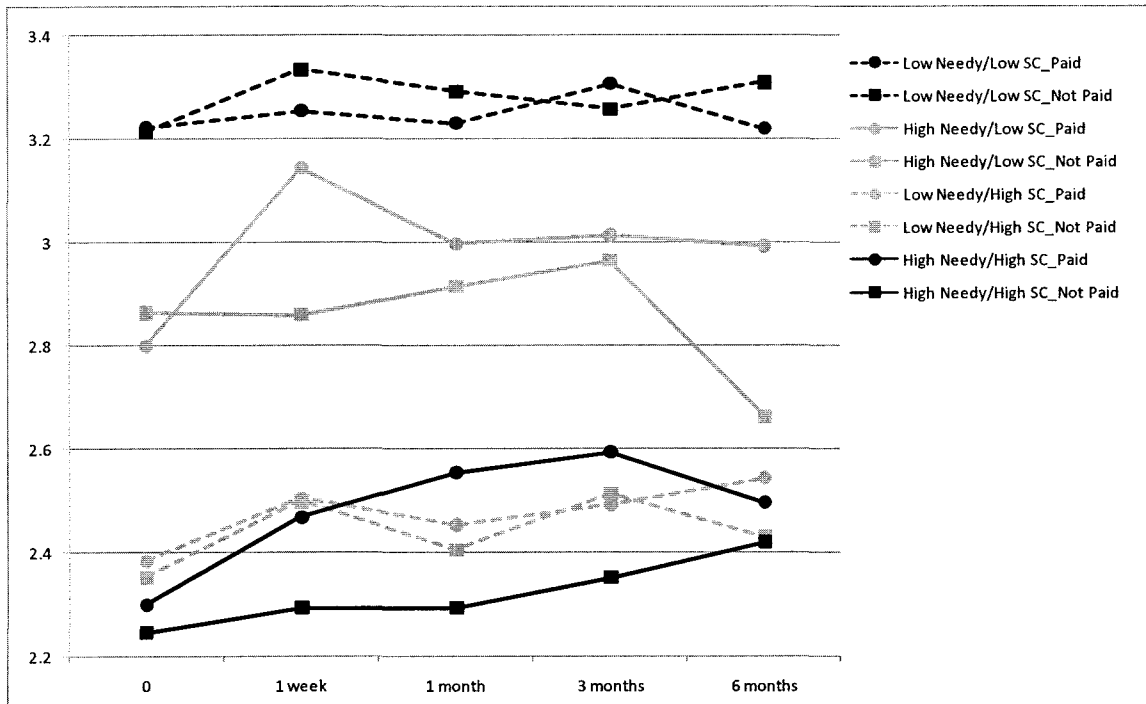


Figure 4. Time by Payment by Neediness by Self-Criticism Interaction for Steen Happiness Index (SHI) scores. The lines represent mean happiness scores across all time points.

Contrasts show that for non-paid participants, neediness and self-criticism had no significant effect on outcome. For paid participants, those high in neediness experienced greater increases in happiness than those low on both vulnerability traits at 1 week, 1 month, and 6 months (trend). Those high on both vulnerability traits also showed greater levels of improvement at posttest (trend), 1 month, 3 months, and 6 months (trend).

increases in happiness as a result of participating in these exercises, but again, only when participants were paid.

Neediness, self-criticism, and changes in depressive symptoms. An ANOVA (5 time periods by 4 conditions by 2 levels of neediness by 2 levels of self-criticism by 2 payment statuses) with age, income, and adherence as covariates was conducted on depression scores across the 6-month study period. Significant main effects were found for self-criticism ($F(1, 312) = 67.653, p = .000, \eta_p^2 = .178$) and neediness ($F(1, 312) = 18.720, p = .000, \eta_p^2 = .057$). As expected, across all time points, those high in these traits had higher levels of depressive symptoms.

However, as noted in the discussion of results for happiness, of greater interest to this study were the three-way interaction (Time by condition by personality) effects which would detect differential responses to exercises based on levels of neediness and self-criticism. Unfortunately, these Time by condition by DEQ interactions did not reach significance, failing to support a main hypothesis in this study that needy and self-critical individuals would derive greater benefits than their peers from the positive interventions, but not the control exercises (Time by condition by neediness, $F(12, 933) = .754, p = .70$; Time by condition by self-criticism, $F(12, 933) = .931, p = .52$).

Interestingly, the Time by neediness interaction term did reach significance, $F(4, 309) = 2.385, p = .05, \eta_p^2 = .030$, indicating that needy participants responded differently to the exercises in general than their less needy peers. Planned comparisons showed that

needy participants experienced greater decreases in depressive symptoms. Across conditions, needy participants were less depressed than they were at baseline at each follow-up ($ps > .001$). On the other hand, the low needy group did not change significantly in terms of depressive symptoms at any time point ($ps > .10$; See Figure 5). Thus, needy participants showed greater decreases in depression than those who were not needy. However, this was irrespective of the condition (positive intervention or control) to which they were assigned.

Thus, in general terms, neediness was related to greater responsiveness to these exercises. For happiness, this was only true of paid participants. For depression, needy participants experienced greater improvements regardless of whether or not they received payment. There was no evidence that needy or self-critical participants did particularly well or particularly poorly with any individual exercise.

Discussion

Replication of Seligman et al., 2005

The current study was moderately successful in replicating Seligman and colleagues (2005) findings that positive psychology exercises can be successful in increasing happiness and decreasing depression over a period of 6 months, although benefits were less stable in the current study and not significantly greater than those provided by the placebo control condition.

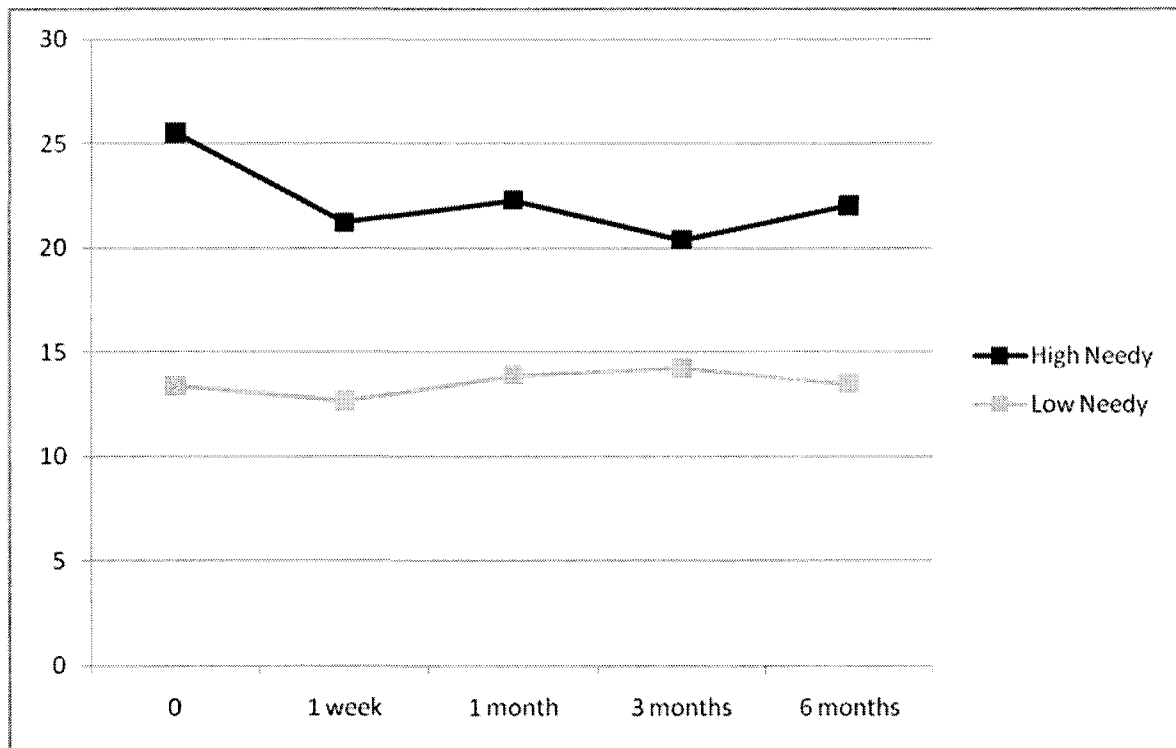


Figure 5. Time by Neediness Interaction for Centre for Epidemiological Studies of Depression (CES-D) scores. The lines represent mean happiness scores across all time points. Contrasts showed that participants in the high needy group had greater decreases in depressive symptoms (relative to baseline) than those in the low needy group at each follow-up .

Seligman and associates (2005) compared happiness and depression at each follow up to baseline levels for each individual group and found that “Three good things” and “Signature strengths” led to stable improvements in terms of both happiness and depression, while the control condition, “Early memories”, did not. In the current study positive changes in happiness and depression relative to baseline were apparent for the positive interventions, but not consistently maintained throughout the 6-month follow-up period. For the “Three good things” exercise, gains relative to baseline were noted in both depression and happiness levels at posttest, but were lost by the 1-month follow-up, only to be noted again at 3 and 6-month posttest. For “Signature strengths”, the benefits were less stable with gains in happiness noted at posttest, 1 month, and 6 months, but not 3 months posttest. Decreases in depression were noted at posttest and 3 months posttest only. The “Early memories” condition was ineffective in improving mood. Thus, in terms of within group comparisons to baseline levels of happiness and depression, the current study mainly replicates previous findings (Seligman et al., 2005).

Seligman and colleagues (2005) also reported “Three good things” and “Signature strengths” to be more effective than a placebo control condition, “Early memories”. In this regard, the current study was not successful in its attempt at replication. In order to compare each positive intervention group to the control group the authors of the original study (Seligman et., al, 2005) followed ANOVAs comparing all conditions at once across time with more specific ANOVAs comparing two groups at a time (a positive

intervention and the placebo exercise) across time. For both “Three good things” and “Signature strengths”, ANOVAs resulted in significant Time by condition interactions, confirming the superiority of the active interventions over the control condition. In the current study, the ANOVA comparing all conditions across time for depression did not have a significant Time by condition interaction, thus failing to support the hypothesis that the control condition was less effective in decreasing depressive symptoms. For happiness, the overall ANOVA did have a significant Time by condition interaction, but the more specific ANOVAs comparing “Three good things” with “Early memories” and comparing “Signature strengths” with “Early memories” failed to provide support for the superiority of the positive interventions (Time by condition interactions were not significant). Thus the findings failed to support the hypothesis that the active interventions were more effective than the “Early memories” control condition in increasing happiness and decreasing depressive symptoms.

In summary, people in the active intervention groups did lastingly improve in terms of happiness levels and depressive symptoms, relative to their own baseline levels, while people in the control condition did not. These results replicate previous findings (Seligman et al., 2005), although improvements in mood relative to baseline were less stable in the current study. Although within group patterns of improvement suggest that “Three good things” and “Signature strengths” exercises are more effective than the “Early memories” control condition, direct comparisons to the control condition do not

support this hypothesis. On this point the current study fails to replicate previous results (Seligman et al., 2005).

One possible explanation for the more glowing support for the positive psychology exercises found by Seligman and colleagues (2005) lies in the sample used in this original study. The sample in the Seligman and associates' (2005) study was recruited through Seligman's self-help positive psychology book "Authentic Happiness" (2005). Thus, the majority of these participants were motivated to buy a self-help book, and had read about the promises of positive psychology and the impressive credentials of Martin Seligman, possibly increasing expectancies for success as well as adherence to the study protocol and continued participation in the study⁸. This possibility is supported by the fact that the current study had a 76% drop-out rate versus a 29% drop out rate reported by Seligman and colleagues (2005). Participants in the current study would have come across the ad while surfing the social networking website Facebook, and would have had no knowledge of the types of well-being studies involved, or of the researchers conducting the research. These participants may not have had the same expectancies for change or may have been less informed about the potential usefulness of the exercises. In addition, the study initially offered payment for completing the initial week-long exercise

⁸ Average adherence (number of nights out of 7 that participants logged on to the website to complete their daily exercise) for the current study was 3.2 out of 7 days for the initial sample of 1447 participants who completed the initial assessment and were assigned to a condition. Average adherence for participants in the final sample (those who participated in the initial assessment as well as at 1 week, 1 month, 3 month, and 6 month follow-ups) was 4.9 days out of 7. Seligman and associates (2005) did not have a comparable measure of adherence.

period and posttest measures, thus attracting participants who were likely motivated by the monetary compensation. The importance of motivation was suggested in a recent meta-analysis of positive psychology intervention studies which found self-selection to be related to increased benefits in response to such interventions (Sin & Lyubomirsky, 2009).

Another possible explanation for the less impressive results in the current study could be related to the fact that participants in the current study were more depressed and less happy than those in Seligman et al. (2005). It is possible that these exercises exert their optimal effects on less distressed persons. However, this is not consistent with the limited research on positive psychology interventions with more distressed populations (e.g. Seligman et al., 2006; Fava et al., 1998) or with a recent meta-analysis that found positive psychology interventions to be more effective with depressed individuals (Sin & Lyubomirsky, 2009). However, more research will be needed in this area in order to fully address this possibility.

Additionally, while the current study attempted to replicate the original (Seligman et al., 2005) closely, some changes were made to the “Early memories” control condition in order to improve upon the methodology of the study. The rationale for the “Early memories” control condition in the original study (Seligman et al., 2005) was shorter in length, less detailed, and arguably less convincing (See Appendix F). In addition, while the expectancies created for the positive psychology exercises are directly related to

depression or happiness, the expectancies created for Seligman and colleagues (2005) original control condition are not. (The rationale for “Three good things” explains how this exercise could combat a tendency towards depression and anxiety and the “Signature strengths” exercise is prefaced with an explanation of how this exercise could increase satisfaction with life. In contrast, the “Early memories” condition suggests only that the exercise can help people better understand themselves, a promise which is not directly related to happiness or depression.) In the current study, the rationale of the control condition was enhanced in order to more closely match the active interventions to ensure that any additional gains achieved by the positive interventions were due to factors inherent in the exercises and not due to increased demand characteristics or increased expectancies for change created by their more persuasive rationales. This improvement in methodology may have worked against finding significant differences between conditions; differences that may have been artificially inflated in the original study (Seligman et al., 2005).

In summary, the more modest evidence for the effectiveness of the “Three good things” and “Signature strengths” exercises in the current study can be postulated to be due to the strengthening of a previously inadequate control condition as well as differences between the study samples, specifically in terms of motivation and distress levels.

Positive Psychology Interventions Compared to a Positive Control Condition

An enhanced control condition, “Positive memories”, was added to this study in order to match the “Three good things” and “Signature strengths” exercises in terms of valence and begin to tease out the active ingredient in the positive psychology interventions. Interestingly, participants in this group were happier at posttest (trend), and at 1, 3, and 6 months posttest, than they were at baseline. In terms of depressive symptoms, significant reductions in depressive symptoms were noted at posttest (trend) and at 1 month posttest. Thus, this enhanced control condition appeared to provide benefits similar to those provided by the positive psychology exercises. In fact, direct comparisons of the “Positive memories” condition with each of the active interventions provided no evidence for the superiority of the positive psychology interventions. In addition, “Positive memories” outperformed the original control condition, particularly in terms of happiness. In comparing the two control conditions a significant Time by condition interaction was further explored with planned contrasts that showed greater increases in happiness for “Positive memories” at 1 month, 3 months (trend), and 6 months. Thus, the “Positive memories” enhanced condition outperformed the original control condition, and performed as well as “Three good things” and “Signature strengths”.

Changing the inactive control exercise by giving it a positive rather than neutral valence was sufficient to make the exercise as effective as the two positive psychology

interventions examined. This suggests that there is nothing particularly special about the positive psychology interventions, other than what they share in common with the “Positive memories” exercise, positive valence, or a daily focus on positive self-relevant information. Is there anything particularly therapeutic about acting upon these much researched character strengths (Peterson & Seligman, 2004)? Is there anything special about gratitude and counting your daily blessings? Or is it simply that these exercises, like “Positive memories”, force people to put some time aside each day to focus on something positive? Could it be that simple to make people happier? And if so, is the importance of “Three good things” and “Signature strengths” somewhat diminished?

On the other hand, proponents of positive psychology may not be troubled by these findings and may argue simply that we stumbled upon another “treatment” in asking participants to recall early positive memories; a treatment with its own separate active ingredients that fits well with the tenets of positive psychology. It could be that the effectiveness of all three exercises is due to more than the introduction of daily positive thoughts. Anecdotally, a number of participants emailed researchers thanking them for the impact the “Positive memories” exercise had on their lives. Participants claimed it helped them to reframe their past in a more positive light. Depression is associated with a bias towards remembering negative self-relevant material (Blaney, 1986). Perhaps the positive memories allowed dysphoric participants, accustomed to viewing their childhood as wholly negative some, to gain some perspective and rewrite their history as a more

balanced, partly positive narrative. One participant claimed the exercise prompted them to reconnect with estranged family members. Again, being reminded of positive history helped to soften a focus on negative feelings alone and encouraged forgiveness, reaching out, and other positive behaviours, which in turn encourage more positive emotions in an “upward spiral” (Fredrickson, 2000).

There is also a body of research on the role of positive episodic memories in the regulation of negative mood (Joormann & Siemer, 2004; Joormann, Siemer, & Gotlib, 2007). These studies have found positive memories to be effective in decreasing the intensity of induced negative moods in nondysphoric individuals (Joormann & Siemer, 2004) and this emotion regulating function may have been a factor in the effectiveness of the “Early memories” condition in the current study. However these researchers also found that thinking about positive memories did not reduce negative mood in dysphoric or previously depressed individuals and actually increased the intensity of naturally occurring negative moods for depressed individuals (Joormann & Siemer, 2004; Joormann, Siemer, & Gotlib, 2007). These findings are not consistent with the current study’s moderately depressed sample (CES-D scores: $\bar{x} = 20.39$, $s = 14.62$) experiencing long lasting benefits in happiness and depression in response to the “Positive memories” condition. It is possible that although positive memories may not immediately reduce in-the-moment negative moods of depressed individuals, they may still, through a different mechanism, have measurable effects on depression and happiness in the longer term.

Effect of Positive Psychology Interventions for Needy and Self-Critical Individuals

A second focus of this study was to determine if these positive psychology exercises would benefit people with high levels of neediness and/or self-criticism. Since these personality traits are known vulnerability markers for depression, people with high levels of these traits could have the most to gain from these exercises. Do these exercises reduce depressive symptoms and increase happiness for these populations? Could participating in these exercises improve vulnerable persons' mood and hence their resilience to depression?

It was hypothesised that these personality traits would be associated with greater levels of improvement in mood in response to the "Three good things" and "Signature strengths" exercises. These exercises seem to be well suited to those vulnerable to depression. For self-critical individuals, "Signature strengths" explicitly forces participants to think about their character strengths, which should be particularly beneficial for self-critics who are accustomed to focusing mainly on their perceived flaws. "Three good things" asks participants to focus on positive aspects of the day. This increased attention to the good things that happen to them might be beneficial for self-critics, particularly if they attribute the causes of at least some of these things to be related to their own actions or characters, forcing them again to focus on positive, rather than negative aspects of themselves. In addition, studies have shown that people high on self-criticism are particularly resistant to therapeutic change (e.g., Blatt, Quinlan, et al.,

1995; Blatt et al., 1998) in short term therapies. Could these exercises, which are self administered, rather than dependent on the formation of a therapeutic alliance, more likely to effect change?

As for needy individuals, the “Signature strengths” exercise may be expected to be beneficial by turning the individual’s attention towards their strengths, causing them to feel strong enough to stand on their own, rather than relying on others. Similarly, the “Three good things” exercise would allow them to focus on positive aspects of their day, which even if relationship related, will be positive and reassuring, rather than negative and anxiety-producing.

Thus, it was expected that the active interventions tested in this study would be particularly beneficial for needy and self-critical participants. After controlling for age, income, adherence to the task, and whether or not participants were remunerated, Time by condition by neediness, and Time by condition by self-criticism interactions were non-significant. This was true for both happiness and depressive symptoms. Thus, there is no evidence to suggest that needy or self-critical individuals would do better with a specific exercise. So although these exercises do seem to fit well with the issues that self-critical and needy participants present, they were not designed specifically for these populations and their ingredients were likely general enough to be equally effective across the whole sample.

However, some interesting and unexpected interactions regarding neediness were obtained across all conditions and further examined on an exploratory basis. In terms of depressive symptoms, a significant Time by neediness interaction was obtained. Across conditions, participants high in neediness had greater decreases in depressive symptoms than those low in neediness, posttest and at every follow-up. Thus, needy people improved more, although there is no evidence to suggest that it mattered to which condition they were assigned (active or control). The fact that neediness was associated with increased responsiveness across all conditions, including the inactive control condition “Early memories”, suggests that their higher levels of improvement may be due in part to demand effects. It is possible that needy participants are simply more sensitive to demand characteristics, and were more likely to report feeling better because that is what was expected of them, or because that is what the researchers were hoping to find.

A Time by payment by neediness interaction as well as a Time by payment by neediness by self-criticism interaction were obtained when examining happiness scores. Further exploration of these interactions through the use of planned comparisons revealed that needy participants experienced greater increases in happiness than those who were not needy, but this was only true for participants who received remuneration. Likewise, those high in self-criticism also improved more than those low on vulnerability traits, but only if they were also high in neediness, and again, only if they were paid for participating in the study. Thus, for paid participants only, highly needy participants, and

those high in both neediness and self-criticism, experienced the greatest increases in happiness across conditions. Again, these findings may be related to the possibility that needy participants may be more sensitive to demand characteristics as their higher levels of improvement are not specific to the active interventions. The fact that payment was related to greater increases in happiness for needy people alone also supports this possibility. Being paid could have also amplified the tendency to tell the researchers what they wanted to hear, as it may have made them feel more pressure to be a “good” participant. On the other hand, it is also possible that the results were not inflated artificially for needy participants. Perhaps needy participants paid more attention to the tasks when they were paid, feeling more responsible for diligently completing their exercises if they were paid to do so. Payment and adherence were in fact correlated positively. It should be noted that these are simply conjectures made after the fact and were not predicted by a priori hypotheses.

Thus, while nonsignificant Time by condition by neediness and Time by condition by self-criticism interactions failed to confirm the hypothesis that people with high levels of these vulnerability markers to depression would particularly benefit from positive psychology exercises, results show that regardless of condition (active or control), needy participants particularly benefited from taking part in these self-help exercises, although it is not clear if this is in part due to increased acquiescence. Self-criticism alone was not associated with either higher or lower levels of improvement.

Although it was hypothesized that self-criticism would be related to increased levels of improvement it is noteworthy that this population is particularly unresponsive to psychological interventions and not finding self-criticism to be related to lower levels of improvement can be considered a small success (Blatt, Quinlan, et al., 1995; Blatt et al., 1998).

Summary

Two week-long internet-based positive psychology exercises, “Three good things” and “Signature strengths”, resulted in increases in happiness and decreases in depression evident 6 months later, replicating previous research (Seligman et al., 2005). The results obtained in the current study were more modest. In particular, these positive psychology exercises failed to outperform a placebo control condition, and benefits within each group were not as stable over time as those reported by Seligman and colleagues (2005). This may be due to sample differences, such as motivation and level of dysphoria, as well as the strengthening of the rationale provided to participants in the original control condition.

Interestingly, when the control condition was altered to match the positive psychology interventions in terms of valence, it became significantly more effective and as beneficial as the positive intervention. This indicates that there may not be anything particularly special about the positive interventions tested, other than requiring a focus on positive aspects of one’s experience. It is also possible however, that the “Positive

memories” control condition may have its own active ingredients that make it an effective exercise that fits well with the tenets of positive psychology.

These exercises may be used advantageously to bolster the mood of individuals with needy and self-critical personality styles who are vulnerable to depression, and may be of particular benefit to those with needy personalities, although the possibility that the superior benefits this group reported were due to increased sensitivity to demand characteristics cannot be discounted.

Limitations

One limitation of this research is its reliance on a homogenous sample that was largely white and female, making generalization of these findings to men and individuals of other cultures difficult. The study was also completely on-line, thus the majority of participants are at least somewhat computer and technology savvy, further limiting the generalization of these findings.

In addition, the use of a repeated measures design including all follow-up assessments led to the loss of a substantial amount of data. With an attrition rate of 76%, some important information on how the exercise affected the whole sample is lost. Thus, findings must be interpreted with caution as they can only be generalized to the type of participant who remained in the study until the very end. Individuals who completed every follow-up assessment throughout the 6 month study period were happier, less depressed, less needy, and less self-critical than those who dropped out of the study.

Thus, the finding that needy participants particularly benefited from these exercises, for example, is tempered by the fact that the neediest participants were also more likely to drop out of the study.

Why more highly distressed individuals were more likely to drop out is an important question. It is possible that people who are struggling and suffering from depression simply lacked the motivation to continue with the exercises and the follow-up sessions. It is also possible that they found these exercises irrelevant, unhelpful, or even unpleasant and harmful. Unfortunately, these questions cannot be answered by this study. However, it is clear that these exercises will not help the most needy and self-critical individuals who are struggling if they are not willing to actively engage in them. It is interesting to note that participants in the Seligman and associates (2005) study had a much lower dropout rate (29%). As previously discussed, it is likely that differences in participant recruitment methods led to the former study having a more highly motivated sample than the one obtained in the current study. It is likely that this high level of motivation played a part in the lower dropout rate and the relatively superior results that Seligman et al. (2005) obtained.

Another criticism against the current study is that although the findings are statistically significant they may not be clinically significant. The change in mean depression scores over time involved only a few points and may not have amounted to a change in clinical status (depressed to non-depressed). However, these exercises were not

hypothesised to cure depression, but rather to enhance mood, important for those vulnerable to the disorder. The significant decrease in depressive scores and increases in happiness scores indicate that mood was indeed enhanced. In addition, the mean changes in depressive symptoms and happiness do not capture individual differences in participant's responses to the exercises. A moderate change in mean scores overall likely suggests that some participants profited substantially from these exercises, while others were unaffected. While the current study failed to capture individual difference variables that may capture this variability in response, future research may profitably focus on this question.

A further limitation of this study is its limited ability to tease out the active ingredients in the positive psychology interventions. The original investigation of these interventions (Seligman et al., 2005) compared the exercises to an "Early memories" control condition, that simply asked participants to write about early memories. This condition led to initial improvements in mood that did not last past the 1-week exercise period, making it an acceptable control condition. However it did little to elucidate the active ingredient in "Three good things" and "Signature strengths" exercises. In the current study, an additional control condition, "Positive memories", was added which controlled for the valence of the positive psychology interventions. The active interventions failed to outperform this enhanced control condition, failing to prove that the exercises had specific ingredients outside of positive valence that made them

effective. However, as previously discussed, the “Positive memories” exercise may have had separate active ingredients of its own, other than simply positive valence, that made it a useful exercise. A more useful control condition might have been one in which the only active ingredient was that people were asked to think about happy things for a period of time each day. For example, participants may have been asked to list and think about some of their favourite things each day. Future studies could look more closely at the specific ingredients or exercise characteristics that are responsible for improving emotional well-being. In terms of the exercises tested in the current study, one could ask: Is it gratitude for “Three good things”, increased self-esteem for “Signature strengths”, or is it simply a focus on anything positive that make these exercises useful?

Conclusions and Future Directions

Despite the limitations inherent in the current study, the partial replication of the effectiveness in these two week-long, internet-based positive psychology interventions suggests that further research into positive psychology exercises as well as self-help exercises aimed at needy and self-critical individuals is warranted.

Further research into the active ingredients of these exercises should be conducted. Three conditions were found to be effective in the current study, “Three good things” which involved counting blessings, “Signature strengths” which involved acting on personal strengths of character, as well as “Positive memories” which involved thinking about happy childhood memories. While all three exercises have in common a

daily focus on positive self-relevant information they are also very different exercises that may have additional unique active ingredients that make them effective. Future research can look into how these individual exercises work by comparing them to carefully selected control conditions that are similar but lacking in hypothesized active ingredients.

An interesting avenue of research could look into the “Positive memories” exercise, which was added as a control condition, but turned out to be as effective as the positive psychology interventions examined. Research on the affect regulating role of positive memories suggests an interesting point of departure for examining what makes this exercise therapeutic (Joormann & Siemer, 2004; Joormann, Siemer, & Gotlib, 2007).

The finding that these interventions were useful for bolstering the mood of needy and self-critical individuals is an important finding because of their vulnerability to major depression. Neediness was related to greater levels of improvement in term of happiness and depressive symptoms and self criticism was not related to lower levels of improvement despite being usually associated with poorer outcomes in short term therapies (Blatt, Quinlan, et al., 1995; Blatt et al., 1998). These results provide some optimism for the role of web based self administered psychological interventions in bolstering these individuals’ resilience against depression. Future research could effectively work on developing and testing similar interventions specifically designed to deal with issues particular to needy and self-critical individuals in order to maximize possible gains for these vulnerable individuals.

Finally, there is a need for research on internet-based psychological interventions. The current study replicated previous findings (Seligman et al., 2005) that psychological interventions delivered solely through the internet, with no clinician present, can be useful in increasing well-being. Future research into the effectiveness as well as advantages, disadvantages and possible perils of internet-based interventions should be conducted. With the current emphasis on cost-reduction in overburdened health care systems, web based interventions could be a cost effective adjunct to traditional forms of therapy. However, web based self-help interventions can also be dangerous if they are used in place of therapy for individuals who require a higher level of care. Research into the optimal use of these interventions would be beneficial.

In sum, the current study replicates Seligman and associates' (2005) findings that two week-long internet-based positive psychology interventions are effective in reducing depressive symptoms and increasing happiness for a period of 6 months although the benefits experienced in the current study were somewhat more modest. In addition, the benefits provided by the positive psychology exercises did not surpass benefits provided by an enhanced control condition that matched them in terms of valence, thus failing to prove that these interventions had unique active ingredients beyond positive valence. The effectiveness of these exercises were examined in relation to neediness and self-criticism, vulnerability markers for depression. Self-criticism alone did not seem to affect responsiveness to the exercises. There was some evidence that needy individuals

particularly benefited from these self-help exercises. Future research into the active ingredients of positive psychology interventions, as well as into interventions targeting needy and self-critical individuals, is highly warranted.

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Appendix A

Criteria for a characteristic to be considered a strength (Seligman, 2002, p 137-140).

Strength Criteria

- 1) It is a *trait*, a psychological characteristic stable across situations and time.
- 2) It is *valued in its own right* and not simply as a means to a further gain.
- 3) It can be seen in what *parents wish for their newborn*.
- 4) Its display causes others to feel *elevated and inspired*. It does not diminish others.
- 5) Cultural *institutions, rituals, role models, parables, maxims, and children's stories*, exist to support it.
- 6) There exist in a culture *role models and paragons* of the characteristic.
- 7) There exist *prodigies* with respect to the characteristic.
- 8) There exist *idiots* with respect to the characteristic, who lack it completely or almost completely.
- 9) They are *ubiquitous*, valued in almost every country in the world.

Appendix B

Six Virtues and Underlying Strengths (Seligman, 2002, p 140-159).

Six Virtues and Underlying Strengths

Wisdom and Knowledge

- 1- Curiosity/Interest in the World
- 2- Love of Learning
- 3- Judgment/Critical Thinking/Open-Mindedness
- 4- Ingenuity/Originality/Practical intelligence/Street Smarts
- 5- Social Intelligence/Personal Intelligence/Emotional Intelligence
- 6- Perspective

Courage

- 7- Valour and Bravery
- 8- Perseverance/Industry/Diligence
- 9- Integrity/Genuineness/Honesty

Humanity and Love

- 10- Kindness and Generosity
- 11- Loving and Allowing Oneself to be Loved

Justice

- 12- Citizenship/Duty/Teamwork/Loyalty
- 13- Fairness and Equity
- 14- Leadership

Temperance

- 15- Self- Control
- 16- Prudence/Discretion/Caution
- 17- Humility and Modesty

Transcendence

- 18- Appreciation of Beauty and Excellence
- 19- Gratitude
- 20- Hope/Optimism/Future-Mindedness
- 21- Spirituality/Sense of Purpose/Faith/Religiousness
- 22- Forgiveness and Mercy
- 23- Playfulness and Humour
- 24- Zest/Passion/Enthusiasm

Appendix C

Newspaper/Facebook Advertisement

Feel Better- Participate in Project Hope

Online study by York University researchers looking at the effect of mental exercises on well-being and mood. Participants paid \$30 and entered in \$1,000 draws.
Go to www.ProjectHopeCanada.com

Appendix D

Measures:

- 1) DEQ; Depressive Experiences Questionnaire (Blatt, D'Afflitti, & Quinlan, 1976)
- 2) SHI; Steen Happiness Index (Seligman, Steen, Park, and Peterson, 2005)
- 3) CES-D; Centre for Epidemiological Studies of Depression (Radloff, 1978)

1) DEQ

Listed below are a number of statements concerning personal characteristics and traits. Read each item and decide whether you agree or disagree and to what extent. If you strongly agree, circle 7; if you strongly disagree, circle 1; The midpoint, if you are neutral or undecided, is 4.

- 1=Strongly Disagree
- 2=Disagree
- 3=Mildly Disagree
- 4=Don't know or neutral
- 5=Mildly Agree
- 6=Agree
- 7=Strongly Agree

1. I set my personal goals and standards as high as possible.
2. Without support from others who are close to me, I would be helpless.
3. I tend to be satisfied with my current plans and goals, rather than striving for higher goals.
4. Sometimes I feel very big, and other times I feel very small.
5. When I am closely involved with someone, I never feel jealous.
6. I urgently need things that only other people can provide.
7. I often find that I don't live up to my own standards or ideals.
8. I feel I am always making full use of my potential abilities.
9. The lack of permanence in human relationships doesn't bother me.
10. If I fail to live up to expectations, I feel unworthy.
11. Many times I feel helpless.
12. I seldom worry about being criticized for things I have said or done.
13. There is a considerable difference between how I am now and how I would like to be.
14. I enjoy sharp competition with others.
15. I feel I have many responsibilities that I must meet.
16. There are times when I feel "empty" inside.
17. I tend not to be satisfied with what I have.
18. I don't care whether or not I live up to what other people expect of me.
19. I become frightened when I feel alone.
20. I would feel like I'd be losing an important part of myself if I lost a very close friend.
21. People will accept me no matter how many mistakes I have made.
22. I have difficulty breaking off a relationship that is making me unhappy.

23. I often think about the danger of losing someone who is close to me.
24. Other people have high expectations of me.
25. When I am with others, I tend to devalue or "undersell" myself.
26. I am not very concerned with how other people respond to me.
27. No matter how close a relationship between two people is, there is always a large amount of uncertainty and conflict.
28. I am very sensitive to others for signs of rejection.
29. It's important for my family that I succeed.
30. Often, I feel I have disappointed others.
31. If someone makes me angry, I let him (her) know how I feel.
32. I constantly try, and very often go out of my way, to please or help people I am close to.
33. I have many inner resources (abilities, strengths).
34. I find it very difficult to say "No" to the requests of friends.
35. I never really feel secure in a close relationship.
36. The way I feel about myself frequently varies: there are times when I feel extremely good about myself and other times when I see only the bad in me and feel like a total failure.
37. Often, I feel threatened by change.
38. Even if the person who is closest to me were to leave, I could still "go it alone."
39. One must continually work to gain love from another person: that is, love has to be earned.
40. I am very sensitive to the effects my words or actions have on the feelings of other people.
41. I often blame myself for things I have done or said to someone.
42. I am a very independent person.
43. I often feel guilty.
44. I think of myself as a very complex person, one who has "many sides."
45. I worry a lot about offending or hurting someone who is close to me.
46. Anger frightens me.
47. It is not "who you are," but "what you have accomplished" that counts.
48. I feel good about myself whether I succeed or fail.
49. I can easily put my own feelings and problems aside, and devote my complete attention to the feelings and problems of someone else.
50. If someone I cared about became angry with me, I would feel threatened that he (she) might leave me.
51. I feel comfortable when I am given important responsibilities.
52. After a fight with a friend, I must make amends as soon as possible.
53. I have a difficult time accepting weaknesses in myself.

54. It is more important that I enjoy my work than it is for me to have my work approved.
55. After an argument, I feel very lonely.
56. In my relationship with others, I am very concerned about what they can give to me.
57. I rarely think about my family.
58. Very frequently, my feelings toward someone close to me vary: there are times when I feel completely angry and other times when I feel all-loving towards that person.
59. What I do and say has a very strong impact on those around me.
60. I sometimes feel that I am "special."
61. I grew up in an extremely close family.
62. I am very satisfied with myself and my accomplishments.
63. I want many things from someone I am close to.
64. I tend to be very critical of myself.
65. Being alone doesn't bother me at all.
66. I very frequently compare myself to standards or goals.

2) SHI**Instructions**

Please read each group of statements carefully. Then pick the one statement in each group that best describes the way you have been feeling for the past week, including today. Be sure to read all of the statements in each group before making your choice.

Question 1

- A. I dislike my daily routine. (1)
- B. I neither enjoy nor dislike my daily routine. (2)
- C. I enjoy my daily routine, but I do like to get away from it. (3)
- D. I enjoy my daily routine so much that I rarely take breaks from it. (4)
- E. I enjoy my daily routine so much that I almost never take breaks from it. (5)

Question 2

- A. I feel disconnected from other people. (1)
- B. I feel neither connected nor disconnected from other people. (2)
- C. I feel connected to friends and family members. (3)
- D. I feel connected with most people, even if I do not know them well. (4)
- E. I feel connected to everyone in the world. (5)

Question 3

- A. I feel like a failure. (1)
- B. I do not feel like a success. (2)
- C. I feel like I have succeeded more than the average person. (3)
- D. As I look back on my life, all I see are a lot of successes. (4)
- E. I feel I am an extraordinarily successful person. (5)

Question 4

- A. Most of the time I am bored. (1)
- B. Most of the time I am neither bored nor interested in what I am doing. (2)
- C. Most of the time I am interested in what I am doing. (1)
- D. Most of the time I am quite interested in what I am doing. (2)
- E. Most of the time I am fascinated by what I am doing. (3)

Question 5

- A. I am displeased with myself. (1)
- B. I am neither pleased nor displeased with myself—I am neutral. (2)
- C. I am pleased with myself. (3)
- D. I am very pleased with myself. (4)
- E. I could not be any more pleased with myself. (5)

Question 6

- A. When I am working on a task, I often feel frustrated. (1)
- B. When I am working on a task, sometimes I feel frustrated and sometimes I don't. (2)
- C. When I am working on a task, I am usually not frustrated. (3)
- D. When I am working on a task, I am rarely frustrated. (4)
- E. When I am working on a task, I am almost never frustrated. (5)

Question 7

- A. I am joyless. (1)
- B. I am neither joyful nor joyless. (2)
- C. I am more joyful than joyless. (3)
- D. I am much more joyful than joyless. (4)
- E. Almost everything about my life fills me with joy (5)

Question 8

- A. I dislike my work (paid or unpaid). (1)
- B. I neither like nor dislike my work. (2)
- C. For the most part, I like my work. (3)
- D. My work gives me great satisfaction. (4)
- E. My work provides true and deep satisfaction. (5)

Question 9

- A. I have made more bad choices than good in life. (1)
- B. Some of the choices I have made in life have been good; some have been bad. (2)
- C. I have made more good choices than bad in life. (3)
- D. I have made mostly good choices in life. (4)
- E. Even if I could, I would not change any of the choices I have made. (5)

Question 10

- A. Life is bad. (1)
- B. Life is OK. (2)
- C. Life is good. (3)
- D. Life is very good. (4)
- E. Life is wonderful. (5)

Question 11

- A. My life does not have a purpose. (1)
- B. I do not know my purpose in life. (2)
- C. I have a hint about my purpose in life. (3)
- D. I have a pretty good idea about my purpose in life. (4)
- E. I have a very clear idea about my purpose in life. (5)

Question 12

- A. I have little or no energy. (1)
- B. My energy level is neither high nor low. (2)
- C. I have a good amount of energy. (3)
- D. I feel energetic doing almost everything. (4)
- E. I have so much energy that I feel I can do most anything. (5)

Question 13

- A. I experience more displeasure than pleasure. (1)
- B. I experience pleasure and displeasure in equal measure. (2)
- C. I experience more pleasure than displeasure. (3)
- D. I experience much more than pleasure than displeasure. (4)
- E. My life is filled with pleasure. (5)

Question 14

- A. Time passes slowly during most or all of my activities. (1)
- B. Time passes quickly during some of my activities and slowly for others. (2)
- C. Time passes quickly during most of my activities. (3)
- D. Time passes quickly during all of my activities. (4)
- E. Time passes so quickly during all of my activities that I do not even notice it. (5)

Question 15

- A. I am ashamed of who I am. (1)
- B. I am not ashamed of who I am. (2)
- C. I am proud of who I am. (3)
- D. I am very proud of who I am. (4)
- E. I am extraordinarily proud of who I am. (5)

Question 16

- A. I am discouraged about the future. (1)
- B. I am neither encouraged nor discouraged about the future. (2)
- C. I feel somewhat encouraged about the future. (3)
- D. I feel quite encouraged about the future. (4)
- E. I feel extraordinarily encouraged about the future. (5)

Question 17

- A. When I am working on a task, I pay more attention to what is going on around me than I do to the task. (1)
- B. When I am working on a task, I pay as much attention to what is going on around me as I do to the task. (2)
- C. When I am working on a task, I pay more attention to the task than to what is going on around me. (3)
- D. When I am working on a task, I rarely notice what is going on around me. (4)
- E. When I am working on a task, I pay so much attention to it that the outside world practically ceases to exist. (5)

Question 18

- A. Every day I spend almost all of my time doing things that are unimportant. (1)
- B. Every day I spend a lot of time doing things that are neither important nor unimportant. (2)
- C. Every day I spend some time doing things that are important. (3)
- D. I spend the greater part of each day doing things that are important. (4)
- E. Practically every moment of my day is spent doing things that are important. (5)

Question 19

- A. I am pessimistic. (1)
- B. I am neither optimistic nor pessimistic. (2)
- C. I am optimistic. (3)
- D. I am very optimistic. (4)
- E. I am the most optimistic person I know. (5)

Question 20

- A. If anything, what I do has a negative effect on the world. (1)
- B. In the grand scheme of things, my existence neither helps nor hurts the world. (2)
- C. I am making a small but positive difference in the world. (3)
- D. I am making the world a better place. (4)
- E. My life is having a lasting, positive impact on the world. (5)

3) CES-D

Using the scale below, indicate the number which best describes how often you felt or behaved this way, DURING THE PAST WEEK.

- 1= Rarely or none of the time (less than 1 day)
- 2= Some or a little of the time (1-2 days)
- 3= Occasionally or a moderate amount of the time (3-4 days)
- 4= Most or all of the time (5-7 days)

DURING THE PAST WEEK:

- 1. I was bothered by things that usually don't bother me.
- 2. I did not feel like eating; my appetite was poor.
- 3. I felt that I could not shake off the blues even with help from my family or friends.
- 4. I felt that I was just as good as other people.
- 5. I had trouble keeping my mind on what I was doing
- 6. I felt depressed.
- 7. I felt that everything I did was an effort.
- 8. I felt hopeful about the future.
- 9. I thought my life had been a failure.
- 10. I felt fearful.
- 11. My sleep was restless.
- 12. I was happy.
- 13. I talked less than usual.
- 14. I felt lonely.
- 15. People were unfriendly.
- 16. I enjoyed life.
- 17. I had crying spells.
- 18. I felt sad.
- 19. I felt that people disliked me.
- 20. I could not get "going."

Appendix E

Consent Form

Consent Form

Consent

This study will examine the effects of various self-help exercises on mood and well-being. You must be 18 years old to participate.

Participation in this study will involve logging on to this website daily for 8 consecutive days and will consist of the following steps:

A) On the first day you will complete a set of personality and mood questionnaires on this website. This phase of the study will require between 45 minutes to 1.5 hours depending on the condition to which you are assigned. You are randomly assigned to one of the daily exercises being studied.

B) On days 2 through 8 you will complete your daily exercises, which will take 5 - 15 minutes each day. You may be assigned to an online daily writing exercise or you may alternately be given a task to complete each day following which you will answer some questions online. On the 8th day you will also be asked to complete a series of questionnaires (20 minutes).

C) In order to assess long-term effects of these exercises you will be encouraged to continue to use these exercises after the completion of the initial study period. We will ask you to return to the website after 1 month, 3 months, and 6 months to complete questionnaires. These follow-up sessions will take approximately 15 minutes to complete. You can terminate your involvement in this study at any time and do not have to complete all aspects of the project.

Participants will be entered in a draw for \$1,000 after completing the first week. There will also be a \$1,000 draw upon completion of the 1 month, 3 month, and 6 month follow-up measures. Odds of winning depend on the final number of participants completing each follow-up. Failure to participate in one follow-up session does not exclude the possibility of participating in subsequent follow-ups.

There are no evident risks inherent in this project. In previous research, participants have reported benefiting from some of the exercises assigned. You may refrain from answering any questions you are not comfortable with. You may also contact Dr. Mongrain, the project director at (416) 736-5115, Ext. 66193 or York University's Human Participants Review Sub-Committee at (416) 736-5055 (research@yorku.ca) with any concerns you may have.

This research has been reviewed and approved by the Human Participants Review Sub-Committee within the context of York's Senate policy on Research Ethics. All information, including your online responses for the daily exercises and questionnaires will be kept confidential to the limits allowed by law. Participants will be assigned ID numbers, which will be used in place of names in files which are kept in the custody of the research team and which are unavailable to others. The master list matching names (and contact information) to ID numbers will only be available to the researcher in charge of contacting you (e.g. for remuneration purposes or debriefing). All information derived by the study will be used for research purposes only, and the data obtained will be destroyed within a year of the final publication.

Participant Consent

By clicking the Agree button below you are stating that you understand the above information and agree to participate in this study. This does not commit you to all phases of the project and you may withdraw from it at any time. A copy of this page will be sent to the email address you have provided for us.

Appendix F

Exercise instructions:

- 1) Three Good Things in Life
- 2) Using Signature Strengths in a New Way
- 3) Control: Early Memories
- 4) Positive Control: Early Positive Memories
- 5) Early Memories (Original). As used in Seligman, Steen, Park, and Peterson (2005).
Not used in current study.

Instructions borrowed verbatim from Seligman, Steen, Park, and Peterson (2005). Text in parentheses has been adjusted to fit the current study's requirement that participants type the written part of their daily assignments directly onto the study's website. Text in *italics* has been added in condition 3 in order to create higher demand characteristics than in the original condition and in condition 4 to create higher demand characteristics and to make the exercise positive in emotional tone.

1) Three Good Things in Life:

We think too much about what goes wrong and not enough about what goes right in our lives. Of course, sometimes it makes sense for us to analyse bad events so that we can learn from them and avoid them in the future. However, people tend to spend more time thinking about what is bad in life than is helpful. Worse, this tendency to focus on bad events sets us up for anxiety and depression. One way to keep this from happening is to develop our ability to think about the good in life. Most of us are not nearly as good at analyzing good events as we are at analyzing bad events, so this is a skill that needs practice. As you become better at focusing on the good in your life, you will likely become more grateful for what you have and more hopeful about the future. So let's get started.

Your assignment is as follows:

Every night for one week, set aside 10 minutes before you go to bed. Use that time to write down three things that went really well on that day and why they went well. [Log onto the website and you will note a space for you to write about your three good things.] The three things you list can be relatively small in importance ("My husband picked up my favourite ice cream for dessert on the way home from work today") or relatively large in importance ("My sister just gave birth to a healthy baby boy"). Next to each positive event in your list, answer the question, "Why did this good thing happen?" For example, someone might write that her husband picked up ice cream "because my husband is really thoughtful sometimes" or "because I remembered to call him from work to remind him to stop by the grocery store." When asked why her sister gave birth to a healthy baby boy, someone might write that "God was looking out for her" or "She did everything right during her pregnancy."

Writing about "why" the positive events in your life happened may seem awkward at first, but please stick with it for one week.

To review, here are the steps of this exercise:

- 1) Every night before bed for one week, think about three good things that went well that day.
- 2) [Log onto the website and type in] the three things that went well.
- 3) Then [type in] why each thing went well.
- 4) After doing this exercise [every night for 7 days], log back on to the website [to fill out the follow-up questionnaires].

We look forward to hearing back from you soon!

2) Using Signature Strengths in a New Way:

Honesty. Loyalty. Perverserance. Creativity. Kindness. Wisdom. Courage. Fairness. These and about 16 other character strengths are valued in almost every culture in the world. We believe that people can get more satisfaction out of life if they learn to identify which of these character strengths they possess in abundance and then use them as much as possible whether working, loving, or playing.

This exercise consists of two parts. First, you will take a questionnaire that gives you feedback about your strengths. Then you will be asked to use these strengths in new ways every day for one week [and to report back to us on the new way you used a particular strength that day].

Here are the specific steps to follow:

- 1) Enroll in the VIA Signature Strengths project.
- 2) Write down the feedback you receive about your five highest strengths (your signature strengths), [on the spaces provided on this website.]
- 3) Every day for the next seven days use one of your top five strengths in a way that you have not before. You might use your strength in a new setting or with a new person. It's your choice. [You will log onto the website and report back on how you used your strength that day.] Here are some examples of how people have used their strengths in new ways:
 - a. One of Tracy's signature strengths is love of learning. She chose to spend some time browsing the internet for information about how to brew beer at home, something she had always wanted to try.
 - b. One of Russell's signature strengths is fairness. He decided to exercise this strength by devising a system that he and his roommates could use to split up household chores so that everyone contributed equally.
 - c. Judy's top strength is an appreciation of beauty and excellence. She decided to take a walk during her lunch hour so that she could enjoy the brilliantly coloured Fall leaves.
 - d. Kent's signature strength is playfulness/humour. He chose to sneak into the bathroom at work and post some funny comic strips on the stall walls.
- 4) [After reporting back to us how you used your strengths in a new way for 1 week], please return to our website [on the 8th day] to take the follow-up questionnaires.

We look forward to hearing back from you soon!

3) Early Memories:

The unexamined life is not worth living (Socrates).

The importance of self-knowledge and understanding has long been recognized. We believe that those who are truly content have one thing in common: They have a strong sense of self and a good understanding of the factors that have come to make them who they are today. They often reflect on their past experiences and learn from them rather than blindly moving on to the next chapter of their lives.

This simple exercise requires you to consider for a moment your earliest memories. Out of all the experiences of a lifetime, we only hold on to a few in the form of early memories. The few experiences that are remembered are thus likely of some importance. A careful consideration of our earliest memories may help us to better understand who we are today and ultimately lead to increased self-acceptance and well-being.

Your assignment is as follows:

Every night for one week, set aside 10 minutes before you go to bed. Use that time to think of an early memory and [log into the website] and write it down in as much detail as possible [in the space provided for you]. Try to remember what you were doing, what you were feeling, and the other people who were with you. (If you cannot remember some of the details, that is OK. Just [type] down what you can remember.)

After seven nights of doing this exercise, [log back onto the website on the 8th day] and look back over your collection of memories. Notice any similarities or patterns across the memories. [Write down your insights in the space provided. Then fill out the follow-up questionnaires] so that we can learn how this exercise affected you.

To review, here are the steps of this exercise:

- 1) Every night for one week, [log on to the website] and write an early memory in as much detail as possible.
- 2) On the 7th night, look for similarities or patterns in your memories. [Type your insights in the space provided on your web page.]
- 3) [Fill out the follow-up questionnaires on the 8th night] so that we can learn about your experience.

We look forward to hearing back from you soon!

4) Early Positive Memories

The unexamined life is not worth living (Socrates).

The importance of self-knowledge and understanding has long been recognized. We believe that a strong sense of self and an understanding of the factors that have come to make you the person you are today are essential components of well-being. Our early life experiences can influence us and play a role in how we think and act later on in our lives. It may be important to reflect upon these early experiences to gain a better understanding of the person we are today.

However, we sometimes have the unfortunate tendency to focus on negative memories more than on positive ones, a tendency that sets us up for anxiety and depression. Making a conscious effort to concentrate on positive events in the past could help change one's focus and lead to increased hope and self-acceptance. It could also increase one's sense of optimism, and lead to a better outlook.

This simple exercise requires you write about early positive memories. Out of all the experiences of a lifetime, we only hold on to a few in the form of early memories. The few experiences that are remembered are likely of some importance. Research has shown that writing about one's life experiences can enhance psychological well-being and even lead to physical benefits.

Here are some examples of how one may report an early positive memory:

- a. *I remember my little sister coming home for the first time from the hospital. I remember being in awe of her. I thought she was a toy for me to play with. She was like a little doll and I was amazed at how alive she was. I remember my mother and I giving her her first bath. I was amazed by this tiny person moving around in the water.*
- b. *I remember my fifth birthday party. I was supposed to have a big baseball game and barbeque at a park nearby with all of my friends from school. It snowed though (My birthday is in mid-April) and my parents let everyone come over for a pizza party instead. I remember having a lot of fun. I remember playing hide and seek in the house and pretending that we were Ninja Turtles. It was a good time.*

Your assignment is as follows:

Every night for one week, set aside 10 minutes before you go to bed. Use that time to think of an early memory, *a positive one in particular*, and [log into the website] and write it down in as much detail as possible [in the space provided for you]. Try to remember what you were doing, what you were feeling, and the other people who were

with you. (If you cannot remember some of the details, that is OK. Just [type] down what you can remember.) You will then fill out the follow-up questionnaires so that we can learn how this exercise affected you.

After seven nights of doing this exercise, [log back onto the website on the 8th day to fill out some follow-up questionnaires] so that we can learn how this exercise affected you.

To review, here are the steps of this exercise:

- 1) Every night for one week, [you log in to the website] and write an early memory in as much detail as possible.
- 2) [Fill out the follow-up questionnaires on the 7th night] so that we can learn about your experience.

We look forward to hearing back from you soon!

5) Early Memories (Original):

Consider for a moment your earliest memories. Out of all the experiences of a lifetime, we only hold on to a few in the form of early memories. A careful consideration of our earliest memories may help us to better understand who we are today.

Your assignment is as follows:

Every night for one week, set aside 10 minutes before you go to bed. Use that time to think of an early memory and write it down in as much detail as possible. Try to remember what you were doing, what you were feeling, and the other people who were with you. (If you cannot remember some of the details, that is OK. Just [type] down what you can remember.) You may use a journal or your computer to write about the events, but please make sure you actually write (or type) your memories.

After seven nights of doing this exercise, look back over your collection of memories. Notice any similarities or patterns across the memories. Then log back on the website so that we can learn how this exercise affected you.

To review, here are the steps of this exercise:

- 1) Every night for one week, write down an early memory in as much detail as possible.
- 2) On the 7th night, look for similarities or patterns in your memories.
- 3) Log back on the website so that we can learn about your experience.

We look forward to hearing back from you soon!