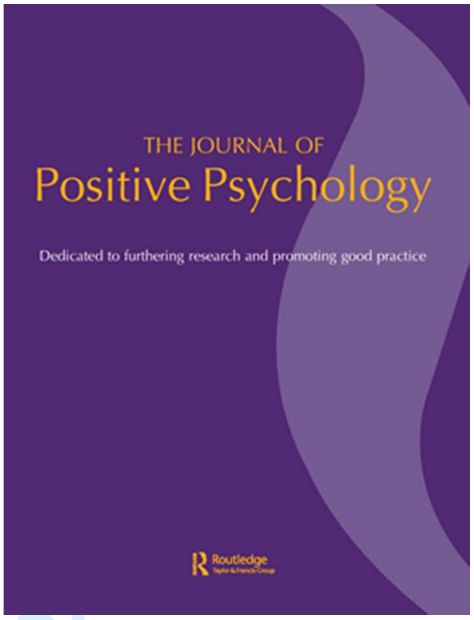

Who you are and who you can become matters: An RACT of A six-week-protocol of Positive Psychology and the Role of Personality in Israel.

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Introduction

Positive psychology is a term that refers to the science of positive emotions, positive personality characteristics, and institutions that give meaning to life (Seligman, Steen, Park, & Peterson, 2005). Known also as the "science of happiness", it looks for interventions that advance well-being and mental health and applies systematic research in order to test their efficacy. Even though it is not yet clear if positive psychology interventions that are developed in order to increase happiness, will also decrease mental illnesses, it is clear that they have a potential to do so (Hershberger, 2005).

A meta-analysis of 51 positive psychology interventions revealed that PPIs significantly enhanced well-being and decreased depressive symptoms (Sin & Lyubomirsky, 2009). The magnitude of these effects was medium-sized, indicating that not only do PPIs work, they work well. The meta-analysis revealed several moderators for the effectiveness of the interventions. First, depressed individuals benefited more from the PPIs than non-depressed individuals. Second, individuals who elected to participate in a PPI – perhaps expecting that the intervention would be beneficial for them, experienced greater gains in well being and depression-decrease compared with non-self-selected PPIs participants. Third, benefits of PPIs increased with age. It was also found that the effectiveness of PPIs was greater for individual therapy, followed by group-administered PPIs and least by self-administered PPIs. Longer interventions produced greater gains in well-being, however intervention duration was not significant for depression (Sin & Lyubomirsky, 2009).

Although research has supported the effectiveness of PPIs for increasing well-being and decreasing depressive symptoms, very little is known about the mechanisms of change. Research has shown that the ability to be happy is an inherent

part of the person and is probably influenced by his personality traits: a strong association was found between various personality profiles and differences in individuals satisfaction with life, positive affect, as well as subjective and objective health measures (Cloninger & Zohar, 2011). This study of over 1000 adult Israelis, found that personality traits and combinations of personality traits (personality profiles) explained more than fifty percent of the variance in happiness (Cloninger & Zohar, 2011). Another study that tested the influence of personality on well-being in young Finnish adults found a similar and strong association; moreover it was the same personality traits of high Self-Directedness and low Harm Avoidance that were most strongly associated with well-being (Josefsson et al., 2011). Thus, this strong association between personality traits and well-being and positive affect has been reported in two very different cultures.

Studies have observed relationships between dispositional positive affect (joy, contentment, pride, love, compassion, amusement and awe) and two core constructs, the Big Five (BF) personality traits and adult attachment style. The BF factor Extraversion was significantly associated with all the positive emotion dispositions (Shiota, Keltner, & John, 2006). Several theories proposed that reward orientation or response to opportunities in the environment may be a common feature of Extraversion and positive emotionality (Carver & White, 1994; Fredrickson, 1998; Watson & Clark, 1997). In addition, correlations were found between attachment security and joy, contentment, pride, love, and compassion, suggesting that more secure individuals derive greater pleasure from resource acquisition, as well as from intimate social bonds (Shiota et al., 2006).

One of the personality traits that are associated with indivdual success is the character trait Self-Directedness, which is the extent to which the individual perceives

himself as an autonomic entity and trusts himself and his abilities (Cloninger, 2008). Individuals that are high in Self-Directedness are known to be responsible, purposeful, resourceful, self-accepting and hopeful (Cloninger, Svrakic, & Przybeck, 2006). On the other hand, individuals that are low in Self-Directedness are described as aimless, incompetent, arrogant, hesitant and tend to frequently blame others (Cloninger, 2004). It has been shown that Self-Directedness is the basis of regulation of the desires and the hopes of the individual (Cervone, 2004; Ryan & Deci, 2000). The temperament trait Harm Avoidance, is the reflective response bias to inhibit behavior lest harm occur (Cloninger, 2004). Individuals who are high in Harm Avoidance tend to be pessimistic, fearful, shy and fatiguable, whereas individuals who are low in Harm Avoidance tend to be optimistic, courageous, sociable and energetic (Cloninger et al., 2006). Being high on SD and low on HA is a very resilient combination (Cloninger and Zohar 2011).

It is reasonable to assume that an intervention that would increase the level of Self-Directedness while decreasing Harm Avoidance could also increase the individuals' levels of happiness and well-being. Most of the research on Self-Directedness until now has focused on its influence on the vulnerability to mental disorders and on the prognosis in treatment (Cloninger et al., 2006; Grucza, Przybeck, & Cloninger, 2005, 2007), and there is no reported research that attempts to increase Self-Directedness with an external intervention. Several studies showed an increase in Self-Directedness after treatment of a mental disorder. Antidepressants and cognitive therapy were found to increase the levels of Self-Directedness and consequently decrease long term vulnerability to depression and to psychopathology accompanying depression (Bulik, Sullivan, Joyce, Carter, & McIntosh, 1998; Cloninger, 2004). In another study a significant increase in Self-Directedness and a significant decrease in

Harm Avoidance were found after treatment with paroxetine in participants with generalized anxiety disorder (Allgulander, Cloninger, Przybeck, & Brandt, 1998).

Positive Psychotherapy (PPT) (Seligman, Rashid, & Parks) was developed to treat depression. It is different from the standard interventions for depression as PPT aims to increase self-efficacy, happiness, engagement and meaning in life, and does not target depressive symptoms directly. PPT could be applied both as individual and group therapy. During the sessions participants receive different positive psychology exercises. Each exercise aims to help the individual progress throughout at least one of the five paths towards happiness (Seligman, 2011): (1) positive emotion; (2) engagement; (3) meaning; (4) accomplishments; (5) positive relationships, while all the exercises together cover all five paths (Seligman, Rashid, & Parks, 2006).

PPT was found very effective in increasing well-being and decreasing depressive symptoms, but the mechanisms of change are still unknown. The purpose of this study is to investigate whether personality traits are part of the pathway through which positive psychology interventions help to improve happiness and decrease depressive symptoms. We assume that strengthening of positive personality traits, like self-directedness that was mentioned earlier, will be a part of that pathway. The character harm avoidance could also be part of that mechanism. Individuals with low levels of Harm Avoidance are described as optimistic, vigorous, friendly and brave (Cloninger, 2004). This description resonates with the five paths to happiness mentioned earlier. Therefore it is reasonable to assume that the mechanisms through which positive psychology interventions influence happiness and depression are related to these personality characters.

The current study is a trial of PPT on an Israeli sample. Culture may influence the efficiency of positive psychology interventions. For example, individuals from an individualistic culture that values individual happiness benefit more from these interventions than individuals from collectivistic cultures (Lyubomirsky, Dickerhoof, Boehm, & Sheldon, 2011). Moreover, an individual from a collectivistic culture experiences a larger increase in happiness in social activities that focus on the other than in activities that focus on the self (Sin & Lyubomirsky, 2009). Israeli culture is characterized by the fact that individuals experience a high rate of stress, because of the security threats and the high migration (Bleich, Gelkopf, & Solomon, 2003).

Hypotheses:

1. There will be an increase in happiness between T0 and T1 in the intervention group, but not in the control group. This gain will be maintained at follow-up T2.
2. There will be a decrease in depressive symptoms in the intervention group but not in the control group from T0 to T1 which will be maintained at T2.
3. There will be an increase in the Character trait SD between T0 and T1 in the intervention group, but not in the control group. This gain will be maintained at follow-up T2.
4. There will be a decrease in the Temperament trait of HA between T0 and T1 in the intervention group, but not in the control group. This decline will be maintained at follow-up T2.
5. The gain in happiness in the intervention group will be mediated by the decrease in the temperament trait of HA.and by the increase in the character trait of SD.

Method

Participants were recruited mainly via Facebook, including closed Facebook groups, such as the Multiple Sclerosis group. In total, 95 individuals from Israel consented to participate in the research. Participants were mainly female (74.7%, n =71) and mainly single (61.1%, n=58). The mean age was 36.03 years (SD = 10.52). Nearly a fifth, 19% of the participants, stated that they suffer from a chronic or an extended illness.

The inclusion criteria were Hebrew proficiency good enough to self-report on the extensive questionnaires, and motivation high enough to complete the PPT tasks. There were no exclusion criteria. Thus the participants are self-selected.

Consenting participants were asked to self-report online on their current happiness, satisfaction with life, positivity, optimism, depressive symptoms and personality. The participants were randomly assigned to intervention and control groups. The control group waited while the intervention group underwent the intervention, and were offered the intervention 10 weeks later. The intervention group recieved the Positive Psychotherapy (PPT) exercises, week-by-week, over a six week period. These exercises drew (with permission) from the content of the 6-week PPT Protocol (Seligman, Rashid, & Parks, 2006) and the group psychotherapy protocol (Parks & Seligman, 2007), and were delivered to the participants via e-mail. Additionally, detailed explanations of the exercises and examples that were presented in the Protocol were sent to the participants. Most of the content in the group PPT Protocol was delivered to the participants via e-mail. The intervention exercises are presented in Appendix 1. In addition, the participants could receive personal guidance from the group moderator, a graduate student of clinical psychology (M.G.), by phone

or e-mail. In order to receive the personal guidance, the participants had to actively contact the moderator and request such guidance. During the entire intervention, 68 guidance phone calls and more than 400 guidance personal e-mails were sent to the participants. Besides answering the personal guidance requests that the participants actively sent, the moderator sent up to 3 personal e-mails to each participant during the intervention, in which the participants were asked how the intervention was going for them and if they needed any help. In order to increase the motivation and the persistence of the participants, each week, additionally to presenting the weekly exercise, the participants were asked to fill a short feedback form about the previous exercise. The participants were asked to rate the extent to which they enjoyed the exercise, the extent that they felt the exercise contributed to them, the extent to which they felt they had managed to persist in the exercise, and how much time they had invested in the exercise. At the end of the intervention (T1) and one month after the end of the intervention (T2), the members of both groups self-reported on the same measures they had reported on at T0. The research procedure is presented in Figure 1.

Figure 1 about here

Self-Report Measures

(1) Steen Happiness Index (SHI) (Seligman et al., 2005) consists of 24 items. Scores range from 24 to 120 with higher scores indicating higher levels of happiness. The SHI was translated for use in this study, using translation, independent back-translation, comparison and revision. The SHI in this study had an internal reliability with Cronbach's α=.65.

(2) Satisfaction with Life Scale (SWLS) (Diener, Emmons, Larsen, & Griffin, 1985; Pavot & Diener, 1993) consists of 5 items. Scores range from 5 to 35

with higher scores indicating higher levels of satisfaction with life. The SWLS showed good internal reliability, with Cronbach's α=.70.

(3) Positive Psychotherapy Inventory (PPTI) (Rashid, 2005) was used for measurement of the specific active components that are addressed in positive psychology therapy, including positive emotion, meaning and engagement. The PPTI consists of 21 items. Scores range from 21 to 84 with higher scores indicating higher levels of happiness. The PPTI showed an internal reliability of Cronbach's α=.67.

(4) Life Orientation Test (LOT-R) (Scheier & Carver, 1985; Scheier, Carver, & Bridges, 1994) was used for measuring optimism, as opposed to pessimism. The questionnaire consists of 6 items that contribute to the score and four filler items that are used to disguise the purpose of the measure. Scores range from 5 to 30 with higher scores indicating higher levels of optimism. The Lot-R showed good internal reliability, with Cronbach's α=.71.

(5) The Positivity Scale (P Scale) (Caprara et al., 2012) was used for measurements of the levels of positivity of the individual. The P scale is defined to measure the tendency to view life and life situations positively. The P Scale consists of 8 items. Scores range from 8 to 40 with higher scores indicating higher levels of positivity. The P Scale showed good reliability, with Cronbach's alpha of .75 (Caprara et al., 2012).

(6) Center for Epidemiological Studies Depression Scale (CES-D) (Radloff, 1977) consists of 20 items that describe symptoms of depression. The subjects are asked to assess the frequency of the symptoms during the past week. Scores range from 20 to 80 with higher scores indicating more symptoms of depression. Scores of 36 and higher represent a clinically significant level of

depressive symptoms. The CES-D showed good reliability, Cronbach's α was .82. Of the 64 participants in this study, 48.4% reported clinically significant levels of depressive symptoms at outset, and 32.7% at followup 10 weeks later.

(7) The Temperament and Character Inventory (TCI-140) (Cloninger, Przybeck, Svrakic, & Wetzel, 1994; Zohar & Cloninger, 2011) includes 140 items and measures four dimensions of temperament: Harm Avoidance (HA), Novelty Seeking (NS), Reward Dependence (RD), and Persistence (PS). It also measures three dimensions of character: Self-Directedness (SD), Cooperativeness (CO), and Self-Transcendence (ST). There are 20 items for each trait. For the current study two traits were measured, the temperament trait of HA and the character trait of SD. For HA Cronbach's α was .81, and for SD Cronbach's α was .68.

We calculated the inter-correlations of the measures for happiness, satisfaction with life, positivity, optimism, positive psychotherapy, and depressive symptoms. As shown in Table 1, the SHI correlated positively with all the positive measures, and negatively with depressive symptoms, at T0 and again (in parentheses) at T1.

Table 1 about here

Having established that the SHI has satisfactory convergent and divergent validity, we present the results in terms of the SHI alone. The other measures presented in Table 1 show the same pattern of results. We compared the intervention and waiting list group on all study variables as well as demographics and found no significant differences. We looked for an association between number of phone calls or emails to MG throughout the 10 weeks with study variables and found none.

Hypothesis 1: There will be an increase in happiness between T0 and T1 in the intervention group, but not in the control group. This gain will be maintained at follow-up T2.

In order to assess the treatment effects, growth curve analyses were conducted (Singer & Willett, 2003). This analysis is based on a multilevel model, in which time measurements (baseline, post-test, and follow-up) comprise level-1, and individuals comprise level-2. In this model average baseline differences between experimental groups and treatment effects can be estimated, as well as inter-individual variability in baseline and rate of change. The growth trajectory estimates from the multilevel analysis, as well as a graphical depiction of the average change in both groups is shown in Figure 2 below. Time measurements were coded in weeks (6 weeks between baseline and post-test, and 4 weeks between post-test and follow-up), hence average growth estimates are the rate of change per week across the study duration.

Figure 2 about here

The graph shows that there was no significant difference between the control group and treatment group at T0. Over time however, the control group did not change in happiness while the treatment group showed significantly higher levels of happiness at T1 and at T2. The estimates of the model are summarized in Table 2 Below.

Table 2 about here

Average baseline happiness score in the control group was 72.28; the experimental effect (the average difference between control and treatment groups) at baseline was -2.20 and not statistically significant ($t_{(60)}$=-.52; p=ns). The results also indicate a large (246.62) and statistically significant (Z=4.85; p<.001) inter-individual (within-groups) variance at baseline.

The average control group weekly rate of change was.10, and not statistically significant ($t_{(51)}$=-.62; p=ns). The treatment effect (indicated by the GroupxTime interaction in the ML model) was 1.16 and was statistically significant ($t_{(52)}$=4.47; p=.001) – the treatment group average per-week rate of change was, thus, 1.26. Over the entire study ten-week duration, the control group showed no statistically significant change, while the treatment group gained, on average 12.6 points on the happiness scale, as depicted in the graph above. The inter-individual variance in rate of change (.28) was not statistically significant (Z=1.07, p=ns), indicating a rather homogenous response to treatment among study participants.

Table 3 about here

Hypothesis 2: There will be a decrease in depressive symptoms between T0 and T1 in the intervention group, but not in the control group. This gain will be maintained at follow-up T2.

This hypothesis can be tested by growth curves, and shows an inverse pattern from that of happiness change over time (see above), as expected since the two measures are highly and inversely correlated. Alternately, it is possible to consider the proportion of participants who scored over the clinical cut-off point on the CES-D (a score of 36). In the intervention group at outset, T0, it was 57.1%; immediately following the intervention at T1 it was 32% and at follow-up 4 weeks later, T2, it was 15%. In the control group the level of those scorings over the cut-off point did not change much over the 10 weeks period.

Hypothesis 3: There will be an increase in the Character trait SD between T0 and T1 in the intervention group, but not in the control group. This gain will be maintained at follow-up T2.

To test this hypothesis growth curve analyses were conducted (Singer & Willett, 2003) as in the previous section. Figure 3 shows the increase in SD in the intervention group and the maintenance of the gain to follow-up. Descriptive statistics and effect sizes are shown in Table 4 below.

Figure 3 about here

Table 4 about here

The results also indicate a large (141.44) and statistically significant (Z=4.70; p<.001) inter-individual (within-groups) variance at baseline.

The average control group weekly rate of change was.21, and not statistically significant ($t_{(56)}$=1.60; p=ns). The treatment effect (indicated by the GroupxTime interaction in the ML model) was .51 and was statistically significant ($t_{(57)}$=2.47; p=.05) – the treatment group average per-week rate of change was, thus, .72. Over the entire study ten-week duration, the control group showed no statistically significant change, while the treatment group gained, on average 7.2 points on the self-directedness scale, as depicted in the graph above. The inter-individual variance in rate of change (.13) was not statistically significant (Z=.82, p=ns), indicating a rather homogenous response to treatment among study participants. Table 5 shows the post-hoc analyses of SD differences.

Table 5 about here

Post hoc tests reveal that there was a significant difference between T1 and T0 SD between groups as well as for T2 vs T0.

Hypothesis 4: There will be a decrease in the Temperament trait of HA between T0 and T1 in the intervention group, but not in the control group. This decline will be maintained at follow-up T2.

The growth curve methodology applied to testing Hypotheses 1, 2 and 3 was applied to the analysis of HA.

Table 6 about here

The results also indicate a large (137.17) and statistically significant (Z=4.78; p<.001) inter-individual (within-groups) variance at baseline.

The average control group weekly rate of change was -.10, and not statistically significant ($t_{(51)}$=-.79; p=ns). The treatment effect (indicated by the GroupxTime interaction in the ML model) was -.62 and was statistically significant ($t_{(51)}$=-3.30; p=.01) – the treatment group average per-week rate of change was, thus, -.72. Over the entire study ten-week duration, the control group showed no statistically significant change, while the treatment group losses, on average 7.2 points on the harm avoidance scale, as depicted in the graph below. The inter-individual variance in rate of change (.09) was not statistically significant (Z=.65, p=ns), indicating a rather homogenous response to treatment among study participants.

Figure 4 about here

Table 7 about here

Post hoc tests reveal that there was no significant difference between time 1 and time 0 HA between groups. A significant difference, however, between follow up and time 0 did emerged.

Comparing happiness with SD and HA: in all three the interaction between time and group was statistically significant. In HA the overall difference between groups at T0 was larger (4.31) than that of Happiness (-2.20) and then that of SD (-.25), but these differences were not significant. The interaction for group and time for happiness (1.16) was larger than that of SD (.51) and that of HA (-.62) meaning that the treatment was most significant for happiness, less than for HA and least for SD.

Hypothesis 5: The gain in happiness in the intervention group will be mediated by the decrease in the temperament trait of HA and the increase in the character trait SD.

In order to better understand the differential influence of each of the personality characteristics on happiness, we conducted a hierarchical regression analysis in which the change in happiness due to treatment was the dependent variable and the HA difference score and the SD difference score between T1 and T0 were the independent variables. In step 1 only group was entered into the analysis. In step 2, changes in personality traits were also entered. Table 8 shows the results of this regression analysis.

Table 8 about here

As can be seen in Table 8, when group alone was entered to the analysis, it predicted the difference in happiness, due to treatment, as was expected. Belonging to the treatment group heightened overall change in happiness over the 6 weeks of treatment. However, once changes in personality traits were entered into the analysis, the effect for group was no longer significant. Self-Directedness positively influenced the change in happiness while Harm Avoidance did so negatively. The change in the personality traits mediated the change in happiness.

Discussion

The current study was an RCT of a 6-week protocol-driven and email-delivered intervention of positive psychology (Seligman, Rashid and Parks 2006) in a self-selected sample of Israeli happiness seekers. The first research objective was to test the efficacy of the PPT intervention including the translated measures, constituting a replication and an extension of RCT's on this protocol in the United States. Israelis are immersed in an embattled and highly stressful environment, and thus the appropriateness of this PPT intervention required testing. The results of the PPT were striking: The intervention group improved dramatically and siginificantly on all the positive measures relative to the waiting-list group, and their depressive symptoms were concurrently decreased. This is consistent with what is now a considerable literature supporting the efficacy of positive psychology interventions. Hone, Jarden, and Schofield (2014), in their recent review, concluded that although the level of reporting on the various aspects of these studies was not as complete and as rigorous as needed, there was strong proof for the positive effect of PPT, and very little known of any negative effects. This result is also consistent with a report of other PPT intervention in Israel. Shoshani and Steinmetz (2014) conducted a RCT of a two-year-longitudinal PPT intervention for students in junior high and in high school in Israel.The foci of the program were gratitude, goal setting, and goal-oriented planning and behavior. The program produced significant gains in self-efficacy, optimism, and life satisfaction, and a significant decrease in psychological distress. Thus PPT interventions can be effective in Israelis, as they have been for individuals in other cultures, and the Seligman Rashid and Parks (2006) 6-week-protocol is no exception.

In evaluating the PPT we should take into account not only how well it worked for the participants, but also its reach, i.e. how attractive it was to potential participants. If many potential participants were exposed to the possibility of the PPT and chose not to participate, our conclusions are restricted to a self-selected group. Unfortunately, since the intervention was promoted through Facebook contacts of various kinds, we do not have a good estimate of reach, since we do not know how many people read the PPT invitation and decided against it. Thus our conclusions should be restricted to self-selected happiness seekers.

Having established that the PPT intervention worked, we are left with the task of explaining how it worked. Layous and Lyubomirsky (2012) suggest that encouraging participants to perform positive tasks increases their positive emotions, as well as their positive cognitions; these lead to enhanced well-being and satisfaction with life. This explanation has prima faci validity, but does not suggest that the gain in happiness will be maintained beyond the positive change in behavior. In the current study we explored the possibility that the PPT intervention might have an effect on personality. Several studies on the effectiveness of other psychotherapy methods have shown a sizable and positive change in personality. Itzhar-Nabarro et al. (2009) found that short term psychodynamic therapy brought about personality change as measured by the adjective-check-list (ACL) including a gain in self-confidence and creative personality. Watson et al. (2014) found that in successful individual therapy, self-ideal discrepancies were reduced. In our study we chose to measure personality through the prism of the temperament and character inventory (TCI; Cloninger, Przybeck, Svrakić, & Wetzel, 1994). There are many advantages to the use of the TCI. TCI traits show very high stability under ordinary conditions. This has been found in young adults over a 16 year span (Josefsson et al., 2011) as well as in older adults

over a 6 year span (Zohar et al., in press). Individuals who are high in the character trait of Self-Directedness (SD) and low in the temperament trait of Harm Avoidance (HA) are happier, more satisfied with life, have better subjective health and experience a higher level of social support (Cloninger and Zohar, 2011). Thus these two traits were selected for scrutiny in the context of the PPT trial. The current study found that in the intervention group and not in the control group there were substantial changes in the two traits: a gain in SD which was enhanced further at follow-up and a decrease in HA which further declined from the end of the intervention to follow-up. Since these traits are usually very stable, it is possible that their new values will be maintained over time, and contribute to the enhanced happiness of the intervention group, beyond our last measurement, 10 weeks from outset. Similar results were found for women who participated in group CBT for their bulimia; Anderson et al. (2002) found that a year after the completion of the CBT group the participants had gained in SD and had declined in HA. It is impressive to see that e-mail delivered PPT can have such a dramatic effect on these personality traits as well.

If happiness is gained, and personality traits changed in the course of the PPT intervention and beyond, what is the relationship between these processes? We tested for the possibility that the change in personality traits mediated the effect of the PPT on happiness. We found strong support for this idea: not only did the addition of the change in personality to the regression equation result in a strong additional explained variance in happiness, but the mediation was complete, i.e. after the addition of the change in personality traits the contribution of group (intervention vs control) was no longer significant. This result has theoretical and practical implications.

The main limitation of the current study was its self-selected sample, which does not allow generalization of the results to all potential participants of PPT

interventions. That said, RCT was rigorously applied, and growth curve analysis allowed for using all participants who completed at least one time point in this multi-stage study. Additional research is necessary to replicate these results, and to assess their generalizability; In particular research that studies the dynamic interplay of happiness and personality.

References

Allgulander, C., Cloninger, C. R., Przybeck, T. R., & Brandt, L. (1998). Changes of temperament and character inventory after paroxetine treatment in volunteers with generalized anxiety disorder. *Psychopharmacology Bulletin, 34*(2), 165-166.

Anderson, C.B., Joyce, P.R., Carter, F.A., McIntosh, W., & Bulik, C.M (2002). The effect of CBT for Bulimea Nervosa on temperament and character as measured by the TCI. *Comprehensive Psychiatry 43(3),* 182-188.

Bleich, A., Gelkopf, M., & Solomon, Z. (2003). Exposure to terrorism, stress-related health symptoms, and coping behaviors among a nationally representative sample in Israel. *Journal of the American Medical Association, 290(5),* 612-620.

Bulik, C. M., Sullivan, P. F., Joyce, P. R., Carter, F. A., & McIntosh, V. V. (1998). Predictors of 1-year treatment outcome in bulimia nervosa. *Comprehensive Psychiatry, 39*, 206-214.

Caprara, G. V., Alessandri, G., Eisenberg, N., Kupfer, A., Steca, P., Caprara, M. G., Yamaguchi, S., Fukuzawa, A., & Abela, J. (2012). The Positivity Scale. *Psychological Assesment, 24*(3), 701-712.

Carver, C. S., & White, T. L. (1994). Behavioral inhibition, behavioral activation, and affective responses to impending reward and punishment: The BIS/BAS scales. *Journal of Personality and Social Psychology, 67,* 319–333.

Cervone, D. (2004). The architecture of personality. *Psychological Review, 111*(1), 183-204.

Cloninger, C. R. (2004). *Feeling good: The science of well-being.* New York: Oxford University Press.

Cloninger, C. R. (2008). The psychobiological theory of temperament and character:

Comment on Farmer and Goldberg. *Psychological Assessment*, *20*(3), 292-299.

Cloninger, C. R., Przybeck, T. R., Svrakić, D. M., & Wetzel, R. D. (1994*). The Temperament and Character Inventory: A guide to its development and use*. St. Louis: Washington University Center for Psychobiology of Personality.

Cloninger, C. R., Svrakic, D. M., & Przybeck, T. R. (2006). Can personality assessment predict future depression? A twelve-month follow-up of 631 subjects. *Journal of Affective Disorders, 92,* 35-44.

Cloninger, C. R., & Zohar, A. H. (2011). Personality and the perception of health and happiness. *Journal of Affective Disorders, 128*(1-2), 24-32.

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment, 49,* 71-75.

Grucza, R. A., Przybeck, T. R., & Cloninger, C. R. (2005). Personality as a mediator of demographic risk factors for suicide attempts in a community sample. *Comprehensive Psychiatry, 46(3)*, 214-222.

Grucza, R. A., Przybeck, T. R., & Cloninger, C. R. (2007). Prevalence and correlates of binge eating disorder in a community sample. *Comprehensive Psychiatry, 48(2)*, 124-131.

Fredrickson, B. L. (1998). What good are positive emotions? *Review of General Psychology, 2*, 300–319.

Hershberger, P. J. (2005). Prescribing happiness: Positive psychology and family medicine. *Familiy Medicine, 37*(9), 630-634.

Hone, L.C., Jarden, A., & Schofield, G.M. (2014). An evaluation of positive intervention effectiveness trials using the re-aim framework: A practice-friendly view. *The Journal of Positive Psychology*, DOI: 10.1080/1743760.2014.965267.

Itzhar-Nabarro, Z., Silberschatz, G. & Curtis, J.C. (2009). The Adjective-Check-List as an outcome measure: Assessment of personality change in psychotherapy. *Psychotherapy Research, 19*, 707-717.

Josefsson, K., Cloninger, C. R., Hintsanen, M., Jokela, M., Pulkki-Raback, L., & Keltikangas-Jarvinen, L. (2011). Association of personality profiles with various aspects of well-being: A population-based study. *Journal of Affective Disorders, 133*(1-2), 265-273.

Layous, K., Lyubomirsky, S. (2012). The how, why, what, when, and who of happiness: Mechanisms underlying the success of positive interventions. J. Gruber and J. Moscowitz (Eds.), *The light and dark side of positive emotions*. New York: Oxford University Press.

Lyubomirsky, S., Dickerhoof, R., Boehm, J. K., & Sheldon, K. M. (2011). Becoming happier takes both a will and a proper way: An experimental longitudinal intervention to boost well-being. *Emotion, 11(2),* 391-402.

Parks, A. C., & Seligman, M. E. P. (2007*). 8-Week group Positive Psychotherapy (PPT) manual.* Unpublished manual, University of Pennsylvania.

Pavot, W., & Diener, E. (1993). Review of the Satisfaction with Life Scale. *Psychological Assessment, 5(2),* 164-172.

Radloff, L. S. (1977). The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement, 1,* 385-401.

Rashid, T. (2005). *Positive Psychotherapy Inventory*. Unpublished manuscript, University of Pennsylvania.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55,* 68-78.

Scheier, M. F., & Carver, C. S. (1985). Optimism, coping, and health: Assessment and implications of generalized outcome expectancies. *Health Psychology, 4*, 219-247.

Scheier, M. F., Carver, C. S., & Bridges, M. W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A reevaluation of the Life Orientation Test. *Journal of Personality and Social Psychology, 67(6),* 1063-1078.

Seligman, M. E. P. (2011). *Flourish: A visionary new understanding of happiness and well-being.* New York: Free Press.

Seligman, M. E. P., Rashid, T., & Parks, A. C. (2006). Positive psychotherapy. *American Psychologist, 61,* 774-788.

Seligman, M. E. P., Steen, T. A., Park, N., & Peterson, C. (2005). Positive psychology progress: Empirical validation of interventions. *American Psychologist, 60*(5), 410-421.

Sin, N. L., & Lyubomirsky, S. (2009). Enhancing well-being and alleviating depressive symptoms with positive psychology interventions: A practice friendly meta-analysis. *Journal of Clinical Psychology, 65*(5), 467-487.

Shiota, M. N., Keltner, D., & John, O. P. (2006). Positive emotions dispositions differentially associated with Big Five personality and attachment style. The *Journal of Positive Psychology, 1(2),* 61-71.

Shoshani, A. & Steinmetz, S. (2014). Positive psychology at school: A student-based intervention to promote adolescents' mental health and well-being. *Journal of Happiness Studies, 15*, 1289-1311.

Singer, J. D. and Willett, J. B. (2003). *Applied Longitudinal Data Analysis: Methods for Studying Change and Event Occurrence*. (New York: Oxford University Press).

Watson, N., Bryan, B.C. & Thrash, T.M. (2014). Change in self-discrepancy, anxiety, and depression in individual therapy. *Psychology, 51*, 525-534.

Watson, D., & Clark, L. A. (1997). Extraversion and its positive emotional core. In L. A. Pervin & O. P. John (Eds.), Handbook of Personality Psychology (pp. 767–793). New York: Guilford.

Zohar, A. H., & Cloninger, C. R. (2011). The psychometric properties of the TCI-140 in Hebrew. *European Journal of Psychological Assessment, 27*(2), 73-80.

Zohar, A.H., Sandbank, B., & Gelfin, M. (in press). The range of plasticity of personality: Implications for identity. Cambridge: Cambridge Scholars Press.

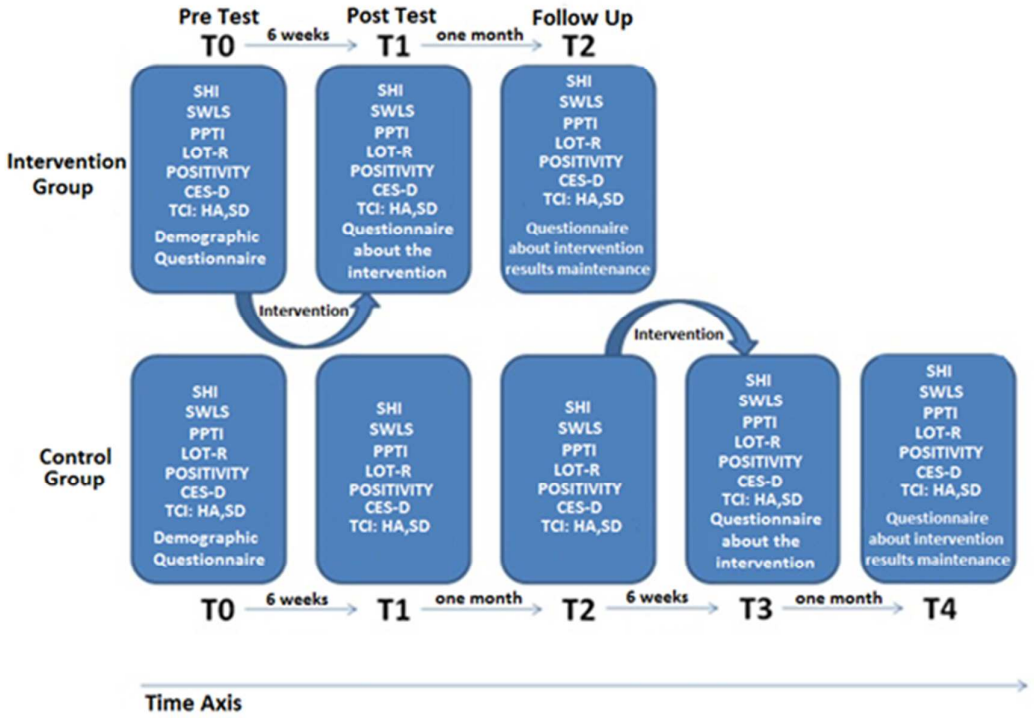

Figure 1. Research Procedure

Note: SHI = Authentic Happiness Inventory; SWLS = Satisfaction with Life Scale; PPTI = Positive Psychotherapy Index; LOT-R = Life Orientation Test; Positivity = Positivity Scale; CES-D = Depressive Symptoms; TCI = The Temperament and Character Inventory; SD = Self-Directedness; HA = Harm Avoidance

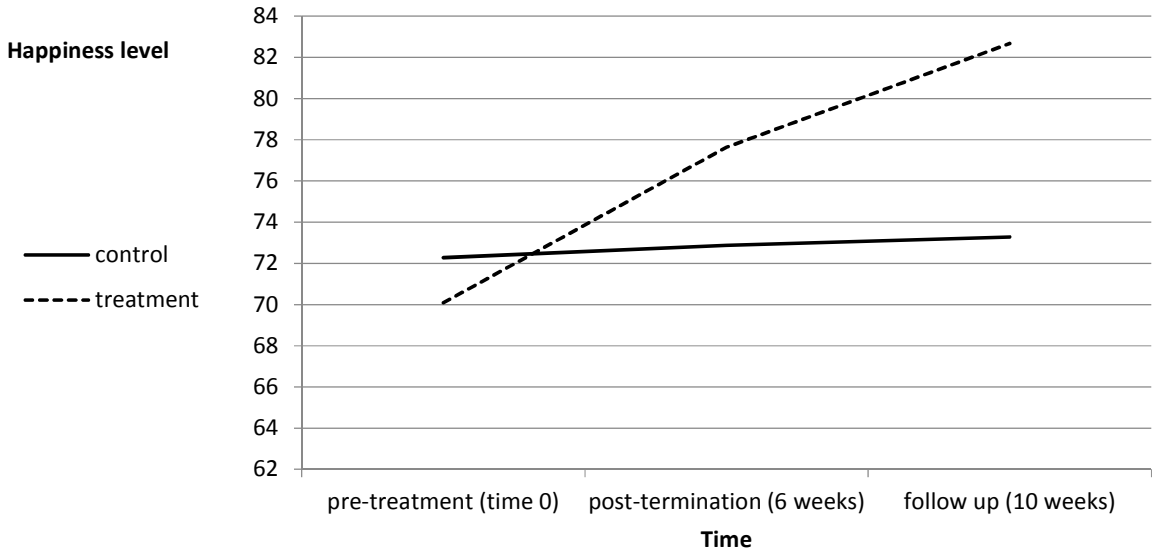

Figure 2. Average growth trajectories of happiness for controls and treatment groups, over the course of treatment and follow up

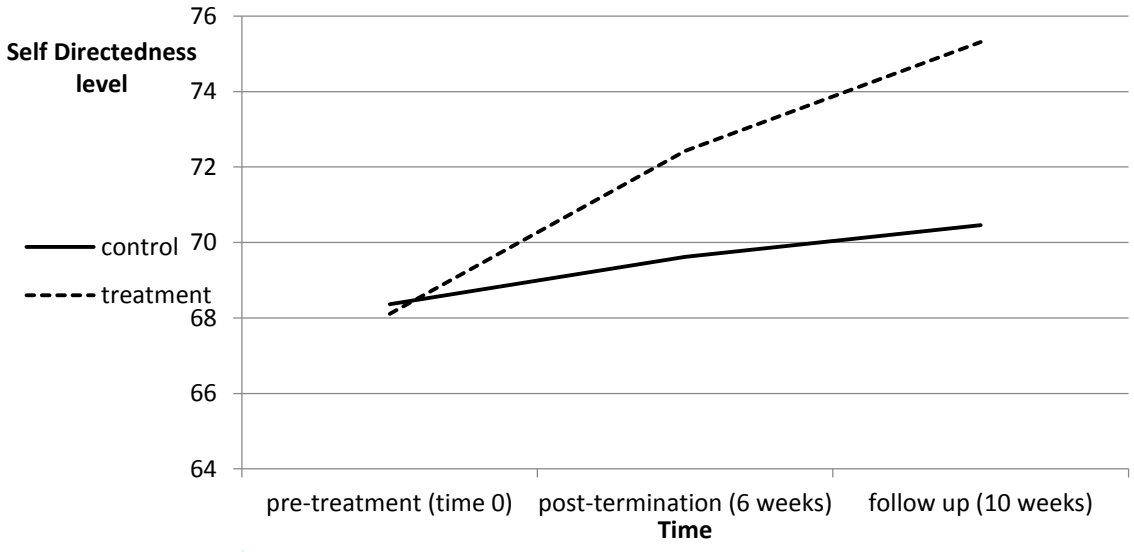

Figure 3. Average growth trajectories of SD T0 to T2

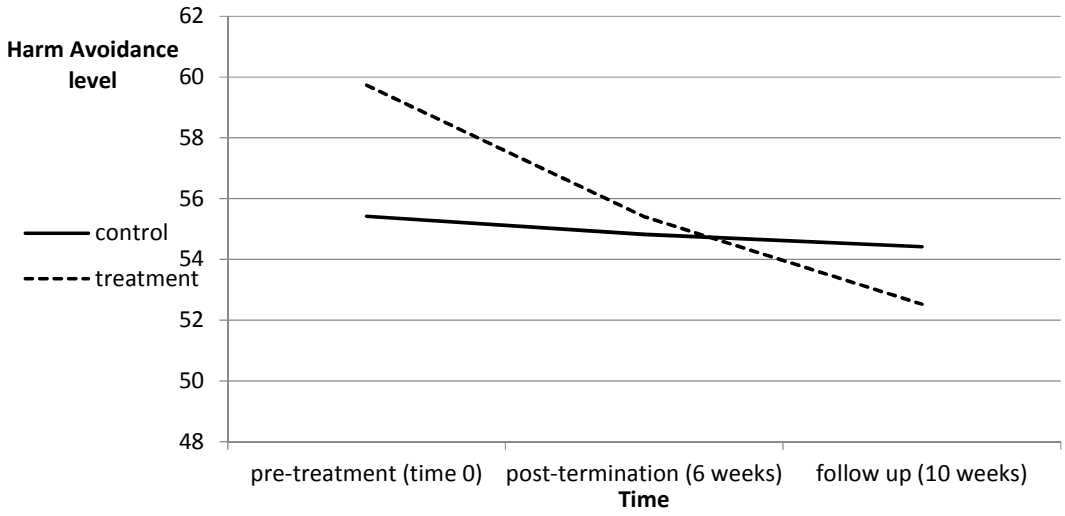

Figure 4. Average growth trajectories of Harm Avoidance for controls and treatment groups, over the course of treatment and follow up

Table 1

Correlations between measures of happiness and well-being at T0 and at (post treatment T1) (N=64)

	SWLS	Positivity	LOT-R	PPTI	CES-D
SHI	.82*** (.85***)	.87*** (.84***)	.72*** (.63***)	.87*** (.89***)	-.77*** (-.76***)
SWLS		.82*** (.77***)	.63*** (.52***)	.70*** (.75***)	-.59*** (-.65***)
Positivity			.81*** (.67***)	.73*** (.73***)	-.74*** (-.71***)
LOT-R				.60*** (.57***)	-.62*** (-.53***)
PPTI					-.69*** (-.62***)

Note: **p<.01; ***p<.001; SHI = Authentic Happiness Inventory; SWLS = Satisfaction with Life Scale; Positivity = The Positivity Scale; LOT-R = Life Orientation Test ; PPTI = Positive Psychotherapy Inventory; CES-D = Depressive Symptoms

Table 2

Multilevel analysis results for SHI comparing intervention and control groups

	Estimate	Std. Error	$t_{(df)}$
Intercept	72.28	2.74	$t_{(60.74)}$=26.37***
Group	-2.20	4.21	$t_{(60.23)}$=-.52
Time	.10	.17	$t_{(51.04)}$=.62
Interaction GroupXTime	1.16	.26	$t_{(51.98)}$=4.47***

Note: ***p<.001

Table 3

Post hoc analysis: Independent T-Tests of the difference between happiness at different times in controls and treatment group

	Difference between T1 and T0		Difference between T2 and T0	
	Mean	SD	Mean	SD
Controls	1.38	8.27	.45	7.67
Treatment	9.08	12.44	12.00	10.66
	$t_{(51)}$=-2.68** Cohen's d=-0.74		$t_{(49)}$=-4.50*** Cohen's d=-1.29	

Note: **p<.01 ***p<.001

Table 4

Multilevel analysis results

	Estimate	Std. Error	$t_{(df)}$
Intercept	68.36	2.10	$t_{(60.68)}$=32.48***
Group	-.25	3.23	$t_{(60.08)}$=-.08
Time	.21	.13	$t_{(56.55)}$=1.60
Interaction Group X Time	.51	.21	$t_{(57.24)}$=2.47*

Note: *p<.05 ***p<.001

Table 5

Post hoc analysis: Independent T-Tests of the difference between SD at different times in controls and treatment group

	Difference between T1 and T0		Difference between T2 and T0	
	Mean	SD	Mean	SD
Controls	.75	6.95	1.45	7.50
Treatment	5.27	8.29	7.33	7.45
	$t_{(51)}$=-2.16* Cohen's d=-0.59		$t_{(49)}$=-2.74** Cohen's d=-0.79	

Note: *p<.05 **p<.01

Table 6

Multilevel analysis results

	Estimate	Std. Error	$t_{(df)}$
Intercept	54.42	2.06	$t_{(60.69)}$=26.48***
Group	4.31	3.16	$t_{(60.15)}$=1.37
Time	-.10	.12	$t_{(51.38)}$=-.79
Interaction: Group X Time	-.62	.19	$t_{(51.94)}$=-3.30**

Note: **p<.01 ***p<.001

Table 7

Post hoc analysis: Independent T-tests of the difference between HA at different times in control and treatment group

	Difference between T1 and T0		Difference between T2 and T0	
	Mean	SD	Mean	SD
Control	-1.32	6.07	-.66	6.49
Treatment	-4.32	8.49	-7.13	6.97
	$t_{(51)}$=1.49 Cohen's d=0.41		$t_{(49)}$=3.37*** Cohen's d=0.96	

Note: ***p<.001

Table 8

Hierarchical Regression Analysis (HLM) predicting the change in happiness following treatment due to changes in personality characteristic

	Standardized β	*T*	R^2	Adj. R^2	ΔR^2	$F_{(df)}$
Step 1			.12	.11		$F_{(1,51)}$=7.18**
Group	.35	2.68**				
Step 2			.57	.54	.44***	$F_{(3,49)}$=21.36***
Group	.16	1.60				
SD change	.46	3.59***				
HA change	-.30	-2.40*				

Note: *p<.05; **p<.01; ***p<.001 SD=Self Directedness; HA=Harm Avoidance