Enhancing Personal Growth Initiative through Happiness Strength Interventions: The mediating role of Positive Affect

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Abstract

The present study explores the use of a happiness strength intervention (HSI), characterized as processes and activities that target the identification, development, and use of the happiness strengths; love, gratitude, curiosity, hope and zest, to increase job-seekers' personal growth initiative (PGI). Development of happiness strengths is linked to increasing positive affect (PA), personal well-being, personal relationships, environmental mastery and personal growth. The study investigates whether (a) participating in a HSI increases PA, (b) participating in a HSI increases PGI, (c) if higher PA leads to an increase in PGI; and (d) whether participating in HSI leads to an increase in PGI, mediated by PA. To test these hypotheses, a field study was conducted with a sample of $N = 55$ last-year master students and graduates one year after graduation (78.3% females; $M_{age} = 24.21$ years). The participants were randomly allocated to the experimental- or a wait-list control group. All participants filled in a pre- and post-test questionnaire which indicated their PA and PGI levels and the VIA character strengths at pre-test. Repeated measures ANOVA and a regression analysis were used to test the hypotheses. The main findings are that (a) participating in a HSI did not significantly affect PA, (b) participating in a HSI did not significantly affect PGI, (c) higher PA levels did lead to an increase in PGI and (d) participating in a HSI did not lead to an increase in PGI, mediated by PA. Limitations and recommendations for future studies are discussed.

Keywords: Values in action, Job-seekers, Personal growth initiative, Positive affect, Broaden-and-build theory

Enhancing Personal Growth Initiative through Happiness Strength Interventions: The mediating role of Positive Affect

The transition from school to work is an exciting time for many young adults, bringing with it the prospect of social and economic independence (Mathys, 2020). However, finding employment remains difficult for many due to the social and professional uncertainty felt by young adults. This uncertainty may be due to an imbalance between supply and demand in the labour market of employees, or because a lack of work experience serves as a frequent reason for companies to refuse to employ students (Mizintseva, et al., 2017). Job-seekers that fare better in the uncertain labour market are those with higher levels of personal growth initiative (PGI), since they are more aware of their career goals and actions needed to achieve those goals (Robitschek & Cook, 1999; Stevic & Ward, 2008). PGI is defined as being intentional and active about positive self-change (Robitschek et al., 2012). Being intentional and active about one's personal growth is vital to handle life's stressors and challenges, as well as to master skills that are necessary to successfully overcome uncertainty (Hendrick, 1995).

Accordingly, it is important to understand how higher levels of personal growth initiative can be generated. However, research on interventions that promote PGI yield limited results (Pinto Pizarro de Freitas et al., 2016). Only several interventions have been effective in increasing PGI-related skills. Robitschek (1997) designed an intervention retreat, whereby recognition of participants' limitations and development of PGI-related skills was promoted; and Thoen and Robitschek (2013) developed an intervention that combined psychoeducation about PGI with the development of activities to increase PGI.

In a more recent study, a character strengths intervention was conducted to promote PGI (Meyers et al., 2015). A character strengths intervention is based on increasing usage of personal strengths; this strength-based approach stems from the field of positive psychology, whereby character strength development and use are promoted in order to help people flourish

(Seligman & Csikszentmihalyi, 2000). In their study, they compared the effectiveness of a character strengths intervention with a deficiency intervention. The results showed that the focus on building strengths led to larger and longer-lasting increases in PGI than working from deficiencies (Meyers et al., 2015).

In consonance with Meyers et al. (2015), with regards to the benefits of focussing on positive development, literature on the broaden-and build theory (Fredrickson, 1998) explains that experiencing higher positive affect (PA; or positive emotions) leads to broadening though-action repertoires that encourage novel actions and attainment of essential life skills and psychological resources, possibly increasing PGI.

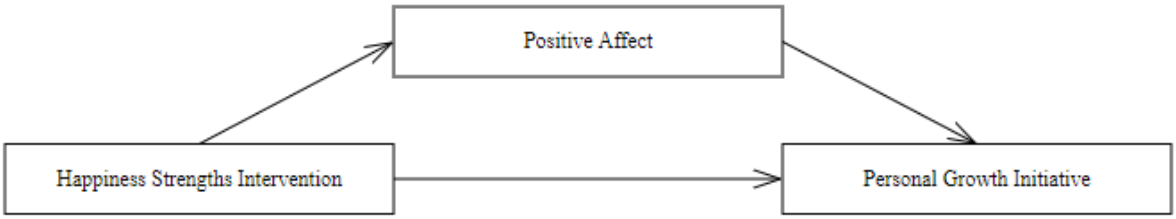
In line with the previously addressed practical implication and theoretical gap, the aim of the study is to strengthen the present body of research regarding PGI growth. Firstly, this research expands the current literature on character strengths-interventions by introducing a more specific happiness strengths intervention and investigating its effect on PA and PGI. Secondly, this research aims to find a causal relationship between a happiness strength intervention and PGI. And a more practical third aim is to increase the understanding of positive development during the school-to-work transition. As job-seekers high in PGI fare better in uncertain situations (Robitschek & Cook, 1999; Stevic & Ward, 2008), a happiness strength intervention might be able support them to take an active role in shaping themselves toward a desired job. If effective, a similar intervention could be integrated in the curriculum of graduation year master's students.

In short, with a positive psychological approach, this study aims to find a relationship between participating in a happiness strengths intervention, PGI and PA in a sample of (future) job-seekers. The research question addressed in this study is as follows: 'Does a happiness strength intervention increase PGI, mediated by PA in (future) job-seekers?' (as depicted in Figure 1). In this study, the dependent variable is PGI, the independent variable is

the happiness strengths intervention and the mediating variable is PA. The target group of the research is master's student job-seekers one year up to, or after, graduation. The theoretical underpinning and relevant literature will be discussed in the theoretical foundation.

Figure 1

Proposed model of the relationship between a Happiness Strengths Intervention and Personal Growth Initiative, mediated by Positive Affect



Theoretical Foundation

Since living an optimal life requires one to grow actively and intentionally (Robitschek, 1998), the present study directs its attention to the field of positive psychology, the scientific study of optimal human functioning. Positive psychology aims to help humans improve performance, achieve valued goals and to apply and enhance strengths (Kauffman, et al., 2010). An individual strength may be defined as 'a natural capacity for behaving, thinking, or feeling in a way that allows optimal functioning and performance in the pursuit of valued outcomes' (Linley & Harrington, 2006, p. 88). The VIA Inventory of Strengths (VIA-IS, Peterson and Seligman, 2004) is a psychological measurement designed to determine an individual's profile of character strengths. In total, the VIA inventory of strengths measures twenty-four personal strengths: *social intelligence, perspective, creativity, bravery, humour, leadership, fairness, kindness, teamwork, modesty, forgiveness, self-regulation, prudence, persistence, open-mindedness, honesty, spirituality, gratitude, zest, hope, love, love of*

learning, curiosity, and appreciation of beauty and excellence. Seligman and Peterson (2004) identified that all individuals possess the twenty-four personal strengths to different extents, forming unique strength profiles. Research on character strengths reveals that developing and improving strengths is not necessarily a slow, gradual process and that personality traits are more malleable than previously thought (Blackie et al., 2014; Hudson and Fraley, 2015; Roberts et al., 2017). Based on this notion, strength-based interventions are processes and activities that target the identification, development and use of such strengths (Niemiec, 2014).

An effective strategy for strength development is the three-phase model, or the Aware-Explore-Apply model (Niemiec, 2014). This model consists of three steps: first, awareness is raised of the character strength that the participant had limited use of, or was previously unaware of; second, the participant explores this strength by questions, reflections, activities and challenges; lastly, the participant applies the strength by choosing concrete goals and to put the strength into action. The phases of the Aware-Explore-Apply (Niemiec, 2014) have been researched and revealed positive results, including increases in well-being and strengths use (Dubreuil et al., 2016), a decrease in negative emotions and a boost to thrive (Mu & Duan, 2018).

Happiness strengths interventions (HSI) focus on the development and use of the five happiness strengths, namely love, curiosity, gratitude, zest and hope. The happiness strength love is defined as the degree to which one values close relationships with others, whilst contributing warmly to said relationships. The happiness strength curiosity involves an interest in exploring and discovery, to be interested in an ongoing experience, as it is. The strength of gratitude entails having a deep sense of thankfulness to others, and in life. Individuals with high levels of zest typically approach a situation with energy and excitement, not half-heartedly. Lastly, the happiness strength hope is a future- and action-oriented strength

that involves agency (motivation and confidence that set goals can be reached; Peterson & Seligman, 2004). These happiness strengths frequently correlate the highest with life satisfaction; hope (r = .53), zest (r = .52), gratitude (r = .43), curiosity (r = .39), and love (r = .35), the degree to which one positively evaluates their quality of life as a whole (Park, et al., 2004). Happiness strengths interventions were found an effective way to increase happiness and to decrease depressive symptoms (Senf & Liau, 2013), which indicates a possible positive correlation with positive affect.

Recent literature on happiness interventions describe the use of activities such as writing letters of gratitude (Lyubomirsky et al., 2011; Seligman et al., 2005), counting one's blessings (Emmons & McCullough, 2003; Lyubomirsky et al., 2005) and cultivating strengths in a new way (Seligman et al., 2005), leading to heightened well-being, especially positive affect (Emmons & McCullough, 2003).

Positive affect (PA) or positive emotions can be a result of behavioral or cognitive processes as well as their source. PA is a well-established important predictor and correlator of many life outcomes, commonly defined as high levels of enthusiasm, energy and pleasure (Merz et al., 2013). Reviews of PA indicate that individuals with higher PA are more likely to strive for value, to be employed, to have higher levels of socio-economic status and better work achievement (Emmons, 1986; Diener et al., 2002; Staw et al., 1994).

In correlational research, the happiness strengths of love, hope, zest and curiosity were found to be orientated toward experiencing more pleasure, engagement and meaning (Peterson et al., 2007; Buschor, et al., 2013). The strengths hope and zest were repeatedly found to have the strongest association with happiness (Park et al., 2004; Proctor et al., 2009), and there even is some causal evidence (Proyer et al., 2013). Furthermore, significant patterns were found between the happiness strengths curiosity, zest and hope on positive affect; zest and hope on self-acceptance; and love on positive relationships (Harzer, 2016).

Even though the using the happiness strengths are correlated with higher positive affect (Park et al., 2004; Proctor et al., 2009; Proyer et al., 2013), according to the Positive-Activity model (Lyubomirsky & Layous, 2013), size of the effect of the happiness strengths intervention on PA depends on the person-activity fit, the fit between the features of the person and the activity features of the HSI. The effect of the HSI on participants positive affect depends on features of the activity e.g., ideal dosage, variety, sequence and built-in social support; and the features of the person, engagement, personality and beliefs (Lyubomirsky & Layous, 2013). These elements can play a role in the effectiveness of the HSI. However, in general, positive activities are likely to promote durable well-being (Emmons & McCullough, 2003).

Previous research on character strengths interventions, combined with the positive associations between happiness strengths and positive affect, leads to the first hypothesis.

Hypothesis I: Participating in a happiness strength intervention increases levels of PA, compared to a wait-list control group.

As the ability to change and adapt is a hallmark of a healthy personality (Allport, 1955), people high in PGI will have an advantage over others in adapting to new circumstances. Robitschek (1998) defines personal growth initiative as a set of cognitive and behavioral skills for self-improvement and includes cognition and behaviour that a person carries into life experiences. This set contains four skills, including readiness for change, planfulness, resource use and intentional behaviour (Robitschek et al., 2012). The skill set represents a global inclination to intentionally improve oneself across life domains (Robitschek, 2003). PGI can thus be appreciated as a personal resource, since it includes this skill set that supports making changes that encourage positive development (Weigold & Robitschek, 2011). Personal resources can be understood as positive evaluations and skills of

the individual with respect to their ability to control their environment. Personal resources are intrinsic, can be developed, and are influenced by changes in the environment.

There are two critical theoretical elements of PGI. First, it is critical to PGI that the person is intentionally engaged in personal growth behaviours. Second, PGI encompasses transferable skills that are central skills for personal growth, because the process of personal growth is similar across life domains (Robitschek, 1999; Robitschek & Kashubeck, 1999). Both PGI and PGI measurement have consistently shown a positive relationship with growth and optimal functioning (Weigold et al., 2013).

Regarding the first critical theoretical element, intentional engagement in personal growth behaviours, there is overlap between PGI and two other constructs. PGI shares theoretical ground with self-efficacy and hope, as it has an aspect of human agency (Weigold et al., 2018), though PGI differs from both. Where both self-efficacy theory and PGI encompass intentional change toward desired growth, PGI also includes change of cognitive beliefs (Robitschek, 1998). PGI differs from hope by its specific focus on personal growth, though both constructs are positive and future-oriented (Shorey et al., 2007).

Another important note relates to the transferability of PGI skills. PGI originated from the trans-theoretical model of change by Prochaska and DiClemente's (2005), in particular from the preparation stage (Robitschek, 1998). In this preparation stage, the client desires to change in a specific life domain. Although PGI also intends to actively change a life domain, its skills are transferable, meaning that attained skills are useful for change in multiple desired life domains. Therefore, increasing PGI in young adults might be helpful to attaining central skills for personal growth in the short term, but also for future transitions and challenges.

Correlational research found several links between happiness strengths and PGI, for example zest and hope are associated with environmental mastery; curiosity is associated with personal growth; and curiosity, zest and hope are linked to purpose in life (Harzer, 2016). In

addition, Sheldon et al. (2015) showed that strongest predictors in goal attainment over time were the strengths perseverance and curiosity. Although perseverance is not a happiness strength, their results also showed that especially curiosity increased the effects of goal attainment on life satisfaction two times over a period of six months (Sheldon et al., 2015).

In regard to the correlations between the happiness strengths and PGI, the present study expects a small but significant direct effect of participating in a HSI on PGI, leading to the second hypothesis.

Hypothesis II: Participating in a happiness strength intervention increases levels of PGI, compared to a wait-list control group.

Positive affect facilitates continued action (Carver & Scheier, 1990; Clore, 1994) or approach behaviour (Davidson, 1993; Watson, et al., 1999; Cacioppo, et al., 1999). Based on this perspective, experiencing PA drives individuals to get involved in activities and engage with their environments that are adaptive for them, the environment or both. This provides an explanation for positive offset, or the tendency for individuals to experience mild PA frequently, even in a neutral context, as it links approach behaviour and PA (Ito & Cacioppo, 1999; Diener & Diener, 1996). Without positive offset, it wouldn't be beneficial for an individual to engage with their environments. Yet with such an offset, individuals would be biased towards approaching new situations, people, objects or situations. As such, the broaden-and-build theory by Fredrickson (1998) stipulates that positive emotions broaden awareness, encourage novel actions, and (over time) the attainment of essential life skills and psychological resources.

The experience of positive emotions undoes lingering negative emotions, fuels psychological and physical well-being, and builds personal resources over time (Fredrickson, 2004). Psychological well-being overlaps with PA in its hedonic feature (enjoyment, pleasure)

and with PGI in its resilience (coping, healthy problem solving; Tang et al., 2019). As a result, happiness strength-based interventions might be able to increase PGI, since PGI is suggested to be positively associated with psychological well-being (Ayub & Iqbal, 2012). Therefore, in this study the broaden-and-build theory is used as possible underlying mechanism to increase PGI in job-seekers. This leads to the last hypotheses of the present study:

Hypothesis III: Higher levels of PA will lead to higher levels of PGI

Hypothesis IV: The relationship between participating in a happiness strength intervention and PGI is mediated by PA

Methods

Study design

The present study had an quantitative, prospective, longitudinal design, conducted through the online survey software Qualtrics (Qualtrics, Provo, UT). It was an experimental field study with two conditions, an experimental (HSI) condition and a (wait-list) control condition. The study included a baseline measurement (T0), approximately two weeks before the start of the three-week intervention period and a follow-up survey (T1) after completion of the intervention period. Both measurements included questionnaires that measured sixteen study variables (N = 143 items), for the reason that the this study was part of a larger research project conducted at Tilburg University, the Netherlands. In addition, the baseline measurement included the shortened Values in Action questionnaire (VIA-IS, Peterson et al., 2005); and the post-measurement included a manipulation check. Completing the baseline measure (T0) was estimated to take an hour. After receiving ethical approval from the Ethics Review Board of the School of Social and Behavioral Sciences of Tilburg, participants were recruited.

Procedures

Participants were recruited using convenience sampling, through contact with department heads of several Dutch universities, advertisements during lecture breaks at Tilburg University and online advertisements via e.g., WhatsApp, LinkedIn and Instagram. All participants entered the study voluntarily and were not rewarded for participation. Prior to the beginning of the study, the recruited participants obtained a consent form and an information letter through Qualtrics.

The participants that agreed to the terms of the study at the pre-measurement (N = 55) were single-blind and randomly assigned to either the experimental group or the control group using block randomization. To ensure anonymity, each participant obtained an unique and anonymous ID number. In addition, the anonymous ID numbers were utilized to ensure that the pre- and post- measurements of each participant were linked and compared properly. After attainment of the post-questionnaire, the wait-list control group was given the opportunity to partake in the happiness strengths intervention. In addition, after completion of the study, the participants were debriefed. The collected data was anonymized and was kept confidential.

Participants

The sample (n = 55; 100%) consisted of only of master's students or recent master graduates (up to one year after graduation). Participants were (future) job seekers at Tilburg University and other Dutch universities, that had sufficient knowledge of the English language. The preferred sample size was identified using the G*Power 3.1 software (Faul et al., 2009). After inserting a power of .8 and an alpha = .05 to identify a medium effect size of f^2 = .15 in a regression model with four predictors (PGI, PA, group and time); the preferred sample size was N = 55. The collected sample size group was sufficient (n_{exp} = 23, $n_{control}$ = 32).

Table 1

Demographic characteristics (N = 55) subdivided into experimental and control group

	Mean/% Experimental group	Mean/% Control group
Number of participants	41.8% (*n* = 23)	58.2% (*n* = 32)
Gender		
Female	78.3% (*n* = 18)	59.4% (*n* = 19)
Male	21.7% (*n* = 5)	40.6% (*n* = 13)
Average age in years	24.17 (*SD* = 1.82)	24.23 (*SD* = 2.16)
Educational background: University master	100% (*n* = 23)	100% (*n* = 32)
Nationality		
Dutch	52.2% (*n* = 12)	46.9% (*n* = 15)
German	4.3% (*n* = 1)	25% (*n* = 8)
Other	43.5% (*n* = 10)	29.1% (*n* = 9)

Note. None of the differences between the experimental- and control group were significant.

Measures

Demographic Data

Demographic information of all participants was collected including age, gender, level of education (graduated or having the intention to graduate within the current year) and nationality. A detailed presentation of demographic characteristics is provided in Table 1.

Personal Growth Initiative

PGI was assessed though the Personal Growth Initiative Scale–II (PGIS-II), a 16-item self-report scale (Robitschek et al., 2012). The scale is divided into four subscales: Readiness for Change (four items), Planfulness (five items), Using Resources (three items) and Intentional Behaviour (4 items). The PGIS-II presents its items on a 6-point Likert scale ranging from 0 (*disagree strongly*) to 5 (*agree strongly*). An example item is "*I set realistic goals for what I want to change about myself*". The items were averaged for each subscale, higher scores represented higher levels of the measured aspect of PGI. The PGIS-II has shown an internal consistency ranging from α=0.90 to α=0.94 (Robitschek et al., 2012). The present

study found α=0.91 at T0 to α=0.92 at T1 for this scale. The test-retest reliability of the PGIS-II was 0.80 (Yalcin & Malkoç, 2013). The current study will measure PGI as one construct.

Positive Affect

The participant's PA was measured by the shortened 10-item International Positive and Negative Affect Schedule PA subscale (I-PANAS-SF PA) by Watson et al. (1988). The original short-form scale is divided into two subscales of each ten items: positive and negative affect. Since only positive affect scores were of interest for the aim of this study, the negative affect subscale was excluded from measurement. An example item of I-PANAS-SF PA is *'Indicate the extent you have felt this way over the past week: Interested.'* rated on a five-point Likert scale ranging from 1 *(Very slightly or not at all)* to 5 *(Extremely)*. After the completion of the scale, the item scores are summed, with higher summed scores representing higher PA, ranging from 10 to 50. The PANAS-SF (including negative affect) has shown an adequate internal consistency of α=0.78 (Mackinnon et al., 1999). The internal consistency was α=0.76 at T0 to α=0.9 at T1 for the I-PANAS-SF PA in the current sample. The I-PANAS-SF PA had a correlation with the full PANAS of .65 ($p < .01$; Thompson, 2007), similar to the two-month test-retest reliability found by Watson et. al (1998).

The happiness strengths intervention

Two weeks after the baseline survey, the HSI period started. The HSI lasted for three weeks. Each week the participant chose one happiness strength to develop. They were advised to choose to develop happiness strengths that fell outside of their top-five VIA character strengths, as found at the baseline measurement. For the reason that using and developing happiness strengths outside of their top-five character strengths would lead to a greater measurable effect of the HSI. The participants received emails with the Qualtrics participation link and YouTube instruction videos (Van Klooster, 2022) every day a new step was introduced. In the emails it was ensured that the tone of voice was supportive and motivating.

The four HSI steps: awareness, exploration, appreciation, and application were based on the aware-explore-apply model (Niemiec, 2014). The aim of the four steps was to make individuals more aware of, and to use their happiness strengths more often for long-term benefits. The first step was about happiness strength awareness, where the participants would familiarize themselves with the definitions and examples of happiness strengths. The definitions of the five happiness strengths were explained in Youtube video format presented via Qualtrics (Van Klooster, 2022; Niemiec, 2014; Park et al., 2004). The second step, exploration, invited participants to connect happiness strengths to (past) experiences and to think about how the happiness strengths perhaps already influenced their behaviours. In the third step, the appreciation phase, participants answered reflective questions dedicated to facilitating appreciation for their chosen happiness strength. Lastly, in the fourth step of the intervention, the participants were challenged to think about novice ways to use their chosen happiness strength in their lives and henceforth use the happiness strength for the remaining days of the week. On Monday and Tuesday step one and two were executed. On Wednesday a deadline was set to complete the reflective questions (step three), to ensure that the chosen happiness strength could be practiced for the remaining five days of the week.

Manipulation check

To indicate whether participants in the experimental condition actively worked on the HSI, a manipulation check was included in the post-intervention questionnaire. Participation in the HSI was measured by the self-report question 'Did you successfully completed all steps (1-4) during the last three weeks for every of your three chosen happiness strengths?' with four answer categories '*Yes*'; '*No, however I at least successfully completed most of the steps for every chosen character strength within the last three weeks*'; '*No, I honestly have to say that I nearly did not complete any of the steps for the character strengths during the last three*

weeks'; or *'None of the response options above apply to me, but I will describe further..*'. The last answer category included an empty textbox to elaborate on the response.

Statistical Analysis

Descriptive Analysis

First the data was prepared. If it was known a participant did not engage in the intervention, their data wasn't excluded from the study due to the small sample size (N = 55).

Second, the descriptive analysis was executed. The participants of the happiness intervention and the wait-list control group were compared on age and gender to control for differences at the base-line measurement (T0).

Repeated Measures ANOVA

Regarding the first and second hypothesis, two distinct 2x2 mixed Analyses of Variance (ANOVA) were conducted to compare the happiness-condition and the wait-list control group in PA and PGI across time. Interaction effects were examined through group x time interaction whereby the between-group differences in PA and PGI were analysed across T0 and T1.

Before conducting the repeated measures ANOVA, it was checked if any assumptions were violated. Cronbach's alpha was measured to determine the internal validity of all the (sub-) scale items. Potential differences in PA and PGI between the happiness strength group (group = 1) and the wait-list control group (group = 2) were measured by two *t-tests*, whereby '*group'* served as the independent variable (IV) and PA and PGI as the dependent variables (DV). Box's M test would show whether the assumption of equal variances was met.

Mediation Analysis

With respect to the third hypothesis, a mediation analysis was executed using the PROCESS application (Model 4; Hayes, 2013) to examine if there was a relationship between the happiness strengths intervention and PGI and whether this was mediated by PA. After

conducting the analysis conclusions were drawn on the direct and indirect effects, if the indirect effect was significant it would be concluded that there was a mediating effect of PA on the relationship between happiness strength interventions and PGI.

Results

Descriptive Analyses

The means, standard deviations, and correlations of the study variables are provided in Table 2. At baseline, the results showed that the experimental group and the control group did not significantly differ in age, $t(53) = -.11$, $p = .914$; or gender, $t(53) = -1.48$, $p = .136$. The twenty-three participants in the experimental HSI group ($M_{PGI} = 3.14$, $SD_{PGI} = 0.69$) compared to the thirty-two participants in the control group ($M_{PGI} = 3.26$, $SD_{PGI} = 0.82$) did not significantly differ in PGI scores, $t(53) = -.54$, $p = .59$. Moreover, there was no statistically significant difference found in PA scores, $t(53) = -.78$, $p = .43$, between the control group ($M_{PA} = 3.47$, $SD_{PA} = 0.82$) and the experimental group ($M_{PA} = 3.35$, $SD_{PA} = 0.54$).

Table 2

The means, standard deviations and Pearson correlations between the study variables

	M	SD	PGI at T0	PGI at T1	PA at T0	PA at T1
Gender	-	-				
Age	24.21	2.00				
Intervention	1.58	.50				
PGI at T0	3.20	.77	1			
PGI at T1	3.34	.70	.69**	1		
PA at T0	3.42	.70	.18	.13	1	
PA at T1	3.62	.54	.32*	.50**	.37**	1

Note. *$p < .05$, **$p < .01$; gender (1 = male, 2 = female); intervention (1 = intervention, 2 = no intervention)

The results depicted in Table 2 show that PA and PGI were moderately correlated at T1 with a statistically significant positive relationship, $r = .50$, $p < .001$. PA and PGI were not significantly correlated at T0, $r = .18$, $p = .202$. The variables PGI at T0 and PGI at T1 were found to be moderately correlated $r = .69$, $p < .01$. The variable PA at T0 was weakly

correlated to PA at T1, $r = .37$, $p < .01$. Lastly, the results indicate that PGI at T0 was positively correlated with PA at T1, $r = .32$, $p = .017$.

Hypotheses tests

Repeated measures analysis of variance

The results of the repeated measures ANOVA are reported in Figure 2 for the variable PA and Figure 3 for the variable PGI. A repeated measures ANOVA was conducted to explore if participating in a happiness strength intervention led to an increase in PA, compared to a wait-list control group. Box's M test of equality reported ($M = 14.9$, $F(3,180896) = 4.76$, $p < .01$), indicating that the covariance matrices were not homogeneous. The main effect of PA on group was not significant ($F(1, 53) = .01$, $p = .909$, $\eta^2 = .00$), although a significant effect of time on PA was observed, $\Lambda = .90$ ($F(1, 53) = 5.65$, $p = .021$, $\eta^2 = .10$). No interaction effect between was found between group and time on PA, $\Lambda = .96$, $F(1, 53) = 2.05$, $p = .158$, $\eta^2 = .04$.

Another repeated measures ANOVA was conducted to explore if participating in a happiness strength intervention led to an increase in PGI, compared to a wait-list control group. Box's M test of equality indicated that the covariance matrices were homogeneous, ($M = 3.92$, $F(3,180896) = 1.25$, $p = .29$. The main effect of group on PGI was not significant, $F(1, 53) = .003$, $p = .952$, $\eta^2 = .00$; and no significant effect of time on PGI was observed, $\Lambda = .94$ ($F(1, 53) = 3.68$, $p = .061$, $\eta^2 = .07$). No interaction effect between was found between group and time on PGI, $\Lambda = .95$, $F(1, 53) = 4.24$, $p = .116$, $\eta^2 = .05$.

Figure 2

Repeated measures analysis of variance of PA and Group at T0 and T1

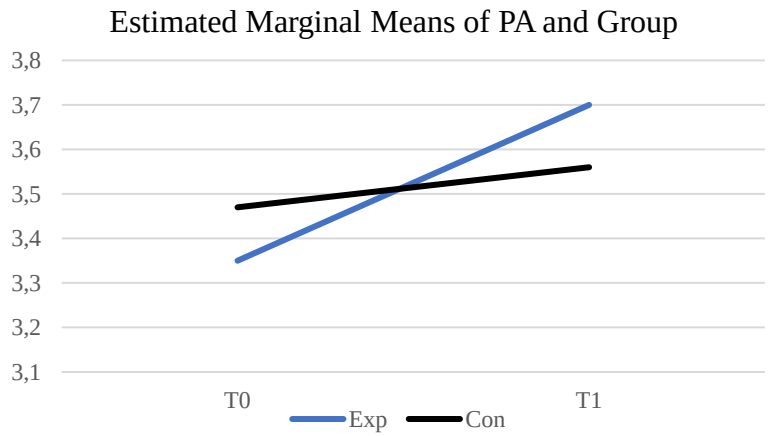
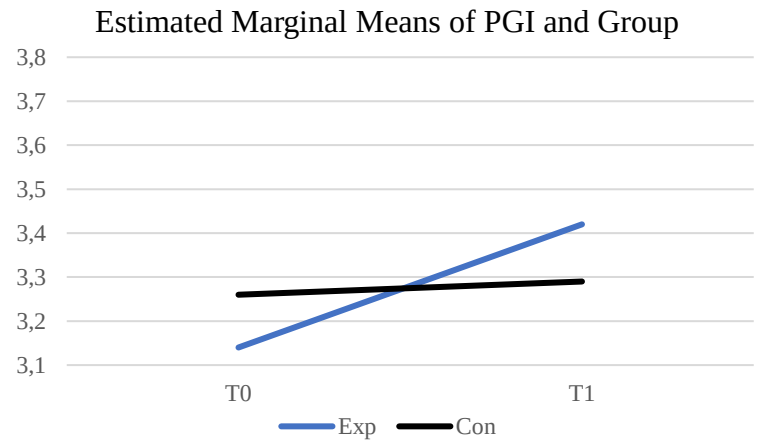


Figure 3

Repeated measures analysis of variance of PGI and Group at T0 and T1



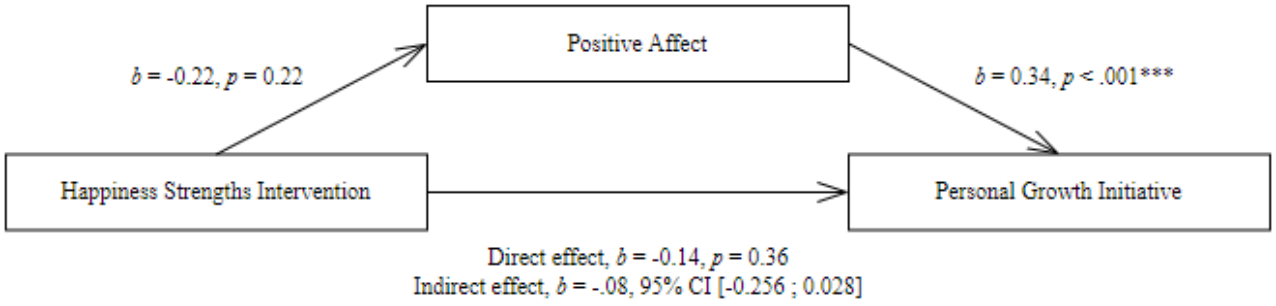
Mediation Analysis

The direct and indirect effects of the happiness strengths intervention on PA and PGI are presented in Figure 4 and Table 3. The results show that participating in a happiness strengths intervention did not have a significant direct effect on PA (b = -.22, t = -1.24, p = .22), but PA did predict a significant positive effect on PGI (b = .34, t = 3.05, p = .004). Analyzing the indirect effects, the results reveal that PA did not significantly mediate the

relationship between participating in a happiness strengths intervention and PGI, *b* = -.08, 95% BCa CI [-0.256;0.028]. Furthermore, the results also showed that participating in a happiness strengths intervention did not have a significant direct effect on PGI (*b* = -.14, *t* = -0.92, *p* = .361). The total effect of the happiness strength intervention on PGI was also not significant, *b* = -0.21, *t* = -1.46, *p* = 0.15.

Figure 4

Model of the relationships between the happiness strengths intervention, PGI and PA



*Note.*** p < .001

Table 3

Results of mediation analysis on PGI and PA at T1

	B	*SE*	*t*	*p*	R^2
DV: PGI at T1					.58
F(4,50) = 20.48***					
Group	-.14	.15	-.92	.36	
Constant*	.91	.48	1.88	.07	
PA at T1***	.34	.11	3.05	.004	
PGI at T0***	.56	.09	5.79	.000	
PA at T0	-.11	.14	-.78	.44	
DV: PA at T1					.23
F(3,51) = 2.64					
Group	-.22	.19	-1.24	.22	
Constant**	1.79	.79	2.25	.03	
PGI at T0**	.24	.11	2.20	.03	
PA at T0**	.41	.21	2.02	.05	

Note. * p < 0.1, ** p < .05 *** p < .001; *N* = 55, DV = dependent variable. Bootstrap sample size = 5.000; group (0 = control group, 1 = experimental group).

Contrary to expectations, participating in the happiness strengths intervention did not show a direct effect on PA, therefore rejecting Hypothesis I. Additionally, there was no significant direct effect from the happiness strengths intervention on PGI, therefore rejecting Hypothesis II. However, there was a significant direct effect found of PA on PGI, therefore the results did provide support for Hypothesis III. Moreover, there was no significant indirect effect from the happiness strengths intervention (mediated by PA) on PGI, thereby also rejecting Hypothesis IV.

Discussion

The present study examined whether a happiness strength intervention could increase PGI, via a mediating effect of PA. The main findings showed that PA was moderately and positively correlated to PGI. The performed mediation analysis also found a significant direct effect of PA on PGI, in line with Hypothesis III. Participation in a happiness strengths intervention did not predict higher levels of PA, therefore no evidence was found for Hypothesis I. Furthermore, the insignificant indirect effect of the happiness strengths intervention on PGI, via a mediation effect of PA, did not provide support for Hypothesis VI. Lastly, there was no significant direct effect of participating in a HSI on PGI, thereby rejecting Hypothesis II.

Although it was hypothesized that participating in a HSI would lead to an increase in PA levels, the results showed no significant interaction effect of group and time on PA. This result indicated that participating in a happiness strengths intervention did not increase PA levels. No significant main effect of group was found either, however a significant main effect of time was found. The significant main effect of time on PA explains that participants, regardless of their experimental or control condition, had significantly higher PA scores after the intervention period, compared to their baseline PA scores. Therefore, the difference in PA scores could not be attributed to either doing the happiness strengths intervention or to being in a wait-list control group.

A possible explanation of this main effect of time might be that participants transitioned to a less stressful period. The first measurement took place in the last week of March until the first week of April, the second measurement took place more than a month later in the first week of May. It is possible that participants had significantly higher levels of PA at the second measurement, due to reasons outside of the HSI, e.g., by being more outside

in the spring weather or considering that Covid-19 measures were eased in the Netherlands at the time.

Another possible explanation for the lack of an interaction effect of group and time on the HSI, is that the intervention was not effective enough. A) There was no compensation or external reward for participating in the present study. Although working on one's strengths works best when motivation is autonomous (Deci and Ryan, 2000), participating in an intervention next to finishing one's university master program or whilst in search of a job might be too demanding. An external reward, e.g., money or extra study points could serve as an extra motivator to take serious part in a study.

No interaction effect was found for HSI on PGI. The mediation analysis didn't reveal an indirect effect from HSI on PGI, mediated by PA or a direct effect of HSI on PGI. A possible explanation is the inept construction of the HSI, as explained above. An alternative is that the correlations found between happiness strengths and PGI start with experiencing higher PGI. As achieving success leads to increase in positive affect (Ayub & Iqbal, 2012), it might be reasonable to assume that people high in PGI enjoy more happiness strengths e.g., zest, hope, due to those achievements. Clarifying the insignificant results of Hypothesis 2.

In accordance with Hypothesis III, the results of the mediation analysis showed that higher levels of PA did lead to a significant increase in PGI levels. Therefore, this study did find some support for the broaden-and-build theory by Fredrickson (1998). This theory that states that the experience of positive emotions broadens thought-action repertoires, might be an underlying driving force for individuals high in PA to build enduring personal resources (Fredrickson, 2001).

Another benefit for individuals of building enduring personal resources and seeking opportunities for growth, is that it potentially creates a cycle of positive experiences. As Robitschek et al. (2012) explained, people high in PGI perceive potential stressors as

opportunities for growth, therefore PGI also serves as a protective factor against psychological distress. Since the transition period between work and school is seen as a stressful period, it is more than helpful to focus on interventions that help increase people's PA, in order to find a positive effect on PGI, and therefore their future success. This finding implies that job-seekers high in PA might enjoy the benefits of expanding their horizon to find a suitable job and to work more effectively toward (indicating higher PGI levels) finding a suitable match on the labour market.

The present research contributes to positive psychological literature in that it provided support for the broaden and build theory by Fredrickson (1998). It is one of the first studies to use a happiness strengths intervention, based on the five VIA happiness strengths. It also provides a practical outline for an online character strengths intervention, of which possible improvement will be discussed. Additionally, the present research emphasizes the need for positive interventions, or more generally, for positive psychology approaches to be implemented in educational institutions so that students can be motivated to increase their PGI. As the transition between school and work is often a stressful period for graduating students, working on increasing PA can help to support them to take an active role in shaping themselves toward a job, increasing their PGI.

Limitations, strengths and further research

There were a number of limitations in this study than can be addressed. For starters the sample size was rather small. Though, the GLM power analysis did find that the amount of participants (n = 55) was precisely sufficient to find a medium effect size in the original sample, the actual sample size turned out smaller. With exclusion of the participants that did not actively participate in the experimental group, the total sample size decreased to N = 40. In line with the results, this sample size turned out insufficient to find a significant effect size.

Regarding the reliability of the HSI could be affected by participant changes, since this experiment was an online field study, there was no indication whether the participants underwent any changes between measurements causing error that reduced the reliability, e.g., changes in time of working on the HSI could influence the consistency of the measurement.

The internal validity of the study was not accounted for. There was a possibility of social interaction, since participants attended the same university. It is possible that they talked about the HSI, which might have influenced their participation. Also there were a lot of dropouts. Many participants didn't fully participate in the intervention. They indicated that they a) had too little time in their daily life to commit to the steps of the happiness strengths intervention b) didn't enjoy the study (e.g., too repetitive, too little live interaction with the researchers), and c) were overwhelmed by filling in the large questionnaires at T0 and T1.

Concerning the external validity, there was a sampling bias. The study used a sample of highly educated young adults, therefore it is not generalizable to the population. History threat was another limitation, the changes in the participant's daily life were not asked, not controlled for. This could have influenced participant's motivation or changed their PA and PGI levels independent of the HSI. Lastly, situation effects might have occurred, this related to the amount of time participants took and when they took time to work on their HSI. Since the present study was a fields study, the participants were responsible for finding the time to work on their HSI. Whether they worked on their HSI consistently at the same time of day every day, or inconsistently could have influenced their engagement working on their happiness strength.

Several strengths are also notable. The present study had high ecological validity, for the study was a field experiment, with instructions and questions that were answered online in the participant's daily life. The reliability of the measurements PGI-IS-II and I-PANAS-SF PA were very high. The study revealed more evidence for the link between PA and PGI,

regardless of the small sample size. In the feedback question asked at the post-measurement, participants did explain that they did enjoy finding out their top-five character strengths and they enjoyed the video fragments explaining the intervention.

Future research could focus on the underlying mechanisms that explain why PA leads to higher PGI. Furthermore, there are improvement to be made to strengthen the HSI (e.g., higher frequency of social support and contact with the participants; less items per questionnaires; adding an extra measurement, e.g., one month after the intervention period; collect a more varied sample; insert an element in the HSI for participants to report on special changes in their environment to combat the history threat; and encourage people to work on the HSI every day at the same time) to counter a situation effect.

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