

SHORT TIME STRENGTHS-BASED
INTERVENTION AND GENDER AS A
MODERATOR ON THE RELATIONSHIP
BETWEEN CHARACTER STRENGTHS AND
SUBJECTIVE WELL-BEING

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Abstract

Background

The positive psychology approach emphasises concepts that facilitate the flourishing of people and societies. One of the ways to support the flourishing is by conducting strengths-based interventions. These interventions use the relationship between character strengths and subjective well-being. Character strengths are life quality, enhancing traits and subjective well-being is the combination of life satisfaction and the level of positive and negative affect. Training character strength with the interventions using the Aware-Explore-Apply (A-E-A) model leads to improved life satisfaction and well-being. Interventions that use the A-E-A model partly are not researched yet.

How much does a character strengths test effect subjective well-being of individuals?

The relationship between character strengths and subjective well-being might be moderated by gender; however, it is not yet clear whether or not this is the case.

How much does gender moderate the relationship between character strengths and subjective well-being?

Methods

A sample of 76 participants took part in a matched-pairs within-subject online survey. The survey has a pre- and post-test structure. The character strengths test used was The survey was the Global Assessment of Character Strength. Subjective well-being was measured by the Satisfaction With Life Scale and the Positive Affect and Negative Affect Scale. To analyse the data, a repeated measure one-way ANOVA and a moderation analysis were done.

Results

Life satisfaction and positive affect were not significantly affected by the character strengths test. However, the negative affect of the participants was significantly lower after the character strengths test than before. The moderation analysis did not have significant results.

Conclusion

The results of the current study accord with the results of previous research. They are confirming because the strengths-based intervention decreased negative emotions.

Nonetheless, the results regarding life satisfaction and positive emotions were contrary to prior research results. The insignificance of gender as a moderator on the relationship between character strengths and subjective well-being conforms with the findings of Toner, Haslam, Robinson, & Williams, 2012.

Introduction

Positive Psychology and the Strengths-based Approach

The field of clinical psychology includes many different approaches exploring various aspects of the human mind. Positive psychology is one of the approaches gaining popularity over the last few years. This approach highlights the mental states, traits and social institutions that enable individuals and groups of people to develop in a healthy manner (Seligman & Csikszentmihalyi, 2000). Interventions using the positive psychology approach have shown to increase the well-being and physical health of individuals (Lambert et al., 2019; Seligman & Csikszentmihalyi, 2000). Moreover, programs promoting positive psychology were successful in reducing symptoms of depression and stress while improving general happiness and life satisfaction (Goodmon et al., 2016; Guo et al., 2017). The approach emphasises resources, as well as, experiences of a person and how these can enhance the quality of life for them and others (Seligman & Csikszentmihalyi, 2000). The positive psychology approach comprises different constructs that promote its end goal in different ways.

One of the approaches within the positive psychology approach that fosters the goal of increased life quality by using resources is the strengths-based approach. It focuses on the ways individual strengths can be trained and used most favourably (Moorkath, Ragesh, & Hamza, 2019; Niemiec, 2013; Proctor et al., 2011). Moreover, the strengths-based approach aims to teach a wide range of strengths (Proctor et al., 2011). The goal of utilising character strengths in these ways is to improve life satisfaction and well-being (Duan, 2016; Lounsbury, Fisher, Levy, & Deborah, 2009; Park, Peterson, and Seligman, 2004; Peterson, & Seligman, 2004).

Different interventions aim to accomplish these goals. Littman-Ovada, Lazar-Butbul, & Benjamin (2014) have developed a four-week long strengths-based intervention course, discussing strengths, strategising with the strengths, applying the strengths and reflecting on

the use and effect of one's strengths. The participants' well-being and self-esteem increased after the intervention (Littman-Ovada et al., 2014). Another long term intervention was done by Gander, Proyer, Ruch, & Wyss (2013), who tested different ways of applying strengths tasks, which mostly resulted in increased happiness and decreased depressive symptoms. In contrast to the long term interventions, Duan and Bu (2019), show that also less time-consuming interventions seem to have a positive effect on well-being. They tested a 90-minute long intervention that included the identification of character strengths, the exploration of these strengths and the planning of application of them. Even though the different interventions can be distinguished by their duration, they share an underlying model. Strengths-based interventions follow the Aware-Explore-Apply (A-E-A) model (Moorkath et al., 2019; Niemiec, 2013). In the three-step program, individuals learn about their character strengths, then they explore them in a personal context, and lastly, they use them in their daily life (Niemiec, 2013). However, it is unclear how much each step contributes to the overall success of the intervention.

The relation of character strengths and well-being

It could be summarised that there is evidence that strengths increase well-being and life satisfaction and that the strengths-based approach relies on this relationship (Duan, 2016; Duan, Ho, Siu, Li, & Zhang, 2015). To understand the relationship between character strengths and well-being, one should first be familiar with each of the concepts. Character strengths are cross-cultural positive and desirable characteristics of a person (Korthagen, 2004; Wagner, Gander, Proyer, & Ruch, 2019; Weber, Wagner, & Ruch, 2014). Desirable in this context describes characteristics that are assumed to improve the "good life" (Wagner et al., 2019), for the person possessing the characteristics as well as the people surrounding that person. The "good life" (Wagner et al., 2019) refers to a combination of different forms of well-being (e.g. hedonic, eudemonic). These characteristics are desirable because they increase the life quality of the individuals and their surroundings (Duan & Bu, 2019; Wagner et al., 2019; Weber et al., 2014).

The concept of well-being is broad and includes multiple dimensions. In different scenarios, distinct dimensions have more significance than under other circumstances (Holder, 2012). Since well-being can be considered in many different situations, there are different types of well-being. For example, hedonic well-being represents delight, joy and happiness or eudaimonia well-being, which refers to self-development and improvement in all aspects of life (Cochrane, Woods, Zaslavsky, & LaCroix, 2020; Zaslavsky, Woods, Cochrane, & LaCroix, 2020). Another form of well-being is subjective well-being. This kind of well-being reflects the personal cognitive evaluation of the life situation, also known as life satisfaction (Diener, 2009; Holder, 2012). The assessment of one's life is done regarding the past, present and future (Diener, Emmons, Larsen, & Griffin, 1985; Diener, 2006; Holder, 2012). This judgement is done with a personal set of values and ideals, which are compared to the perceived life situation of themselves (Diener, 2009). If the ideals and the perception of ones' current state add up, a person experiences high life satisfaction. Furthermore, subjective well-being refers to the levels of positive and negative affect a person is experiencing, also called emotions (Diener, 1984; 2006; 2009; Holder, 2012). Emotions are states of humans that cover the personal experience, the physiological response and the outwards response (Hockenbury & Hockenbury, 2007). These responses determine the emotions which are experienced by a person, both internally and externally (Damasio, 1994, 1998, 2001). Emotions change intrinsic and extrinsic states by affecting specific parts of the brain through, for example, neurotransmitters (Damasio, 1998).

Positive and negative emotions, as well as life satisfaction, have been shown to be increased by character strengths. Peterson and Seligman (2004) developed the Values in Action Inventory of Strength (VIA-IS) which measures 24 character strengths. Multiple studies found that possessing and using the strengths listed in this inventory are associated with higher well-being and life satisfaction (Duan, 2016; Lounsbury, Fisher, Levy, & Deborah, 2009; Peterson, & Seligman, 2004). Character strengths do influence well-being (Brdar, Anic, & Rijavec, 2011). Character strengths result in positive affect for individuals (Weber, Wagner, & Rush, 2014). A variety of character strengths (hope, zest, gratitude, love, and curiosity) is

related to increased life satisfaction (Park, Peterson, and Seligman, 2004). The higher people score on a character strength, the more satisfied with life they report to be (Brdar, Anic, & Rijavec, 2011). However, it seems that the effect of character strengths on life satisfaction differs between different strengths. Women and men show different character strengths; however, it is not clear if this difference leads to a different relationship of character strengths and well-being between the genders (Brdar et al., 2011).

Gender

Research describes an incoherent picture of the moderation effect of gender on the relationship between character strengths and well-being. Brdar et al. (2011) have found that the gender of the people moderated the influence various character strengths have on life satisfaction. In some cases, the way a character strength influenced subjective well-being were different for men and women (Brdar et al., 2011). Blanca, Ferragut, Ortiz-Tallo, & Bendayan (2018) found that authenticity improves life satisfaction of women significantly more than it does for men. In contrast, Toner, Haslam, Robinson and Williams (2012) did not find a moderating factor of gender on the relationship between character strengths and subjective well-being. The results of Brdar et al. (2011) suggest that the relationship between character strengths and subjective well-being should at least partly be explained by gender, however Toner et al., (2012), contradicts this statement.

Research questions

Two independent questions arise from the research. First, it has been shown that strengths-based interventions follow the A-E-A model, but interventions that focus on one of the steps instead of all three steps have not been tested. It is not clear if an intervention that focuses on the awareness of character strengths by investigating them with a character strengths test is as effective as other strengths-based interventions. Therefore, the first research question is:

How much does a character strengths test effect subjective well-being of individuals?

Another uncertainty in the research is the effect gender has on the relationship between character strengths and subjective well-being. The satisfaction with life seems to be influenced by some character strengths (Blanca et al., 2018; Brdar et al., 2011); however, the relationship between character strengths and subjective well-being as a whole is not found.

Therefore, the second research question is:

How much does gender moderate the relationship between character strengths and subjective well-being?

Methods

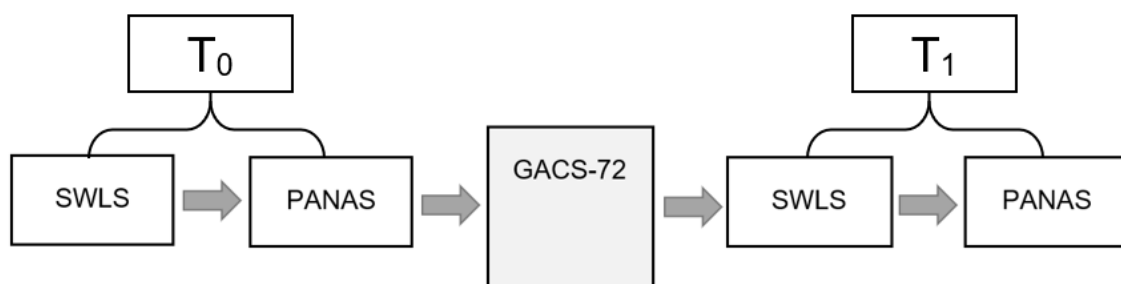
Design

This study was designed as a quantitative survey study. The design used was a matched-pairs within-subject design. The study included a pre- (t_0) and a post-test (t_1) measuring the subjective well-being of the participants (Figure 1). T_0 and t_1 tested the life satisfaction and the positive and negative affect a person experienced. Between t_0 and t_1 , the participants conducted the GACS-72 test as a form of intervention.

The first research question had one independent variable, which is the condition whether the subject had completed the GACS-72 or not. The independent variable consists of two categories. The dependent variables were the subjective well-being at t_0 and t_1 . The dependent variables are "ordinal approximation of a continuous variable" (Can an Ordinal Likert Scale be a Continuous Variable?, n.d.; Norman, 2010). The second research question has one independent variable (the total amount of character strengths), one moderator variable (gender) and one dependent variable (subjective well-being t_0). The independent and dependent variable were each defined as an "ordinal approximation of a continuous variable" (Can an Ordinal Likert Scale be a Continuous Variable?, n.d.; Norman, 2010). The moderator variable is nominal.

Figure 1

The structure of the online survey



Participants

The sample consisted of N=76 participants, of whom 80% were female, and 15% were male. The mean age was 29.1 years old (SD= 12.21), ranging from 19 years to 60 years. The nationalities of the participants include 10 % Dutch, 84 % German, 1% Hungarian, Swiss and Belgian each. The participants all were above 18 years, and they participated voluntarily. Two sampling strategies were used. The first one was convenience sampling using the website SONA and available people in the social circle. The SONA system was a website used by the University of Twente to connect researchers with students that have to participate to gain study credits. The second method used was snowballing the sample. The participants that took part in the study via SONA received credit points in return; other participants did not receive benefits for completing the study.

Materials

The survey was composed of three existing tests (The Global Assessment of Character Strengths (Appendix C), The Satisfaction With Life Scale (Appendix A), Positive Affect and Negative Affect Schedule (Appendix B)). The survey included 136 items.

Character strengths test

The Global Assessment of Character Strengths (GACS-72) was used to measure the character strengths of the participants (McGrath, 2019). This test was based on the Values in Action Inventory of Strength (VIA-IS) test (Peterson & Seligman, 2004). That test includes 240 items testing 24 character strengths that were divided into six virtues (Anjum & Amjad, 2019). The GACS-72 provides 72 statements that have to be assessed by the participant choosing from a 7-point Likert scale (1= very strongly disagree to 7= very strongly agree) (McGrath, 2019). The statements combine the 24 character strengths with three kinds of statements. An example of the first type of statement is: "Creativity is an essential part of who I am in this world". The character strength was combined with the statement "is an essential part of who I am in this world". The second kind of statement stated that "It is

natural and effortless for me to express...". In combination with a character strength, an item could, for example, be "It is natural and effortless for me to express my Creativity strength". The third kind of statement states "It is uplifting or energising for me to express my ...". One example of this statement, in combination with one strength, is: "It is uplifting or energising for me to express my Creativity strength". The item-total correlation was acceptable according to McGrath (2019) ("essential part of who I am" item-total correlation = 0.73; "natural and effortless" = 0.77; "uplifting or energizing" = 0.68). The reliability coefficients of 24 strengths were above 0.80 (McGrath, 2019).

Subjective well-being tests

Life-satisfaction. To test the life-satisfaction of the participants, the Satisfaction with Life Scale (SWLS) that was included (Diener et al., 1985). The scale was composed of 5 items (e.g. "I am satisfied with my life" or "If I could live my life over, I would change almost nothing") (Appendix C). A 7-point Likert scale does the rating (1="strongly disagree" to 7="strongly agree"). The total score indicated the level of global life satisfaction of the individual (Diener et al., 1985). The reliability of the test has been tested to be satisfying (Diener et al., 1985; Moradi et al., 2014). The internal consistency has an alpha of 0.87 and an excellence test-retest reliability (0.82) (Magyar-Moe, 2009). Cronbach's alpha of the SWLS in the current study has been $\alpha=.89$. The concurrent validity showed that the scale is correlated to other well-being and self-esteem inventories. It was negatively correlated with multiple mental illness symptoms (Magyar-Moe, 2009).

Emotions. To measure the emotions, the Positive Affect and Negative Affect Schedule (PANAS) was used (Watson, Clark, & Tellegen, 1988). The survey used a 5-point Likert scale (1="very slightly" to 5="extremely") to measure the affect of the participants (Watson et al., 1988). The survey includes 20 items, ten of the items for positive (e.g. strong, proud or interested) and ten items for negative affect (e.g. afraid, shamed or nervous) (Appendix B). Cronbach's alpha of the positive affect sub-scale has been $\alpha=.91$ and for the negative affect sub-scale, $\alpha=.92$.

Procedure

To prepare the online survey, the website Qualtrics was used. Before the study started the Ethics Committee of the University of Twente approved this study (file number: 200357). After this, the study was distributed using SONA, social environment or email. To fill in the survey, the participants needed to use a technological device with a connection to the internet. An answer was given by pressing the button marking the chosen answer. In the beginning, the participants had to fill in the informed consent form (Appendix D). Then demographic data, about gender, age and nationality, was collected. The students needed to fill in the SWLS and PANAS questionnaires (Appendix A; Appendix B). Afterwards, they had to fill in the GACS-72 questionnaire (Appendix C). When finished with the GACS-72, the participants had to fill in the SWLS and PANAS once again.

Data Analysis

To analyse the data, the computer program IBM SPSS was used. For some calculation, the SPSS extension PROCESS Macro was used. The analysis of a data set included multiple steps. Before making any calculations, all variables needed to be labelled correctly; the data set needed to be scanned for errors, like values that were above the possible range of answers. Then the missing values needed to be labelled and inscribed in the data set. All the character strengths sub-scales were combined into one total scale representing the total amount of strengths a person possesses. The reliability was tested by calculating the Cronbach's alpha. Descriptive statistics and visual representation of them were conducted to receive an overall picture of the data. The Shapiro-Wilk test was executed to test for normality ($p < .05$) (Field, 2013).

To answer the first research question, a repeated measures one-way ANOVA was conducted. The one-way repeated measures ANOVA was executed to compare the effect of doing or not doing a character strengths test on subjective well-being. The subjective well-being of individuals was measured at two points before completing a character strengths test

and after. So the condition t_0 was that a character strengths test did not effect the participant and the condition of t_1 was that the GACS-72 has eventually influenced the well-being. The measurement of subjective well-being was done by testing life satisfaction and positive and negative affect at t_0 and measure the same concepts at t_1 . Before, the ANOVA could be computed some assumptions needed to be satisfied. The first assumption was that the dependent variable needed to be continuous (ANOVA with Repeated Measures using SPSS Statistics, n.d.). Moreover, the data should not have shown significant outliers. Outliers could be observed by boxplots which depicted outliers as points and stars above and underneath the boxplot (Field, 2013). The normality assumption has been tested beforehand. The next assumption was about sphericity. This assumption was not checked, because to conduct the necessary test, three conditions were needed, and in this case, there are two (t_0 and t_1) (Field, 2013). Therefore, the assumption is assumed to be satisfied (Field, 2013).

When the assumptions are all satisfied the calculations can be conducted. The Sphericity Assumed values were reported within-subjects effect (Field, 2013). The within-subjects effects show if the difference between the means of subjective well-being t_0 and t_1 were significant. Moreover, the omega squared (ω^2) was stated to report the variance in the subjective well-being is caused by the independent variable. It was calculated by hand.

A moderation analysis answered the second research question. The relationship between the total amount of character strengths and subjective well-being is calculated and how gender moderates this relationship. The total amount of character strengths was measured by having a total mean score of all sub-scales of the GACS-72 survey combined. The subjective well-being is tested by the t_0 and t_1 measurements of life satisfaction and positive and negative affect, which are all used separately and not in a total score.

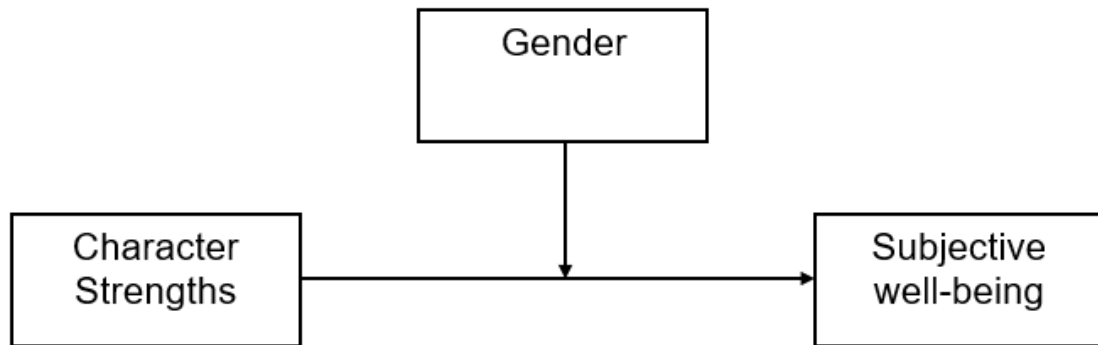
The assumptions for moderation analyses were calculated: the nature of the dependent and independent variables, outliers, leverage points, influential points, the independence of the observation, linearity, homoscedasticity, multicollinearity and the normality of the residuals (Moderator Analysis with a Dichotomous Moderator using SPSS Statistics, n.d.). Outliers, leverage and influential points are identified with boxplots, leverage

points, Cook's Distances (Field, 2013; Moderator Analysis with a Dichotomous Moderator using SPSS Statistics, n.d.). The Durbin-Watson test calculated the independence of the observation and a scatterplot of the independent and dependent variable shows the linearity. Homoscedasticity is shown in scatterplots of the standardised residuals with the unstandardised residuals and to validate the multicollinearity assumption the VIF values need to be calculated (Field, 2013; Moderator Analysis with a Dichotomous Moderator using SPSS Statistics, n.d.). To ensure that the moderation analysis can be conducted all outliers, leverage and influential points were marked as missing values.

A moderation analysis investigated the observation that the expected effect of the independent variable on the dependent variable was influenced by a third variable (moderator). In this study, the moderation effect of gender on the effect of character strengths on subjective well-being was examined (Figure 2). The first step in the moderation analysis was calculating the regression between the independent variable and dependent variable (the amount of character strengths and subjective well-being). Next, the regression of the moderator and the dependent variable (gender and subjective well-being) were calculated. The third step examined if both predictors (independent variable and moderator) influence the dependent variable separately or together in an interaction effect. When the interaction effect was significant ($p < .05$), the moderator effected how the independent variable influences the dependent variable. A significant interaction effect means that gender moderates the relationship between character strengths and well-being (Field, 2013). To do so, the SPSS addition PROCESS Macro was used (Hayes, 2013).

Figure 2

Overview of the investigated moderation analysis



Results

This study had 76 participants, which not all could be used for all calculations because some did not fill out the survey completely. Three participants were excluded because they did not answer any of the questions, and one was because the person did not agree to the terms of consent. After these participants were removed, 72 participants were included for the data analysis. The missing data varied between the subjective well-being measurements (Table 1).

Table 1

Descriptive statistics

		N	Mean	Std Dev	Minimum	Maximum
GACS-72		69	5.09	.74	4.0	7.0
SWLS	t ₀	68	5.49	.76	4.0	7.0
	t ₁	62	5.48	.84	3.5	7.0
Positive Affect	t ₀	70	3.33	.74	2.0	5.0
	t ₁	51	3.36	.79	2.0	5.0
Negative Affect	t ₀	67	1.93	.75	1.0	4.0
	t ₁	47	1.71	.68	1.0	3.5

The assumptions that needed to be satisfied have been satisfied (APPENDIX). The results show that the Satisfaction with Life Scale was not significantly effected by the GACS-

72, Wilks' Lambda = .99, $F(1.0, 60.0) = .482$, $p = .490$, $\omega^2 = 1.06$. Furthermore, the positive affect sub-scale does not show a significant effect, Wilks' Lambda = 1.00, $F(1.0, 50.0) = .018$, $p = .894$, $\omega^2 = -0.003$. Indeed, the negative affect sub-scale shows an effect of the GACF-72 Wilks' Lambda = .87, $F(1.0, 43.0) = 6.552$, $p = .014$, $\omega^2 = .033$. The pairwise comparison of the negative affect sub-scale is significant ($p < .01$). The pairwise comparison of life satisfaction ($p = .49$) and positive affect ($p = .89$) are not significant. There has been a significant difference between t_0 and t_1 for the negative affect sub-scale. The other two scales do not show a significant difference between t_0 and t_1 .

The assumptions for the moderation analysis that need to be satisfied have been satisfied partially. For some scales, there has been an indication for multicollinearity, and regarding one sub-scale, the homoscedasticity could not be guaranteed (Appendix E). Still, the calculation of the moderation analysis was performed. The calculation showed that the moderation effect was not significant for life satisfaction, the positive affect sub-scale and the negative affect sub-scale. The results of the moderation analysis can be seen in the Figure 3. The assumptions that need to be satisfied have been satisfied partially (Appendix X). For some scales, there has been an indication for multicollinearity and for one sub-scale the homoscedasticity could not be confirmed. The calculation of the moderation analysis was continued.

The moderation model of the t_0 measurement of the SWLS was not significant. The general model is not significant, $F(3, 58) = .24$, $p = .87$, $R^2 = .01$. The effect of the individual components showed that the total amount of character strengths did not predict the subjective well-being of the participants, $b = .11$, $t(58) = .54$, $p = .59$. The moderation effect also did not predict the subjective well-being of individuals, $b = .07$, $t(58) = .23$, $p = .82$. Furthermore, the interaction effect did not predict the subjective well-being, $b = .36$, $t(58) = .55$, $p = .58$. The addition of the interaction effect to the model did not significantly change the model, $F(1, 58) = .31$, $p = .58$, R^2 change = .01.

The general moderation model of the t_1 measurement of the SWLS is not significant, $F(3, 55) = .63$, $p = .6$, $R^2 = .03$. The effect of the total amount of character strengths on the

subjective well-being is not significant, $b = .22$, $t(55) = 1.02$, $p = .31$. The moderator gender does not significantly influence the subjective well-being of individuals, $b = -.34$, $t(55) = -1.03$, $p = .31$. The interaction effect does not significantly effect subjective well-being, $b = -.04$, $t(55) = -.06$, $p = .95$. The addition of the interaction effect did not significantly influence the model, $F(1, 55) = .00$, $p = .95$, R^2 change = .00.

The general moderation model of the t_0 measurement of the positive affect sub-scale is not significant, $F(3, 59) = 1.29$, $p = .29$, $R^2 = .06$. The independent variable total amount of character strengths does not significantly predict the dependent variable subjective well-being, $b = .22$, $t(59) = 1.61$, $p = .11$. Gender does not significantly influence subjective well-being, $b = .15$, $t(59) = .75$, $p = .45$. The interaction between independent variable and moderation did not significantly influence subjective well-being, $b = -.03$, $t(59) = -.07$, $p = .94$. The inclusion of the interaction effect in the model did not significantly change the model, $F(1, 59) = .01$, $p = .94$, R^2 change = .00.

The general moderation model of the t_1 measurement of the positive affect sub-scale was not significant, $F(3, 41) = 1.53$, $p = .22$, $R^2 = .10$. The total amount of character strengths does not influence subjective well-being, $b = .31$, $t(41) = 1.94$, $p = .06$. Moreover, gender does not predict subjective well-being, $b = -.07$, $t(41) = -1.11$, $p = .27$. The interaction effect also does not effect the subjective well-being of participants, $b = -.54$, $t(41) = -1.11$, $p = .27$. Adding the interaction effect to the model did not change the model significantly, $F(1, 41) = 1.24$, $p = .27$, R^2 change = .03.

The general moderation model of the t_0 measurement of the negative affect sub-scale was not significant, $F(3, 57) = 1.11$, $p = .36$, $R^2 = .05$. The total amount of character strengths does not effect subjective well-being, $b = .03$, $t(57) = .24$, $p = .81$. Furthermore, gender does not influence subjective well-being, $b = .04$, $t(57) = .22$, $p = .82$. In addition, the interaction of character strengths and gender does not change subjective well-being, $b = -.65$, $t(57) = -1.63$, $p = .11$. The addition of the interaction effect to the model did not significantly effect the model, $F(1, 57) = 2.66$, $p = .11$, R^2 change = .04.

The general moderation model of the t_1 measurement of the negative affect sub-scale was not significant, $F(3, 40) = 1.1, p = .36, R^2 = .08$. The effect of the individual components showed that the total amount of character strengths did not predict the subjective well-being of the participants, $b = -.07, t(40) = -.40, p = .69$. The moderation effect also did not predict the subjective well-being of individuals, $b = -.03, t(40) = -.11, p = .91$. Furthermore, the interaction effect did not predict the subjective well-being, $b = -.92, t(40) = -1.72, p = .09$. The addition of the interaction effect to the model did not significantly change the model, $F(1, 40) = 2.95, p = .09, R^2 \text{ change} = .07$.

Discussion

Main findings

The results of the data analysis of the first research question disclosed that the character strengths test does not increase the positive emotions or life satisfaction of a person. However, the research showed that negative affect is decreased after completing the strengths test. The effect on the negative affect shows that a character strengths test can influence subjective well-being in some aspects. The results regarding the second research question were not significant. Gender did not moderate the relationship between the overall level of character strengths and subjective well-being.

Negative Affect

The decrease of negative emotions due to the strength-based intervention conforms to the results of another research. Duan and Bu (2019) also conducted a short intervention of 90 minutes based on the strengths-based approach. Their intervention was composed of exercises identifying the individual strengths, collecting information on the strengths, finding the most significant strengths of the individual and then planning goals to achieve the goal. To investigate the character strengths test, CVQ was used, and the negative affect was measured by the Depression Anxiety Stress Scale (Duan & Bu, 2019). The measuring tools

and the intervention differed from this study; however, both studies did find reduced negative affect and indicated that strengths-based interventions could be used to reduce negative affect.

The reduction of negative emotions by conducting a strengths-based intervention might be caused by improved self-esteem. The confrontation with character strengths has been shown to increase the self-esteem of individuals (Martínez-Martí & Ruch, 2017). By filling out, a character strengths test the self-esteem is increased. Since, individuals with high self-esteem show less negative emotions than the people that have low self-esteem, this might be the reason for the decreased negative emotions (Lorr & Wunderlich, 1988). Another explanation for the reduction of negative emotions is that the completion of the character strengths test might reduce the self-discrepancy of participants. Self-discrepancy refers to the difference between what a person believes to be, whom they wish to be and whom they are expected to be (Higgins, 1989). The theory of self-discrepancy stated that the level of conformity between the actual self and wished for self result in different level of negative emotions (Higgins, 1989). Self-discrepancy have been found to be related to negative emotions (Mason et al., 2019). Higher levels of self-discrepancy correlate with high levels of negative emotions and low level of self-discrepancy correlate with a low level of negative emotions (Mason et al., 2019). If becoming aware of character strengths would reduce the distance between the actual self and ideal self, this also could explain how completing a character strengths test resulted in reduced negative emotions. However, this is an exercise for future research because the relationship between character strengths and self-discrepancy has not been studied.

Life Satisfaction and Positive Affect

Contrary to the current study, other studies have found that strengths-based interventions do increase life satisfaction and positive affect. These findings do not match the results of this report. Lounsbury et al. (2009) found an increase in life satisfaction that was the result of many character strengths. Since, this study analyses the effect of the overall

amount of character strengths on life satisfaction and the study of Lounsbury et al. (2009) compares the results of 24 different character strengths and their effect on life satisfaction, the results cannot be compared directly. However, like Lounsbury et al. (2009), Park et al. (2004) also measured the effect of all the individual character strengths on life satisfaction and found multiple positive relationships. These results indicated that the overall amount of character strengths does not influence satisfaction in life. Nevertheless, having high scores in specific individual strengths does increase the life satisfaction of people.

Besides taking individual strengths or the general amount character strengths, strengths-based interventions that did increase the life satisfaction and positive affect of participants used the A-E-A model (Niemi, 2013). Wagner et al. (2019) developed a weeklong online intervention, with questionnaires and tasks that focused on the identification and usage of strengths. The intervention increased the happiness of the participants. Proctor et al. (2011) developed a six-month-long intervention of identifying, learning and exercising strengths. Life satisfaction and positive affect were increased, and the negative affect reduced. The short intervention by Duan and Bu (2019) using identification, learning and exercising of strengths, increased general well-being. Identifying and interacting with the strengths is something that these interventions have in common with each other. The current study made the participants aware of their strengths but did not implement the other two steps. The difference in life satisfaction and positive emotions between this and the other intervention might be that the exploration and appliance of the strengths are needed to facilitate the satisfaction of life and positive affect. However, this hypothesis would need to be explained by future research by comparing the two methods directly.

Moreover, the difference in life satisfaction and positive emotion results between the current study and the previous studies can be due to the difference in lengths. Since this study includes fewer steps than the other studies, it is shorter than they are. Lochman (1985) found that the length of treatment influences the outcomes of the intervention.

Gender and the Relationship between Character Strengths and Well-being

This study did not find a moderation effect of gender on the relationship between character strengths and subjective well-being, which disagrees with the findings of Brdar et al. (2011) and confirms the results of Toner et al. (2012). Brdar et al. (2011) found that the effect of some strengths on well-being was different for men and women. Toner et al. (2012) also tested if gender interacted with the relation of character strength and well-being; however, there was no interaction found. This study also did not find a moderation effect of gender on the effect character strengths has on well-being.

Limitations

The first limitation is that the increasing number of missing values towards the end of the current study might indicate that the instructions in the survey were not sufficiently specific or that the length of the survey was too long. Some participants took over an hour to answer the questionnaire. That amount of time might have discouraged some participants. On the other hand, it was not directly stated that the subjective well-being questions would appear twice. Therefore, some people might have thought that they were finished after the character strengths test. It might help to include graphics or numbers in the questionnaire that indicate how far the person is in the process. The visual clues might help in the case of confusion.

The second limitation is the high percentage of female participants and the low percentage of male participants. For a study that analyses the effect of gender, the ideal distribution of gender would be balancing around 50%. However, in this study, the participants were 79,1% female 15,1% male. This imbalance between the number of male and female participants gives more influence to each male participants about the general male results than to each female participant.

Future research

For future research, the results of this study encourage to look into the effectiveness of character strengths test as a strengths-based intervention to influence the well-being of people. Although the effect of the character strengths test in this study was limited to reducing negative emotions, other character strengths test, like the VIA-IS, might affect the positive affect or life satisfaction of people. In the future, character strengths tests might be a form of immediate positive psychology intervention. This tool could be used for the short time well-being of clients and patients.

Conclusion

In conclusion, this study shows that although life satisfaction and positive affect were not influenced by conducting a character strengths test the negative emotions of people can be effected. Strengths-based interventions change emotions effectively. The determinant gender did not moderate the relationship between character strengths and subjective well-being.

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Appendix A

The Satisfaction with Life Scale

Below are five statements that you may agree or disagree with. Using the 1 -7 scale below, indicate your agreement with each item by clicking the corresponding number. Please be open and honest in your responding.

1 = strongly disagree

2 = Disagree

3 = Slightly disagree

4 = Neither agree nor disagree

5 = Slightly agree

6 = Agree

7 = Strongly agree

1. In most ways my life is close to my ideal.

2. The conditions of my life are excellent.

3. I am satisfied with my life.

4. So far I have gotten the important things I want in life.

5. If I could live my life over, I would change almost nothing.

Appendix B

The Positive Affect and Negative Affect Scale

Indicate the extent you have felt this way over the past week. Do so by using the scale below.

1 = Very slightly or not at all

2 = A little

3 = Moderately

4 = Quite a bit

5 = Extremely

interested

distressed

excited

upset

strong

guilty

scared

hostile

enthusiastic

proud

irritable

alert

ashamed

inspired

nervous

determined

attentive

jittery

active

afraid

Appendix C

The Global Assessment of Character Strengths

Describe how accurate the following statements represent you.

1 = Very Strongly Disagree

2 = Strongly Disagree

3 = Disagree

4 = Neutral

5 = Agree

6 = Strongly Agree

7 = Very Strongly Agree

Creativity is an essential part of who I am in this world.

Curiosity is an essential part of who I am in this world.

Judgment/Critical Thinking is an essential part of who I am in this world.

Love of Learning is an essential part of who I am in this world.

Perspective/Wisdom is an essential part of who I am in this world.

Bravery/Courage is an essential part of who I am in this world.

Perseverance is an essential part of who I am in this world.

Honesty is an essential part of who I am in this world.

Zest is an essential part of who I am in this world.

Love is an essential part of who I am in this world.

Kindness is an essential part of who I am in this world.

Social Intelligence is an essential part of who I am in this world.

Teamwork is an essential part of who I am in this world.

Fairness is an essential part of who I am in this world.

Leadership is an essential part of who I am in this world.

Forgiveness/Mercy is an essential part of who I am in this world.

Humility/Modesty is an essential part of who I am in this world.

Prudence is an essential part of who I am in this world.

Self-Regulation is an essential part of who I am in this world.

Appreciation of Beauty & Excellence is an essential part of who I am in this world.

Gratitude is an essential part of who I am in this world.

Hope is an essential part of who I am in this world.

Humor is an essential part of who I am in this world.

My Spirituality/Sense of Meaning is an essential part of who I am in this world.

It is natural and effortless for me to express my Creativity strength.

It is natural and effortless for me to express my Curiosity strength.

It is natural and effortless for me to express my Judgment/Critical Thinking strength.

It is natural and effortless for me to express my Love of Learning strength.

It is natural and effortless for me to express my Perspective/Wisdom strength.

It is natural and effortless for me to express my Bravery/Courage strength.

It is natural and effortless for me to express my Perseverance strength.

It is natural and effortless for me to express my Honesty strength.

It is natural and effortless for me to express my Zest strength.

It is natural and effortless for me to express my Love strength.

It is natural and effortless for me to express my Kindness strength.

It is natural and effortless for me to express my Social Intelligence strength.

It is natural and effortless for me to express my Teamwork strength.

It is natural and effortless for me to express my Fairness strength.

It is natural and effortless for me to express my Leadership strength.

It is natural and effortless for me to express my Forgiveness/Mercy strength.

It is natural and effortless for me to express my Humility/Modesty strength.

It is natural and effortless for me to express my Prudence strength.

It is natural and effortless for me to express my Self-Regulation strength.

It is natural and effortless for me to express my Appreciation of Beauty & Excellence strength.

It is natural and effortless for me to express my Gratitude strength.

It is natural and effortless for me to express my Hope strength.

It is natural and effortless for me to express my Humor strength.

It is natural and effortless for me to express my Spirituality/Sense of Meaning.

It is uplifting or energising for me to express my Creativity strength.

It is uplifting or energising for me to express my Curiosity strength.

It is uplifting or energising for me to express my Judgment/Critical Thinking strength.

It is uplifting or energising for me to express my Love of Learning strength.

It is uplifting or energising for me to express my Perspective/Wisdom strength.

It is uplifting or energising for me to express my Bravery/Courage strength.

It is uplifting or energising for me to express my Perseverance strength.

It is uplifting or energising for me to express my Honesty strength.

It is uplifting or energising for me to express my Zest strength.

It is uplifting or energising for me to express my Love strength.

It is uplifting or energising for me to express my Kindness strength.

It is uplifting or energising for me to express my Social Intelligence strength.

It is uplifting or energising for me to express my Teamwork strength.

It is uplifting or energising for me to express my Fairness strength.

It is uplifting or energising for me to express my Leadership strength.

It is uplifting or energising for me to express my Forgiveness/Mercy strength.

It is uplifting or energising for me to express my Humility/Modesty strength.

It is uplifting or energising for me to express my Prudence strength.

It is uplifting or energising for me to express my Self-Regulation strength.

It is uplifting or energising for me to express my Appreciation of Beauty & Excellence strength.

It is uplifting or energising for me to express my Gratitude strength.

It is uplifting or energising for me to express my Hope strength.

It is uplifting or energising for me to express my Humor strength.

It is uplifting or energising for me to express my Spirituality/Sense of Meaning.

Appendix D

Consent form

This study explores the relationship between character strength (e.g. being fair or being kind...) and the well-being of an individual. It also explores how being aware of one's strength influences how character strength and well-being relate to each other. Moreover, it will be explored if there is a difference between gender identities.

The study should take 15 minutes to complete

The participation in this study is voluntary and can be withdrawn from at any time and without giving a reason. Moreover, the participant can refuse to answer questions. The information that was shared in this survey will not be shared beyond the study team.

If you would like to contact the researcher to discuss this study, please email g.i.tapernon@student.utwente.nl

If you have questions about your rights as a research participant, or wish to obtain information, ask questions, or discuss any concerns about this study with someone other than the researcher, please contact the Secretary of the Ethics Committee of the Faculty of Behavioural, Management and Social Sciences at the University of Twente by ethicscommittee-bms@utwente.nl

Please tick the appropriate boxes

I have read and understood the study information or it has been read to me.

I have been able to ask questions about the study and my questions have been answered to my satisfaction.

Yes No

I consent voluntarily to be a participant in this study and understand that I can refuse to answer questions and I can withdraw from the study at any time, without having to give a reason.

Yes No

I understand that personal information collected about me that can identify me, such as [e.g. my name or where I live], will not be shared beyond the study team.

Yes No

I agree to participate in this study

Yes

No

Appendix E

The Correlation of the variables

Table E1

The correlations between the total score of character strengths, t0 and t1 of SWLS and PANAS sub-scales

Correlations								
		Mean of SWLS t0	Mean of SWLS t1	Mean of positive Affect t0	Mean of positive Affect t1	Mean of negative Affect t0	Mean of negative Affect t1	Mean of Character Strengths Total Score
Mean of SWLS t0	Pearson Correlation	1	,888**	,223	,194	-,328**	-,388**	,088
	Sig. (2-tailed)		,000	,076	,196	,009	,008	,490
	N	65	60	64	46	62	45	64
Mean of SWLS t1	Pearson Correlation	,888**	1	,275*	,189	-,238	-,467**	,113
	Sig. (2-tailed)	,000		,032	,209	,069	,001	,384
	N	60	61	61	46	59	45	61
Mean of positive Affect t0	Pearson Correlation	,223	,275*	1	,829**	,011	-,139	,222
	Sig. (2-tailed)	,076	,032		,000	,932	,355	,076
	N	64	61	65	47	63	46	65
Mean of positive Affect t1	Pearson Correlation	,194	,189	,829**	1	,023	,010	,242
	Sig. (2-tailed)	,196	,209	,000		,880	,946	,102
	N	46	46	47	47	45	46	47
Mean of negative Affect t0	Pearson Correlation	-,328**	-,238	,011	,023	1	,906**	,018
	Sig. (2-tailed)	,009	,069	,932	,880		,000	,891
	N	62	59	63	45	63	45	63
Mean of negative Affect t1	Pearson Correlation	-,388**	-,467**	-,139	,010	,906**	1	-,094
	Sig. (2-tailed)	,008	,001	,355	,946	,000		,535
	N	45	45	46	46	45	46	46
Mean of Character Strengths Total Score	Pearson Correlation	,088	,113	,222	,242	,018	-,094	1
	Sig. (2-tailed)	,490	,384	,076	,102	,891	,535	
	N	64	61	65	47	63	46	71

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).