



BACHELOR THESIS PSY

**DAILY STRENGTHS USE AND WELL-BEING IN YOUNG
ADULTS WITH DEPRESSIVE AND ANXIETY
SYMPTOMS**

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Abstract

Background: Many young adults suffer from depression and anxiety, which leads to lower well-being. The use of character strengths is associated with higher well-being and fewer depressive and anxiety symptoms. Especially the character strength “love” has shown to significantly increase well-being. In contrary, another study found indication for “love” being a risk factor for higher levels of depressive moods.

Objective: The aim of the current study was to investigate the different correlations between character strengths use, “love”, depression, and anxiety. The hypothesis of the research state that all variables are significantly associated, and that use of character strength “love” show to decrease symptoms of depression and anxiety.

Method: The study aimed to clarify if the character strength “love” is a predictor for depressive moods. The study used an experienced sampling method (ESM) in which a sample of 13 participants (aged 18 to 25) who showed signs of depression and anxiety filled in daily online questionnaires for nine days in total. More specifically, the study examined the cross-sectional relationship between the character strength “love”, the use of character strengths, and symptoms of depression and anxiety.

Results: On the state level, results showed that depression and anxiety are significantly associated with lower levels of strengths use and “love”, whereas the opposite is not the case. Higher levels of strengths use or “love” were not found to be associated with higher or lower levels of anxiety and depressive symptoms. Results for the trait survey further show that the sample showed an average to above average possession of the character strength “love”, moderate levels of strengths use, as well as borderline abnormal to abnormal signs of depression and anxiety.

Conclusion: Overall, young adults with frequent symptoms of depression and anxiety showed that they can still use their character strengths and the strengths “love” even when experiencing such symptoms. Future research should be directed to explore the relation of different strengths use and symptoms of mental disorders to examine whether the particular use of strengths can decrease depression and anxiety symptoms.

Keywords: strengths use, well-being, experience sampling, mental health

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Introduction

Since World War II, the field of psychology showed to be increasingly concerned with healing illnesses and it gained understanding of how people face and endure the difficulties of unfavourable life situations and conditions (Seligman & Csikszentmihalyi, 2000). Focusing solely on the negative aspects in human life led to a neglect of aspects in life that make life worth living and led to little knowledge about how positive emotions might be able to enhance health (Seligman & Csikszentmihalyi, 2000). Positive psychology aims to understand different aspects of life rather than focusing solely on the treatment of people and looks at aspects in life ranging from negative aspects (e.g., loss, suffering, and illness) to more positive aspects (e.g., connections, fulfilment, and well-being) (Gable & Haidt, 2005). The understanding of different aspects in human life which contributes to the growth and functioning of people, as well as understanding well-being, life satisfaction and how these aspects can be increased are of main interest in positive psychology (Gable & Haidt, 2005; Linley, Joseph, Harrington, & Wood, 2006; Seligman & Csikszentmihalyi, 2000). Subjective well-being focuses on what people think and feel about their lives and is equivalent to happiness.

Seligman and Csikszentmihalyi (2000) underline the importance of the prevention of illnesses and therefore increasing well-being by reinforcing strengths rather than trying to diminish weaknesses of clients. The idea of achieving the “good life” through habituation and good character lead to the development of a classification system of strengths, the Values-In-Action-Inventory of Strengths (VIA-IS) by Park, Peterson, and Seligman (2004) (Proctor, Maltby, & Linley, 2011). Character strengths are positive traits which can be reflected as feelings, thoughts, and behaviours and the use of specific strengths is linked to higher levels of life-satisfaction and well-being (Park, Peterson, & Seligman, 2004; Proctor, Maltby, & Linley, 2011). Park, Peterson and Seligman (2004) introduce an overall of 24 different character strengths.

Even though there are many different strengths, not all strengths contribute to well-being and therefore decrease anxiety and depressive symptoms. The five character strengths “hope”, “zest”, “gratitude”, “love”, and “curiosity” (so called “happiness strengths” or “strengths of the heart”) are the strengths most strongly associated with life satisfaction and well-being (Proctor, Maltby, & Linley, 2011; for more information see Park, Peterson, & Seligman, 2004). The happiness strengths can further be divided into two categories: strengths associated to a life of engagement (“hope”, “zest”, and “curiosity”) and strengths

associated to a life of meaning (“love” and “gratitude”) (Peterson, Ruch, Beermann, Park, & Seligman, 2007; Proctor, Maltby, & Linley, 2011). The study of Proctor, Maltby, and Linley (2011) reported that strengths associated to a life of meaning (“love” and “gratitude”) were greater predictors for well-being. The character strength “love” is defined by Park, Peterson, and Seligman (2004) as follows: “valuing close relationships with others, in particular those in which sharing, and caring are reciprocated; being close to people”. Findings that happiness is often reported by people who value close relationships is in line with findings of research in which the character strength “love” is closely and positively associated with well-being.

Well-being does not only correlate with the absence of social problems (e.g., dysfunctional relationships) and the presence of the character strength “love” and “gratitude”, but also with the absence of symptoms of psychological problems like depression (Park, Peterson, & Seligman, 2004). Hallmarks of well-being are the absence of depressive moods, moods of anxiety and the presence of positive moods and emotions (Diener, Suh, & Oishi, 1997). Further, subjective well-being serves as a protector against depression, whereas using character strengths is also negatively related to depression (Lewinsohn, Redner, & Seeley, 1991; Park, 2004).

Nowadays, mental health is an important topic, and depression, as well as anxiety are common terms. According to the World Health Organization (2017) around 322 million people worldwide are affected by depressive disorders and around 264 are affected by anxiety disorders. Both depression and anxiety are known as mental disorders which show a global increase throughout all ages and genders. Often, these two disorders co-occur, and symptoms can be very similar (WHO, 2017). According to the DSM-5 (2013), depressive symptoms may include a loss of interest or pleasure, feeling fatigued or a loss of energy, as well as feelings of worthlessness or excessive and a decreased ability to think or concentrate. Examples for anxiety symptoms according to the DSM-5 (2013) include restlessness, feeling fatigued easily, having difficulties concentrating, muscle tension, as well as experiencing troubles falling asleep. The WHO (n.d.) explains that symptoms of depression and anxiety are commonly known to be harmful for one’s health and have shown to decrease the overall perceived well-being. The effects depression can have on people can be very dramatic, as it can affect one’s ability to function properly and live a rewarding and fulfilling life. The effects can also have a profound impact on people’s relationships with family and friends and might also negatively impact the ability to participate in the community (WHO, n.d.).

The appearance of depressive and anxiety symptoms can have many causes, for example social isolation and loneliness (Matthews et al., 2016). Social isolation can be understood as a condition in which social connections are limited or absent, whereas loneliness is described as a subjective feeling of discomfort when social connections or relationships are perceived as being unfulfilling or insufficient. Both conditions often co-occur but also can be perceived separately (de Jong Gierveld & Havens, 2004; Coyle & Dugan, 2012; Tomaka, Thompson, & Palacios, 2006). Past research showed that social relationships are fundamental in human life and especially young adults attach high values to close friendships and romantic relationships (Hawthorn, 2008; Matthews et al., 2016; Vicor & Yang, 2012; Qualter et al., 2015).

Overall, well-being and the presence of love, as well as the character strength “love” as defined by Park, Peterson, and Seligman (2004) seem to play important roles in our daily life, and for our health. This suggests that valuing and having functioning relationships contribute to fewer symptoms of depression and anxiety, as well as higher levels of well-being. However, some studies suggest that this is not always the case. Even though the character strength “love” has shown to increase well-being, the study of Kim et. al (2018) showed that the character strength “love” might actually be a significant predictor and risk factor for depressive moods in both women and men. The study aimed at identifying character strengths that act as protective factors against depressive moods and suicidality. Participants of the study comprised general working individuals in Korea, which are not psychiatric patients. The Korean employees’ age ranged from 19 to 50 years and were working in the department of customer services. Kim et al. (2018) distributed a self-report questionnaire to 270 employees. In the survey demographical data, as well as variables like depression, suicidal ideation and suicide attempts, as well as eleven character strengths, amongst others “love”, were collected. The results showed that higher levels of the character strengths “love”, as well as “curiosity” were identified as risk factors for depressive moods in both women, whereas only “love” was identified as risk factor in men. “Judgement” and “kindness” were identified as protectors against suicidality in women, whereas “teamwork” and “creativity” showed to be a protective factor against depression and suicidality in men. The study does not explain why “love” might be a risk factor for depression, however Kim et al. (2018) vaguely suggest that the character strength “love” commonly describes an individual’s character as more emotional rather than rational. People might be more sensitive towards rewards from the external world.

The central aim of the current study is to investigate the correlation between symptoms of mental disorders, namely depressive and anxiety symptoms, and the character strength “love” as well as the use of character strengths. More specifically, this study will investigate how the character strength “love” is associated to character strengths use as well as how both are associated with symptoms of depression and anxiety. The study will be conducted in a population of young adults aged 18 to 25 as they appear to be especially vulnerable to experience symptoms of depression and anxiety, as well as they seem to attach high value to close relationships, which might be an indicator for the presence of the strength “love” (Hawthorn, 2008; Matthews et al., 2016; Robbins & Wilner, 2001 as cited in Matthews et al, 2016; Vicor & Yang, 2012; Qualter et al., 2015).

Many studies investigating strengths use made use of single-occasion retrospective self-reports or investigated long-term associations. This study makes use of the experience sampling method (ESM), as the study aims at investigating state and trait associations. The trait-state distinction helps to understand cross-situational stability and variability as it holds the view that both persons, as well as situation characteristics and their interactions help to explain these. Trait variables are explained as being a person’s characteristic, which remains stable over time and situations. State variables are considered to be reflective for a person’s adaptation to different situations. The ESM allows to study everyday events, moods, and behaviours in their natural context in-depth and in a quantitative manner (Hormuth, 1986 as cited in Miner, Glomb, & Hullin, 2005). In other words, it can ask participants about their well-being multiple times a day which enhances the ability to investigate changes in well-being, symptoms of depression or anxiety, and strengths use (Trull & Ebner-Priemer, 2009).

To connect the study to the findings of Kim et al. (2018), the study wants to find out whether higher levels of trait “love” is associated with depressive (trait and state) symptoms. This paper will further focus on whether the state character strength “love” predicts state strengths use, and if state strengths use predicts momentary symptoms of depression and anxiety. Even though Kim et al. (2018) found indications that higher levels of “love” are associated with depressive moods, this study leans on several other studies and expects no significant positive association H1. The current study expects “love” to positively predict state strengths use H2, whereas strengths use is expected to be a significant negative predictor for state symptoms of depression and anxiety H3.

Research Question 1: *To what extent is “love” associated with state depressive symptoms?*

Research Question 2: *To what extent does “love” predict state strengths use?*

Research Question 3: *To what extent does character strengths use predict state symptoms of depression and anxiety?*

Methods

Design

To measure the day-to-day experiences of well-being, character strengths use and depressive and anxiety symptoms, an experience sampling method (ESM) with a cross-sectional survey design was utilized. This method can be explained as a self-report diary procedure, which is designed to evaluate for example symptoms, moods, and context of an individual throughout the day (Myin-Germeys et al., 2018). The method helps to decrease the burden on the memory of participants, which helps them to recall events and experiences, as well as thoughts and feelings more easily. The data can be targeted to the immediate, emotional state the researcher is interested in (Berkel et al., 2017). During the study, a three time per day sampling frequency was used as this was an advised frequency to balance between minimizing participant burden and the risk of retention, while providing the researcher with enough data (Berkel et al., 2007). Additionally, answering the survey three times per day gives an overview of how the well-being, and the use of character strengths of participants changes throughout the day, as well as it shows variability of symptoms of anxiety and depression and gives an indication when they are experienced the most.

The study was approved by the Ethics Committee of the Faculty of Behavioural Sciences at the University of Twente. Data was collected throughout November 2020, starting at the beginning and finished at the end of November.

Participants

A total of 25 young adults participated in the research. To recruit the participants a convenience sampling recruitment strategy was used. Contacts of the researcher were contacted via WhatsApp, Instagram or Facebook, as well as the platform *SONA system* were used. This platform is an experiment management system of the University of Twente, which allows students and researchers to share their studies and gather participants. Participants were required to: be between 18 and 30 years old, have sufficient English skills, as well as experiencing symptoms of depression and/or anxiety. Participants needed to fill in at least 50% of the questionnaires to ensure that the data is representative of their daily experiences. Participants who did not answer at least 50% of the questionnaires or did not answer one of the two trait questionnaires (i.e. trait measures of wellbeing and strength use), as well as those younger than 18 and older than 30 were excluded from the study. Additional criteria which lead to an exclusion of the study were being in psychological treatment or being

diagnosed with depression or anxiety and not showing any signs of depression or anxiety. Based on these criteria 10 participants were excluded and the sample for further analysis consisted of 13 participants with a mean age $M_{\text{age}} = 22.31$ ($SD_{\text{age}} = 1.97$). Moreover, 10 participants were German (76.9%), 1 was Dutch (7.7%), and 2 indicated to have a different nationality (15.4%). Moreover, 12 participants were female (92.3%), and 1 was male (7.7%).

Materials

The online survey was created using the application Ethica version 390. This tool is designed to upload ESM studies which make use of surveys and is easily available for participants as the application can be downloaded and accessed by any internet connected computer or smartphone. This application was selected for this study as it allows to program the application in such a way that it sends participants multiple questionnaires a day to a set time or time frame. Further, the surveys cannot be accessed before getting an invitation to fill in the questionnaire, which is very helpful for the researcher as the researcher can control which questionnaire should be filled in at what time. The questionnaire consisted of 3 state questionnaires (conducted three times a day on day 2-8 of the study) and two trait questionnaires (conducted on day 1 and 9). The trait questionnaire was measured twice to ensure that participants filled in at least one of the two. The complete survey and consent form can be found in Appendix A, excluding the VIA-IS 120 questions for “love”, as this was requested by the VIA Institution.

Well-Being

Participants' well-being was assessed through the 5-item World Health Organisation Well-Being Index (WHO-5 well-being index), which assesses the subjective well-being of the participants (Topp, Østergaard, Søndergaard, & Bech, 2015). The WHO-5 well-being index consists of 5 items asking about people's subjective well-being. The questionnaire uses a 6-point Likert scale which ranges from 0 (“at no time”) to 5 (“all of the time”). The raw score ranges from 0 to 25 and are multiplied by 4 to give the final score, whereas 0 represents the worst imaginable and 100 the best imaginable well-being. An example item is “*I woke up feeling fresh and rested*”. The WHO-5 showed a high clinical validity, as the scale showed to be applicable for underlying illnesses, lack of illnesses, and across several other settings (Hall, Krahn, Horner-Johnson, & Lamb, 2011). Further, the scale showed to have a Cronbach's alpha of .73, which can be considered as adequate for the research purpose.

In the daily questionnaires well-being was assessed through the Single Item Happiness Scale by Abdel-Khalek (2006). The scale showed a highly significant correlation to the Oxford Happiness inventory and the Satisfaction with Life Scale and was also positively correlated with optimism and mental health. Further, it showed significant and negative correlations with anxiety and showed to be reliable, valid, and viable in cross-cultural comparisons (Abdel-Khalek, 2006). The scale uses one item “*Do you feel happy at the moment?*” and uses a 11-point scale ranging from 0 to 10.

Anxiety and Depression

Anxiety and depression were assessed through the 14 item Hospital Anxiety and Depression Scale (HADS) which was originally developed by Zigmond and Snaith (1983). Respectively, seven of the 14 items are devoted to either anxiety or depression. The scale uses a 4-point scale, and the scoring points range from 0 to 3. The results can range from 0-7 (normal), 8-10 (borderline abnormal), and 11-21 (abnormal). Example questions are “*I still enjoy things I used to enjoy*” (depression) or “*I feel tense or wound up*” (anxiety). Possible response options vary from question to question. When scoring the multiple reversed items were taken into account. Overall, literature reported that the Cronbach’s alpha for this scale varied from .68 to .93 with a mean of .83 (Bjelland, Dahl, Haug, & Neckelmann, 2002). For this study, the study showed to have a Cronbach’s alpha of .78 which is considered acceptable for the study purposes.

In the daily questionnaires anxiety and depression were measured through the reduced item version of the HADS, which consisted of one question for anxiety and depression respectively: “*How anxious do you feel right now?*” and “*To what extent do you feel down right now?*”. These items were inspired by the original HADS questions and constructed for the ESM study. Again, the responses are shown on a 4-point Likert scale and the scoring ranges from 0 (“*Not at all*”) to 3 (“*Very much*”). Here, the scoring ranges from 0-1 (normal), 1.1-1.5 (abnormal borderline), and 1.6-3 (borderline abnormal). The scoring is leaned on the original scoring of the HADS.

Character Strength “Love”

To measure the character strength “love” as described in the VIA-IS Character Strengths Classification by Park, Peterson, and Seligman (2004) 5 items from the VIA-IS 120 (Peterson & Seligman, 2004) scale were used. The VIA-IS 120 scale was originally derived

by McGrath from the original VIA-IS 240 by Peterson (Peterson & Seligman, 2004) and each item measures possession of the character strength “love”. The five items used a 5-point Likert scale ranging from 1 (“*Very much unlike me*”) to 5 (“*Very much like me*”). Two examples are “*I am the most important person in someone else’s life*” or “*I always feel the presence of love in my life*”. The higher the score the higher the presence of the character strength in an individual. The lowest possible score is five, indicating no possession of “love”, and the highest score is 25, indicating high levels of “love”. The reported Cronbach’s alpha of the VIA-120 for “love” is .77, which is adequate for research purposes. For this study, the questions for “love” showed to have a Cronbach’s alpha of 7.5.

The daily assessment of the character strength “love” was based on existing questions of the VIA-IS 120 and adjusted for momentary assessment. The item “*I feel important to other people at the moment*” was used, which was answered on a 7-point Likert scale which ranges from 1 (“*Strongly Disagree*”) to 7 (“*Strongly Agree*”). The higher the score, the more the character strength was present in that moment.

Strengths Use

The use of character strengths was measured through the Strengths Use Scale (SUS) by Govindji and Linley (2007). The scale consists of 14 items and made use of a 7-point Likert scale, ranging from 1 (“*Strongly Agree*”) to 7 (“*Strongly Disagree*”) with higher scores indicating a higher strengths use. One example of an item is “*I am regularly able to do what I do best*”. The lowest score is seven, indicating the lowest possible strengths use, and the highest score is 98, indicating the highest strengths use possible. The study showed to have a Cronbach’s alpha of .96, which is considered to be excellent for research purposes.

For the daily questionnaires, a reduced item version of Govindji and Linley’s (2007) Strengths Use Scale was used. This version also made use of the 7-point Likert Scale, with higher scores indicating a better strength use. The two items used were “*At the moment I feel able to do what I do best*” which was derived from the item “*I am regularly able to do what I do best*” and “*At the moment I feel able to use my strengths in different ways*” which was derived from the item “*My life presents me with lots of different ways to use my strengths*”. The two items were selected as they are the most straightforward questions and do not leave much space for interpretation. Therefore, these two items seemed to be the best fit to use for rephrasing them. They provide an indication of the perceived strengths use in this moment and gives enough information about their current strengths use. The lowest possible score is

two, indicating low strengths use, the highest possible number is 14, indicating high levels of strengths use.

Procedure

Participants accessed the survey through WhatsApp, Facebook, Instagram, or by signing up for the study in the study platform Sona-Systems of the University of Twente. Prior to the initial start of the study the participants were informed about the aim of the study, the requirements of the study, as well as the general rights they had during the study. On day one, after being provided with general information about the study again, the participants were offered to contact the researcher for additional information. Participants were asked to give informed consent and to confirm that they were not in psychological treatment or had been diagnosed with depression or anxiety. Additionally, participants were asked about demographical information, like age, gender, and nationality. After giving informed consent, as well as filling in demographical information, the participants were asked to fill in the first trait questionnaire, which provided some more information about the questionnaires and how to proceed. Participants were presented with the WHO-5 well-being index, the HADS, the items for the character strength “love” from the VIA-IS 120, and lastly the Strength Use Scale. If they did not fill in the first trait questionnaire, they were reminded to fill in the questionnaire after 60 minutes, 120 minutes and after 240 minutes. The questionnaire expired after 420 minutes if it had not been filled out. Filling out the trait questionnaire took around 15 minutes.

On day two to eight, the state questionnaires were asked three times a day. The questionnaires were asked to be filled in at a random time point between 9am and 11am, the second between 2pm and 4pm, the third between 8pm and 10pm. The timeslots were selected to decrease habituation. All timeslots had a timespan of two hours and it was made sure that the measurements are not too close, as this might give the participants the opportunity to be exposed to new triggers and situations. Reminders to fill in the questionnaire were sent three times, the first when the study is available, the second after 30 minutes and the last after 60 minutes. The questionnaires expired after 90 minutes if it was not answered. Participants were first provided with the Single Items Happiness Scale, the reduced SUS and the character strength “love”. Subsequently, they were provided with the reduced item scale of the HADS scale.

On the ninth day, participants were asked to fill in the trait questionnaire a second time under the same conditions to ensure at least one of the trait questionnaires has been filled in. After completing the last survey, they were informed about the possibility to contact the researcher if any questions remain or if the participant wants to receive more information. Participants who participated through Sona-Systems were granted partial study credits after the ninth day. The complete survey with consent form can be found in Appendix A.

Data Analysis

In order to investigate the collected data, the data sets were exported from Ethica to the IBM Statistical Program for Social Sciences (SPSS) 27 and was checked for missing values. Participants who did not provide informed consent, as well as selected being diagnosed with depression or anxiety or are in treatment because of these conditions were excluded for future analyses. Further, participants who did not answer at least 50% of the state questionnaires or did not answer one of the two trait questionnaires were also excluded for future analyses. Subsequently, the raw data sets were prepared for further analysis. Values and labels were adapted if needed and scores for the different trait and state scales were computed.

Demographical values were examined and the frequency, means and standard deviation for age, gender, and nationality were computed. Afterwards, the trait level scores of every participant were calculated for each scale. This was done to examine if participants overall show depressive symptoms, as well as the presence of the character strength “love” and character strengths use. Further, descriptive statistics were computed for trait and state variables to determine the means, median and standard deviations. For the state questionnaires descriptive statistics were interpreted according to the median of the variables and compared to the original scales and their interpretations. Before looking at the correlation, it was checked that the state variables are approximately linear using a scatterplot. The scatterplot showed to have a wide range but also showed some indication for assumptions.

Assumptions for conducting a Spearman’s rho correlation were investigated to check whether state measures capture the trait construct well. This was done by correlating the mean of the state variables to the mean of the trait variables. After checking the correlation analyses, a series of linear mixed models (LMM) were computed for the state variables to investigate whether one or more variables can predict an outcome variable. The correlations

between a) state “love” and state symptoms, b) state “love” and state strengths use, as well as c) state strengths use, and state symptoms were investigated. For this the linear mixed model was applied with a) state “love” as predictor variable and state depressive and anxiety symptoms as outcome variables, b) state “love” as predictor and strengths use as outcome variable, as well as c) state strengths use as predictor variable and state symptoms as outcome variable.

As summarized by Moscatelli, Mezetti, and Lacquaniti (2012), the LMM allows the analysis of longitudinal, clustered data, which is multi-levelled. The LMM was chosen as it accounts for missing data and accounts for multiple responses collected over time from a small sample size as these responses often lead to more similar responses than responses from a bigger sample size. Further, it was selected as the data is nested and might violate the independence assumption (Palmier-Claus et al., 2011). The LMM was computed using state variables, as more data is collected for the state variables which increases the reliability of the correlation analysis. For this study, measures of well-being were used to check whether the assumptions of prior research are consistent with the findings of this research regarding the correlation to depression and anxiety. Lower levels of well-being were part of higher levels of depressive and anxiety symptoms and well-being was not explicitly part of any further research.

Results

Descriptive Statistics

The descriptive statistics for the means and standard deviation of the different scores from the WHO5 well-being index, HADS, the reduced VIA-IS 120 scale for “love”, and the Strength Use Scale are displayed in Table 1. The participants who were screened for depressive symptoms - and only included when they reported these - had a poor well-being score of 30.46 when multiplied by 4 ($M=7.61$, $SD= 2.95$), an abnormal score for anxiety ($M = 12.38$, $SD = 2.27$), and a borderline abnormal score for depression ($M = 9.23$, $SD = 4.20$). This is in line with the expectations of the study. Despite low scores on well-being, and high levels of anxiety and depression, the participants had an average to above average level of the character strength “love” ($M = 18.07$, $SD = 3.59$) and a moderate level of character strengths use ($M = 59.84$, $SD = 15.83$).

To get a closer look at the daily well-being of the participants, descriptive statistics of the state-like variables were computed and can be found in Table 2. The participants reported to have a low to average score for well-being ($M = 5.53$, $SD = 2.23$). Further they reported to

have an average level of strength use ($M = 8.00$, $SD = 2.95$), as well as an average to above average level of the character strength “love” ($M = 4.95$, $SD = 1.43$). Participants also showed to have borderline abnormal levels of depression ($M = 1.30$, $SD = .88$) and anxiety ($M = 1.25$, $SD = .87$).

Looking at the three different time points the questionnaires were taken at, strengths use, anxiety, and “love” peaked at the second time point. Anxiety and depression seemed to be borderline abnormally present throughout all time points. Also “love” was reported to be present to an average to above average extent, as well as strengths use. There was no specific time point in which any of the variables seemed to be extremely low or extremely high.

Table 1

Descriptive Statistics for Trait Variables

	Well-Being	Anxiety	Depression	Love	Strengths Use
Mean	7.61	12.38	9.23	18.07	59.84
Std. Error of Mean	.820	.75	1.16	.99	4.63
Median	8.00	12.00	9.00	19.0	63.00
Std. Deviation	2.95	2.72	4.20	3.59	16.71
Minimum	3.00	8.00	1.00	12.00	29.00
Maximum	13.00	18.00	16.00	24.00	86.00

Table 2

Descriptive Statistics for State Variables

	Well-Being	Anxiety	Depression	Love	Strengths Use
Mean	5.53	1.25	1.30	4.95	8.00
Std. Error of Mean	.15	.05	.06	.09	.20
Median	5.00	1.00	1.00	5.00	8.00
Std. Deviation	2.23	.87	.88	1.43	2.95
Minimum	.00	.00	.00	1.00	2.00
Maximum	10.00	3.00	3.00	7.00	14.00

Correlations

Checking the representativeness of the state variables, the Spearman's rho correlation analysis between trait and state variables was calculated and can be found in Table 3. The correlation showed that only state "love" was significantly correlated to trait "love", while trait and state anxiety, well-being, and strength use were not significantly associated with the trait variables.

Table 3

Correlation Analysis State and Trait Variables

Variable	Trait Anxiety	Trait Depression	Trait Love	Trait Strengths Use
State Anxiety	.02	.50	-.34	-.30
State Depression	.08	.28	-.30	-.17
State Love	.21	-.21	.77**	.33
State Strengths Use	-.05	-.37	.23	.27

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

Generalised Linear Mixed Model

The generalized linear mixed model shows the estimated association a fixed effect has on a dependent variable. In the following the different fixed effects were calculated for the state variables "love", depression, anxiety, as well as strengths use. The results accordingly to the different LMM can be found in Table 4, Table 5, Table 6, and Table 7.

Character Strength "Love"

The character strength "love" showed to significantly predict not only strengths use, but also depression and anxiety. On average, "love" showed to be moderately positively correlated with strengths use ($B = .40$, $SE = .13$, $p = .002$, 95% CI [.14, .66]), and slightly negatively correlated with anxiety ($B = -.08$, $SE = .03$, $p = .001$, 95% CI [-.15, -.01]). Further, "love" also showed to be correlated with slightly lower levels of depression ($B = -.11$, $SE = .03$, $p = .001$, 95% CI [-.17, -.04]). Overall, the association of "love" with depression and anxiety is almost not visible.

Character Strengths Use

To answer the research question to what extent state character strengths use is associated with state symptoms of depression and anxiety, these correlations were also investigated. Character strengths use showed to be slightly negatively correlated with anxiety and depression. Symptoms of depression showed to be slightly lower when strengths use is high, however the estimate is very narrow which indicates that the association between strengths use and depression is almost zero ($B = -.09$, $SE = .01$, $p < .001$, 95% CI $[-.13, -.06]$). Strengths use also shows to have almost no association with anxiety ($B = -.04$, $SE = .01$, $p = .012$, 95% CI $[-.08, -.04]$).

Depression and Anxiety

Symptoms of depression and anxiety showed to have significant associations with both character strengths use and the character strength “love”. Depression showed to be strongly negatively associated with strengths use ($B = -1.52$, $SE = .24$, $p < .001$, 95% CI $[-2.01, -1.02]$) and moderately negatively associated with “love” ($B = -.38$, $SE = .10$, $p < .001$, 95% CI $[-.58, -.18]$). Anxiety is moderately negatively associated with strengths use ($B = -.60$, $SE = .24$, $p = .013$, 95% CI $[-1.08, -.12]$), and weakly negatively associated with “love” use ($B = -.18$, $SE = .09$, $p = .047$, 95% CI $[-.37, -.00]$).

Table 4

Linear Mixed Model: State Strengths Use as Dependent Variable

Parameter	Estimate	SE	95% CI		p
			LB	UB	
Intercept	8.74	.86	7.03	10.45	.000
Love	.40	.13	.14	.66	.002
Anxiety	-.60	.24	-1.08	-.12	.013
Depression	-1.52	.24	-2.01	-1.02	.000

a. Dependent Variable: Strengths Use

Table 5

Linear Mixed Model: State Anxiety as Dependent Variable

Parameter	Estimate	SE	95% CI		p
			LB	UB	
Intercept	1.34	.27	.79	1.89	.000
Love	-.08	.03	-.15	-.01	.023
Strengths Use	-.04	.01	-.08	-.01	.012
Depression	.53	.06	.40	.66	.000

a. Dependent Variable: Anxiety

Table 6

Linear Mixed Model: State Depression as Dependent Variable

Parameter	Estimate	SE	95% CI		p
			LB	UB	
Intercept	2.10	.22	1.66	2.54	.000
Love	-.11	.03	-.17	-.04	.001
Strengths Use	-.09	.01	-.13	-.06	.000
Anxiety	.44	.05	.33	.55	.000

a. Dependent Variable: Depression

Table 7

Linear Mixed Model: State Love as Dependent Variable

Parameter	Estimate	SE	95% CI		p
			LB	UB	
Intercept	4.98	.34	4.30	5.66	.000
Depression	-.38	.10	-.58	-.18	.000
Strengths Use	.08	.02	.03	.14	.001
Anxiety	-.18	.09	-.37	-.00	.047

a. Dependent Variable: Love

Discussion

In order to get a better understanding of the role the character strength “love” and strengths use have on symptoms of depression and anxiety the general aim of the study was to investigate whether “love” is a significant predictor of strengths use. Further it was of interest to what extent both strengths use and “love” show to be associated with symptoms of depression and anxiety. The target group of this study consisted of young adults who frequently showed signs of depression and anxiety.

Overall, the study showed that young adults who experience frequent symptoms of depression and anxiety also showed to possess average to above average scores of the strength “love”, as well as moderate levels of character strengths use. Despite the perceived anxiety and depressive symptoms young adults still experience the character strength “love” and the use of strengths in themselves. This finding might be in line with the general concept of positive psychology as character strengths are seen as tool to achieve the “good life”. However, these findings also seem to be in line with the results of Kim et al. (2018), who found high levels of “love” especially in people who also showed high levels of depressive moods.

The correlation analysis between state and trait variables showed that only state “love” can account for trait “love”. This indicates that either the scales used for strengths use, anxiety, and depression in the state analysis were not representative for the trait scales, or it might be an indication that the trait variables just give an overall, average picture of the persons character but the state variables change with many external factors and lead to different behaviours than indicated by the trait variables. In this study sample, only “love” seemed to be consistent throughout an individual.

The first hypothesis of the current study was based on the findings of the study from Kim et al. (2018), whereas the current study did not expect “love” to have a positive correlation with signs of depression and anxiety. The findings are in line with the hypothesis of the study, as participants who reported high levels of “love” on average did not report any significant difference of perceived depressive or anxiety symptoms. State depression and anxiety show to be independent from the strength “love” in the current study sample.

Further, the current study hypothesized that state “love” positively predicts state strengths use (H2). The results show that state “love” was positively associated with state

strengths use. Participants who felt the presence of the strengths “love” also on average showed higher levels of character strengths use. One interpretation might be that the character strength “love” showed to be an important factor when using one’s character strengths. However, the results also showed that strengths use, like “love”, on average showed to have almost no association with symptoms of depression or anxiety (H3). Overall, in previous research strengths use and “love” have shown to be strongly associated with higher levels of well-being (Proctor, Maltby, & Linley, 2011), the current study shows moderate negative associations of anxiety, and strong negative associations of depression with strengths use. Depression also showed to be moderately negatively associated with “love”.

Interestingly, results also showed that high levels of state depression are strongly correlated with lower levels of state strengths use and moderately correlated with state “love”. Participants who reported to have symptoms of depression and anxiety also reported to have lower levels of strengths use and “love”. This indicates that being in an anxious or depressed mood predicts lower levels of “love”, as well as fewer behaviours of character strengths use. The article of Matthew et al. (2016) might explain these findings, as they detected high levels of depression in young adults when feeling lonely. Their study is based on other findings which show that especially young people highly value close relationships, and further connect the feelings of loneliness and valuing close relationships. This might be an indicator that higher levels of the character strength “love” might be an indicator for being more vulnerable to negative and positive changes in relationships.

The findings that trait symptoms of depression and anxiety are present even though the trait variables of strengths use and “love” are as well present in young adults raises questions whether strengths use can be seen as protector or helpful tool when experiencing symptoms of depression and anxiety. Also, the state variables showed that even when experiencing higher levels of depressive or anxiety symptoms state strengths use and “love” were moderately present.

The findings presented give a new insight into the correlation between the four different variables presented and raise new research questions, as it was identified that the strengths “love” might not contribute to protect against depression or anxiety when experienced frequently. Even though prior research states that “love” is highly associated with higher levels of well-being, which is in turn highly associated with lower levels of depression and anxiety, this study shows that “love” and strengths use are not strongly

correlated with lower levels of depression and anxiety. Especially because the findings of this study showed that even though strengths use and “love” are present, sign of anxiety and depression can still be experienced and seem to be independent of the two, the results contribute to findings of other research.

Limitations and Implications for Future Research

The study presented shows evidence for the examined hypotheses, however it is appropriate to account for any potential limitations. The first potential shortcoming is the sample, as only participants with frequent depressive and anxiety symptoms were included. Future research could therefore examine the correlation between these symptoms and strengths use and well-being in a sample which does not experience frequent levels of depressive symptoms to examine the correlation between the different variables and to compare the two samples.

Overall, “love” might act as a mediator between strength use and well-being like Park, Peterson, and Seligman (2004) and Proctor, Maltby, and Linley (2010) describe. Both articles state that the use of specific character strengths increases well-being. In order to clarify the assumptions of “love” and strengths use also increasing well-being in people who frequently experience symptoms of depression and anxiety, the current study could have investigated well-being separately from depression and anxiety. Future research could aim at finding the connection between strengths use and well-being in depressive and anxious people, as well as taking a closer look at finding which variables might contribute to the protection against depression and anxiety in more anxious and depressed people. When examining which strengths protect against depression and anxiety in a sample with frequent experiences of these symptoms, only looking at one strength that might influence strengths use leaves little room for comparing it to other strengths which might be associated with well-being, as well as mental health. Asking about all five happiness strengths would give a more detailed insight of the different loadings and their impact on strength use, well-being and especially symptoms of mental disorders.

Implications for further research arise from the results, in which the role of love is still not clear from previous research and this study. On the one hand the results show that people with depression and anxiety symptoms show high levels of the strength “love” and strengths use. On the other hand, neither “love” nor strengths use show to be associated with depression and anxiety. This could be investigated further by looking at depressive and non-

depressive people and compare their strengths use, as well as the possession of the character strength love. The article of Matthew et al. (2016) detected high levels of depression in young adults when feeling lonely. Their study is based on other findings which show that young people highly value close relationships. This might be an indicator for a higher character strength of love and might make them more vulnerable to negative and positive changes in relationships. Examining the different relationships might be another focus for future research.

Conclusion

In conclusion, the study provided more insight in the correlation of strength use, well-being and the strength love and their association with depression and anxiety symptoms. It was one of the first studies looking further into the strength use and its impact mental health in a population with signs of mental health disorders. Further, it looked at depression and anxiety as a dynamic process through using the ESM approach, which allowed to look for the variations in symptoms, “love” and strength use. Even though the study showed limitations, it provided further starting points for future research. It gave a more detailed insight into the correlation between well-being and strengths use in people who already suffer from disorders. Fostering strengths use may not protect people with frequent symptoms of mental disorders from said symptoms, but it might be able to buffer the effects of the symptoms when using specific strengths.

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Appendices

Appendix A

Informed Consent

Goal

The goal of this study is to collect information about the use of character strengths and the well-being of young adults who experience symptoms of depression and/or anxiety. Further, the study wants to examine possible correlations and possible bi-directional relationships between character strengths use and perceived well-being.

Procedure

You will be asked several questions through the online application “Ethica” for seven days. The study will consist of multiple questions asking about your perceived well-being, character strengths use, as well as about possible depressive or anxiety symptoms. The first questionnaire will consist of some more general questions about your perceived well-being, character strengths use and your depressive and anxiety symptoms. This will likely take around 15 minutes. For the following seven days you will receive three questionnaires. You will get the first reminder for filling out the questionnaire between 7am and 10am, the following reminder between 1pm and 4pm, and the third reminder will be sent between 7pm and 10pm. Each questionnaire will again ask about your perceived well-being, how you are feeling in terms of your symptoms and your character strengths use. Altogether, these questionnaires will probably take around three to five minutes. On the seventh day you will receive the same questionnaire as on the first day, which will again take around 15 minutes to complete.

You can withdraw from the study at any time. You can ask questions at any moment.

Recording

Your data will only be used for the purpose of this study. The data will only be seen by the researcher and their supervisor and will not be shared outside the research team.

Participation is not expected to have any risks or consequences for you

- Your answers and details will be processed anonymously.
- We are just interested in the possible correlations of the variables, not your performance or your daily routine

Informed consent

I have read or the study has been read to me and understood the study. I have been able to ask questions about the study and my questions have been answered to my satisfaction.

- Yes, I consent.
- No, I do not consent.

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, I consent.
- No, I do not consent.

I understand that taking part in this study involves the recording of information through the application Ethica. I understand that I need to fill in questionnaires provided to me for seven days to complete the study.

- Yes, I consent.
- No, I do not consent.

I understand that the information collected about me will be processed anonymously and will not be shared beyond the study team.

- Yes, I consent.
- No, I do not consent.

Trait Questionnaire

Hello!

Thank you for your participation in this study!

Today you will be asked some more general questions about your overall well-being and character strength use.

DISORDERS

This first questionnaire will probably take around 15 minutes to complete. Please stick through it and answer the questions honestly.

Have fun!

In the next pages you will be presented with a set of statements asking you about your last week. Please select the statements that fit most to you.

Tick the box beside the reply that is closest to how you have been feeling in the past week.

Don't take too long over your replies: your immediate is best.

I have felt cheerful and in good spirits.

- All of the time
- Most of the time
- More than half of the time
- Less than half of the time
- Some of the time
- At no time

I have felt calm and relaxed.

- All of the time
- Most of the time
- More than half of the time
- Less than half of the time
- Some of the time
- At no time

I have felt active and vigorous.

- All of the time
- Most of the time

- More than half of the time
- Less than half of the time
- Some of the time
- At no time

I woke up feeling fresh and rested.

- All of the time
- Most of the time
- More than half of the time
- Less than half of the time
- Some of the time
- At no time

My daily life has been filled with things that interest me.

- All of the time
- Most of the time
- More than half of the time
- Less than half of the time
- Some of the time
- At no time

I feel tense or 'wound up'.

- Most of the time
- A lot of the time
- From time to time, occasionally
- Not at all

I feel as if I am slowed down.

- Nearly all the time
- Very often
- Sometimes
- Not at all

I still enjoy the things I used to enjoy.

- Definitely as much
- Not quite so much
- Only a little
- Hardly at all

I get a sort of frightened feeling like 'butterflies' in the stomach.

- Not at all
- Occasionally
- Quite often
- Very often

I get a sort of frightened feeling as if something awful is about to happen.

- Very definitely and quite badly
- Yes, but not too badly
- A little, but it doesn't worry me
- Not at all

I have lost interest in my appearance.

- Definitely
- I don't take as much care as I should

- I may not take quite as much care
- I take just as much care as ever

I can laugh and see the funny side of things.

- As much as I always could
- Not quite so much now
- Definitely not so much now
- Not at all

I feel restless as I have to be on the move.

- Very much indeed
- Quite a lot
- Not very much
- Not at all

Worrying thoughts go through my mind.

- A great deal of the time
- A lot of the time
- From time to time, but not too often
- Only occasionally

I look forward with enjoyment to things.

- As much as I ever did
- Rather less than I used to
- Definitely less than I used to
- Hardly at all

DISORDERS

I feel cheerful.

- Not at all
- Not often
- Sometimes
- Most of the time

I get sudden feelings of panic.

- Very often indeed
- Quite often
- Not very often
- Not at all

I can sit at ease and feel relaxed.

- Definitely
- Usually
- Not often
- Not at all

I can enjoy a good book or radio or TV program.

- Often
- Sometimes
- Not often
- Very seldom

The next couple of questions will be directed to your character strength and use.

Stick through

Please choose one option in response to each statement. All of the questions reflect statements that many people would find desirable, but we want you to answer only in

terms of whether the statement describes what you are like. Please be honest and accurate!

Originally the items for the character strengths “love” were asked here

I am regularly able to do what I do best.

- Strongly agree
- Agree
- More or less agree
- Neither agree nor disagree
- More or less disagree
- Disagree
- Strongly disagree

I always play to my strength.

- Strongly agree
- Agree
- More or less agree
- Neither agree nor disagree
- More or less disagree
- Disagree
- Strongly disagree

I always try to use my strengths.

- Strongly agree
- Agree
- More or less agree
- Neither agree nor disagree

- More or less disagree
- Disagree
- Strongly disagree

I achieve what I want by using my strengths.

- Strongly agree
- Agree
- More or less agree
- Neither agree nor disagree
- More or less disagree
- Disagree
- Strongly disagree

I use my strengths every day.

- Strongly agree
- Agree
- More or less agree
- Neither agree nor disagree
- More or less disagree
- Disagree
- Strongly disagree

I use my strengths to get what I want out of life.

- Strongly agree
- Agree
- More or less agree
- Neither agree nor disagree

- More or less disagree
- Disagree
- Strongly disagree

My work gives me lots of opportunities to use my strengths.

- Strongly agree
- Agree
- More or less agree
- Neither agree nor disagree
- More or less disagree
- Disagree
- Strongly disagree

My life presents me with lots of different ways to use my strengths.

- Strongly agree
- Agree
- More or less agree
- Neither agree nor disagree
- More or less disagree
- Disagree
- Strongly disagree

Using my strengths comes naturally to me.

- Strongly agree
- Agree
- More or less agree
- Neither agree nor disagree

- More or less disagree
- Disagree
- Strongly disagree

I find it easy to use my strengths in the things I do.

- Strongly agree
- Agree
- More or less agree
- Neither agree nor disagree
- More or less disagree
- Disagree
- Strongly disagree

I am able to use my strengths in lots of different situations.

- Strongly agree
- Agree
- More or less agree
- Neither agree nor disagree
- More or less disagree
- Disagree
- Strongly disagree

Most of my time is spent doing the things I am good at doing.

- Strongly agree
- Agree
- More or less agree
- Neither agree nor disagree

- More or less disagree
- Disagree
- Strongly disagree

Using my strengths is something I am familiar with.

- Strongly agree
- Agree
- More or less agree
- Neither agree nor disagree
- More or less disagree
- Disagree
- Strongly disagree

I am able to use my strengths in lots of different ways.

- Strongly agree
- Agree
- More or less agree
- Neither agree nor disagree
- More or less disagree
- Disagree
- Strongly disagree

Thank you for filling in the first questionnaire!

For the next 7 days you will receive 3 short questionnaires a day.

Do not worry, today you are done with answering our survey.

See you tomorrow morning!

State Questionnaire

Welcome back!

Please fill in the few next questions. This will only take a couple of seconds.

Do you feel happy at the moment?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

At the moment I feel able to do what I do best.

- Strongly Agree
- Agree
- Somewhat agree
- Neutral
- Somewhat disagree
- Disagree
- Strongly Disagree

At the moment I feel able to use my strengths in different ways.

- Strongly Agree
- Agree
- Somewhat agree
- Neutral
- Somewhat disagree
- Disagree
- Strongly Disagree

I feel important to other people at the moment.

- Strongly Agree
- Agree
- Somewhat agree
- Neutral
- Somewhat disagree
- Disagree
- Strongly Disagree

How anxious do you feel right now?

- Very much
- Quite a lot
- Not very much
- Not at all

To what extend do you feel down right now?

- Very much
- Quite a lot

- Not very much
- Not at all

Thank you!!!

Until next time!