

**The Power of Balance: Relationships of Overuse, Underuse, and Optimal Use of
Character Strengths with Well-being and Depressive Symptoms in Students**

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Bachelor thesis

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June 26, 2020

Abstract

Background: A new direction in positive psychology focuses on the role of strengths use not only for well-being but also for psychological problems. Strengths-based interventions for students, a risk group for depressive symptoms, could be improved through new insights from this approach. Therefore, this study examined the quality of strengths use in students on a continuum from extremely low to excessive use for the 24 VIA character strengths. The relationships of strengths under-, over-, and optimal use with well-being and depressive symptoms were explored and group differences between students who mainly use their strengths optimally and those who mainly over/- underuse their strengths were examined. A pattern of specific strengths use to differentiate between healthy and depressive students was identified.

Methods: For this cross-sectional study, 152 international students were recruited with convenience sampling. They filled out an online questionnaire, including demographics, the Overuse/Underuse/Optimal Use Inventory of Strengths, the Mental Health Continuum - Short Form, and the Beck Depression Inventory, second edition. The relationships were analyzed using correlation analysis, followed by multiple regression analysis. Differences in the relationships were investigated with Steiger's z and the group differences with Chi-square tests and independent sample t -tests. The cluster of specific strengths use was examined with discriminant analysis.

Results: Significant associations were found for well-being with strengths underuse ($r=-.46$, $p=.00$) and optimal strengths use ($r=.37$, $p=.00$), with strengths underuse being a predictor of well-being ($p=.00$). Depressive symptoms were associated with strengths underuse ($r=.21$, $p=.03$) and optimal use ($r=-.22$, $p=.02$). Students mainly optimally using their strengths had on average higher levels of well-being than students who mainly over/-underused strengths ($p=.01$). The underuse of hope was the only significant predictor of depressive symptoms ($p=.00$) and a cluster of underuse of hope, zest, perseverance, self-regulation, curiosity, bravery, creativity, and humility and overuse of humility was found to differentiate healthy students from students with depressive symptoms correctly in 84.8% of the cases ($p=.00$).

Conclusion: The findings partly supported the model of the continuum of quality of strengths use but questioned the role of strengths overuse. To improve students' well-being and alleviate depressive symptoms, strengths-based interventions should focus on enhancing optimal strengths use and increasing the use of hope. Although some general strengths use patterns were

identified, the role of the use of several strengths in relation with depressive symptoms remained ambiguous. Therefore, individuals' specific strengths use patterns should be considered additionally to identify problematic use.

Keywords: character strengths, strengths underuse, strengths overuse, optimal strengths use, well-being, depressive symptoms, student health

Introduction

Pursuing a good and healthy life is an important goal of humankind and the focus of positive psychology, an ever-growing branch of psychology in the 21st century. Instead of concentrating on correcting deficits, positive psychology proposes that enhancing positive human qualities increases mental well-being (Seligman, 2002). Within this framework, positive affect and positive psychological functioning are the components of well-being, which is independent of a person's level of complaints (Keyes, 2002). To enhance the well-being of individuals and society, working with character strengths turned out to be a major important component that is applicable in every life domain (Seligman, 2002; Park & Peterson, 2009).

Character strengths provide the psychological basis for virtuousness and being good. Therefore, they are also referred to as positive personality characteristics (Peterson & Seligman, 2004). Being composed of human behavior, thought, feeling, and volition (Niemić, 2014; Park, Peterson, & Seligman, 2004), they are the groundwork for the development of other forms of strengths such as talents and skills (Niemić, 2014). The character strengths that are most natural to a person in different contexts and increase their energy level are called signature strengths. These can be identified with strengths finders like the Values in Action Inventory (VIA) (Peterson & Seligman, 2004). It measures 24 character strengths, like curiosity, zest, and forgiveness, based on the six fundamental and cross-cultural virtues wisdom, courage, humanity, justice, temperance, and transcendence (Dahlsgaard, Peterson, & Seligman, 2005) (see Appendix A for an overview of all strengths).

The interest in identifying character strengths is high because they have been linked to various positive outcomes, also when these measures were rated by peers instead of self-reports (Buschor, Proyer, & Ruch, 2013). Examples of these outcomes are well-being (Gander, Proyer, Ruch, & Wyss, 2013; Huta & Hawley, 2010), life satisfaction (Azañedo, Fernández-Abascal, & Barraca, 2014; Huta & Hawley, 2010; Park et al., 2004) and reduced depressive symptoms (Gander et al., 2013; Huta & Hawley, 2010). In the academic setting and workplace, focus on strengths was associated with increased academic success in students, enhanced well-being and productivity (Clifton & Hartner, 2003; Lounsbury, Fisher, Levy, & Welsh, 2009; Weber, Wagner, & Ruch, 2016), and stress resilience through coping strategies (Harzer & Ruch, 2015).

A more differentiated view on the effects of character strengths results from the distinction between strengths knowledge and strengths use. Both concepts are related (Govindji & Linley, 2007). However, strengths use tends to be a more advanced step in dealing with one's strengths than strengths knowledge (Duan, Bu, Zhao, & Guo, 2018). While the latter has been linked to positive well-being (Park et al., 2004; Proctor et al., 2011) and self-efficacy (van

Woerkom & Meyers, 2019), strengths use turned out to be related to well-being and vitality (Biswas-Diener, Linley, Nielsen, & Gillet 2010; Govindji & Linley, 2007; Loton & Waters, 2017), life satisfaction (Biswas-Diener et al., 2010), self-efficacy (Freire, Ferradás, Núñez, Valle, & Vallejo, 2019; Park, Peterson, Steen, & Seligman, 2005), and outcomes like increased confidence, perseverance, resilience, success expectations and positive feelings (Giehlen, van Woerkom, & Meyers, 2017). Considering the different outcomes, strengths use seems to be more effective than sole knowledge in enhancing well-being factors.

A variety of strengths-based interventions has been established to achieve these positive outcomes. Strengths use was found to be an important mediator for intervention success (Duan et al., 2018), which supports its decisive role. Interventions across different settings resulted in positive outcomes like increased well-being, job performance, positive effects for teams, and personal growth (Giehlen et al., 2017). Moreover, strengths-based exercises at school were increased life satisfaction and well-being in adolescents (Proctor et al., 2011). Similarly, a one-session intervention for first-year students resulted in higher well-being and less negative affect (Duan & Bu, 2019). Therefore, strengths-based interventions, especially when strengths use is included, seem to be a successful at enhancing well-being and productivity in various settings.

However, despite a great deal of research suggesting that the more one uses a strength, the better the outcome, researchers have raised considerable doubts on the monotonic effect of character strengths. Peterson (2006) suggested that extreme forms of strengths use, in either of both directions, is a sign of psychological problems. Likewise, Kern (2017), as well as Schwartz and Scharpe (2006), warned that a potentially good quality can turn into negative consequences when applied too much, just as when applied too little. For example, perseverance in students can lead to higher achievements despite challenges but can, in its excessive form, also result in students overworking themselves (Kern, 2017). Moreover, Grant and Schwartz (2011) have shown that using a strength in a high amount can turn into negative effects, suggesting a nonmonotonic effect of strengths in the categories wisdom, courage, humanity, and justice.

In line with these ideas, Niemiec (2014) proposed a model of individual differences in the quality of strengths use dependent on the context of use. In this model, strengths use is characterized on a continuum from underuse to overuse with optimal use in the middle. This is based on the principle of Aristotle's "golden mean" which argues that characteristics are positive when balanced on a continuum between excess and deficiency (Niemiec, 2019). The underuse of strengths is defined as not applying one's strength potential at a given moment, resulting in negative effects for oneself or others (Niemiec, 2018). For example, the underuse of kindness in a specific situation can result in self-harm (when lacking kindness towards

oneself) or in selfish acts (when lacking kindness towards others). On the other hand, the overuse of strengths is characterized by applying a strength too strongly in specific contexts (Niemic, 2014). The resulting negative consequences for oneself and others lead the strength to lose its positive nature and rather turn into a negative characteristic (Kern, 2017; Niemic, 2018). This way, an overuse of kindness may result in being too focused on others and, therefore, neglecting one's own needs.

Personality and context influence the underuse and overuse of strengths. Both affect the attention paid to a strength which determines its existence over time (Niemic, 2019). People can be unaware of their strengths due to a lack of self-awareness or disconnection with their identity, or they do not understand the meaning of strengths and take them for granted ordinary attributes. A lack of capacity to use a strength is also a common reason for underuse (Niemic, 2014; 2019). Regarding overuse, misinterpretations, like overlooking certain aspects of a situation, can lead to using a strength that is not appropriate for the demands of a specific context (Peterson, 2006). Furthermore, the human predisposition to openly present one's positive core characteristics can lead to application in a non-sensitive way (Niemic, 2019). Factors like impulsivity, forcing, overthinking and perfectionism can also play a role in overusing strengths (Snow, 2016).

The influence of over-, under-, and optimal use of strengths on well-being has recently been the focus of second-wave positive psychology (i. e. positive psychopathology). It is an approach to shed light on the way positive characteristics can help reduce problems and psychopathology, but also how imbalances of strengths use may underlie these problems (Niemic, 2019). This seems promising to gain new insights and a different perspective on psychopathology which can help to develop and refine the diagnoses and treatments of psychological problems (Niemic, 2019). For this purpose, Freidlin, Littman-Ovadia, and Niemic (2017) developed a measurement tool, the Overuse/Underuse/Optimal Use Inventory of Strengths (OUOU), to identify underuse, overuse and optimal use of strengths, considering that the amount of use and the context influence the strength continuum.

Applying the OUOU, Freidlin et al. (2017) and Littman-Ovadia and Freidlin (2019) found support for the positive outcomes of optimal strengths use and the negative ones of strengths over- and underuse. Optimal strengths use was related to well-being, problem-solving, and life satisfaction, similar to the outcomes measured in strengths-based interventions. On the contrary, strengths over- and underuse were related to depression and psychological disorders like social anxiety disorder (Freidlin et al., 2017) and obsessive-compulsive disorder (Littman-Ovadia & Freidlin, 2019). Clusters were identified showing the specific imbalance of strengths

use related to each of the disorders. Remarkably, both studies revealed that underuse had a more negative impact than overuse. One explanation for this pattern is that strengths underuse fits the concept of languishing from Keyes' (2002) mental health continuum model better (Littman-Ovadia & Freidlin, 2019). Languishing is defined through the absence of mental health and includes being restricted in daily activities. As being restricted implies being limited to do something, it is rather related to using strengths too little than too much.

Several benefits but also aspects for caution result from the approach to conceptualize psychopathologies in terms of strengths (mis-)use. Firstly, strengths-based interventions can be used to enhance optimal strengths use to cope with or prevent psychological problems (Littman-Ovadia & Freidlin, 2019; Niemiec, 2019; Rashid, 2015). Secondly, labeling and reframing a disorder in terms of strengths use may be less stigmatizing and can have a positive influence on clients in practice (Littman-Ovadia & Freidlin, 2019; Niemiec, 2019; Rashid, 2015). However, this new approach should not replace previous approaches, but rather complement them (Niemiec, 2019) and there may be some pitfalls to it. For example, using labels in terms of strengths over- and underuse can also lead patients to excessively analyze every part of their life and aim for too much perfectionism. Therefore, practitioners have to be sensitive to the way clients interpret this strengths-based approach (Niemiec, 2019) and complement it with self-compassion exercises (Neff & Vonk, 2009). Furthermore, strengths use assessments have to be interpreted with caution. This is because the over- and underuse is rather subjective and can also be positive and adaptive in certain situations. For example, individuals can intentionally pretend to be more humorous than they are to solve an awkward social situation (Niemiec, 2019).

One psychological problem to which applying this approach could be beneficial is depression. The overuse and underuse of certain character strengths can be linked to the different symptoms for depression listed in the DSM-5 (American Psychiatric Association, 2013). For example, considering the corresponding definitions provided by Niemiec (2014), the overuse of judgment and humility might be positively related to depressive symptoms. Also, the overuse of forgiveness was shown to be positively associated with depression in a previous study (Hirsch, Webb, & Jeglic, 2011). Niemiec's (2014) definitions of underuse of curiosity, bravery, perseverance, zest, hope, humor, prudence, gratitude, and self-regulation also fit the symptoms of depression. Supporting this link, low use of gratitude (Padilla-Walker, Millett, & Memmott-Elison, 2020; Petrocchi & Couyoumdjian, 2016), self-regulation (Acuff et al., 2019; Strauman, 2010), zest (Bachik, Carey, & Craighead, 2020) and hope (Padilla-Walker et al., 2020; Rose, Rose, Miller, & Dyer, 2018) were associated with depression in previous studies.

Depression is one of the main psychological problems in university students (Grobe, Steinmann, & Szecsenyi, 2018; Perez-Rojas et al., 2017; Sarokhani et al., 2013) who face a higher risk of depressive symptoms than the general population (Ibrahim, Kelly, Adams, & Glazebrook, 2013; Keyes, 2006). Therefore, they are a target group that can benefit from this approach. The high workload and demands at universities, as well as the challenges of entering adulthood are stressors that make students vulnerable for depressive symptoms. Accordingly, they are at risk of decreased academic performance and resulting long-term consequences (Royal College of Psychiatrists, 2003). Also, students' character strengths are a basis to develop the competencies they are expected to learn in the 21st century, such as developing intellectual interest and empathy (Lavy, 2019). Therefore, the optimal use of character strengths could enhance students' acquisition of important competencies and, thus, reduce potential stressors while increasing successes. As strengths-based interventions revealed a positive influence on the relief of depressive symptoms (see, e.g., Gander et al., 2013) and turned out to be successful in educational settings (see, e.g., Duan & Bu, 2019), it seems promising to reinvestigate depressive symptoms in students in the light of strengths over-/underuse. These insights can increase the knowledge relevant to improve stress management for students.

The research on strengths over-, under-, and optimal use is in its infancy and needs replication and extension, especially among students. This is because the OUOU inventory has not been used in educational settings yet (Littman-Ovadia & Freidlin, 2019). Applying this approach to the mental health of students, this study aims to explore the following research questions:

- (1) To what extent are the overuse, underuse, and optimal use of strengths related to well-being and depressive symptoms in students?
 - (1a) Is strengths underuse or strengths overuse stronger related to depressive symptoms?
 - (1b) What are the differences in well-being and depressive symptoms between students that mainly use their strengths optimally and those that mainly over- or underuse strengths?
- (2) Which strengths' underuse and overuse are related to depressive symptoms?

Method

Design and procedure

The study design was cross-sectional with strengths over-, under-, and optimal use as independent variables and well-being and depressive symptoms as dependent variables. Obtained data was quantitative and based on self-ratings. The study was authorized by the

Ethics Committee of the Faculty of Behavioral Sciences (ECBMS) at the University of Twente (request number 200201).

Participants were provided with a link to the online survey on Qualtrics which was accessible on their phone or computer. After a short introduction to the study, including a consent form (Appendix F) which was appropriate to the guidelines of ECBMS, participants had to confirm that they wished to participate and that they fulfilled the inclusion criteria. The two criteria were being a student and being at least 18 years old. When they confirmed, participants were asked to fill out demographic questions about age, sex, nationality, and field and level of study, as well as the Overuse/Underuse/Optimal Use Inventory of Strengths, the Mental Health Continuum - Short Form, and the Beck Depression Inventory, second edition. After completing the questionnaires, participants were thanked for their effort and informed that they could contact the researcher for more information about the study and its results.

Participants

English- or German-speaking university students above the age of 18 were asked to participate in the study, recruited with convenience sampling. The recruitment took place on the social media platforms Instagram, Facebook, and WhatsApp, as well as on the platform SurveyCircle, a community for online research. Students from the BMS department of the University of Twente were additionally recruited on the platform SONA, on which they earned credits for participating in human research. 152 students participated in the study and, after removing incomplete responses, 112 were left for analysis. The sample consisted of 20 males (17.9%), 91 females (81.3%), and one person not wishing to share their gender (0.9%) between the ages of 18 and 29 ($M=22.71$, $SD=2.63$). The nationality and field and level of study are summarized in Table 1. A more detailed overview of the nationalities is depicted in Appendix B.

Table 1

Overview of the participants' demographics

Demographic variable	<i>n</i> (%)
Nationality	
German	91 (81)
Other	21 (19)
Field of study	
Psychology	57 (51)
Business	12 (11)
Medicine	8 (7)
Communication Sciences	8 (7)
Teaching	5 (5)
Engineering	4 (4)
Other	18 (16)
Level of study	
Year 1	24 (21)
Year 2	14 (13)
Year 3	35 (31)
Year 4 or higher	39 (35)

Materials***Overuse/Underuse/Optimal Use Inventory of Strengths***

The Overuse/Underuse/Optimal Use Inventory of Strengths (OUOU), developed by Freidlin et al. (2017), was used to measure the over-, under-, and optimal use of character strengths (Appendix C). It consists of 24 items, each about one of the VIA character strengths. Per item, three statements were presented of which one described the underuse, one the optimal use, and one the overuse of the corresponding strength. Participants indicated to what extent each statement applied to them by distributing 100% among the three statements. For example, for the strength zest, participants reported to what extent the statements “I am uninterested and have very little energy.”, “I feel full of energy and vital, approaching life feeling activated.” and “I feel energetic and excited by everything, being hyperactive.” applied to them across all situations in their life. In previous studies, the scale for overuse showed good internal consistency, whereas the underuse and optimal use scale had a Cronbach’s α above the range of good reliability (Freidlin et al., 2017). For the use in this study, the OUOU was also translated

into German. In this study, the strengths underuse scale showed higher than good internal consistency in the English version, but it was slightly lower than good in the German translation. The scale for optimal strengths use revealed higher than good internal consistency in both languages, whereas the strengths overuse scale showed good internal consistency in both languages (Table 2).

Mental Health Continuum - Short Form

The German and English versions of Keyes' (2002) Mental Health Continuum - Short Form (MHC-SF) were used to measure participants' emotional, social, and psychological well-being (Appendix D). On 14 items, participants had to indicate how often they felt a certain way during the past month on a Likert-scale ranging from 0 (*never*) to 5 (*every day*). For example, they had to report how often they felt "satisfied with life", "that people are basically good" and "good at managing the responsibilities of their daily life". Despite its questionable test-retest reliability, the test showed excellent discriminant validity and higher than good internal consistency. The norm group for comparison consisted of a Dutch sample of adults ($N=381$) ranging from age 18 to 29 (Lamers, Westerhof, Bohlmeijer, ten Klooster, & Keyes, 2010). In this study, the MHC-SF revealed higher than good internal consistency for the English and German versions (Table 2).

Beck Depression Inventory, second edition

To measure depressive symptoms in students, the German and English versions of the Beck Depression Inventory, second edition (BDI-II) (Beck, Steer, & Brown, 1996) were used (Appendix E). The questionnaire consists of 21 groups of statements from which participants had to choose the statement that best described their feelings during the past two weeks. Each group measured the severity of one symptom of depression with statements ranging from a value of zero to three. For example, participants had to indicate whether they "do not feel sad", "feel sad much of the time", "are sad all the time", or were "so sad or unhappy that [they] can't stand it". Other measures concerned, for example, pessimism, guilty feelings, and irritability. The BDI-II turned out to have higher than good reliability (Wang & Gorenstein, 2013), excellent internal validity and content validity (Beck et al., 1996; Cassady, Pierson, & Starling, 2019) and has repeatedly been used to measure depressive symptoms in students (Cassady et al., 2019). In the present study, both the English and the German version showed a higher than good internal consistency (Table 2).

Table 2

Overview of the internal consistency of the scales

Scale	Cronbach's α	
	Previous studies	Current study
MHC-SF		
English	$\alpha=.89^1$	$\alpha=.91$
German		$\alpha=.90$
BDI-II		
English	$\alpha=.84-.94^2$	$\alpha=.93$
German		$\alpha=.93$
Optimal strengths use		
English	$\alpha=.89^3$	$\alpha=.85$
German		$\alpha=.85$
Strengths overuse		
English	$\alpha=.75^3$	$\alpha=.81$
German		$\alpha=.79$
Strengths underuse		
English	$\alpha=.84^3$	$\alpha=.89$
German		$\alpha=.69$

Note. ¹Lamers et al., 2010; ²Wang & Gorenstein, 2013; ³Freidlin et al., 2017.

Analysis

The dataset was transferred to the statistical software IBM SPSS, version 26. First, incomplete responses were filtered out for the analyses. Total scores for all variables were determined. The well-being score was computed by taking the average of the sum of all items. For the depressive symptoms score, items 16 and 18 were recoded from the initial values of zero to six to values from zero to three because the items included different options for the same level of symptoms. Afterward, the sum of all items was calculated. Strengths underuse, optimal strengths use, and strengths overuse scores were transformed from percentages into decimal numbers. For each of the three scales, the average of the sum of items was computed.

Subsequently, the dataset was checked for outliers. For this purpose, absolute z-scores were computed for the variables well-being and depressive symptoms. All extreme cases and probable outliers ($z_{abs} \geq 2.58$) were investigated more closely to decide whether they should be included in further analyses. For an overview of the descriptive statistics, the mean, standard

deviation, minimum and maximum for well-being, depression, strengths underuse, optimal strengths use, and strengths overuse were computed, as well as for the over-, under- and optimal use of each individual strength. Additionally, the distributions including kurtosis and skewness were determined. For variables with questionable normality, the Shapiro-Wilk test was conducted. Cronbach's α was calculated for the three scales of the OUOU to test its internal consistency reliability for the use with students. For this purpose, the English version and the translated German version were analyzed separately. Also, the reliability coefficients for the English and German versions of the MHC-SF and the BDI-II were determined. A value between .70 and .80 was considered to indicate good reliability (Kline, 1999).

To investigate the first research question, to what extent strengths under-, over- and optimal use are related to well-being and depressive symptoms, Pearson's correlations were computed for well-being with the three strengths use scales and for depressive symptoms with the three strengths use scales. In case of a variable not being normally distributed, Spearman's correlation was used instead. To test for a relationship in both directions, a two-tailed test was chosen. Table 3 provides an overview of the norms for interpreting the correlation scores used in psychological research (Dancey & Reidy, 2007). To further define the relationships, two multiple regression analyses were performed, one with well-being and one with depressive symptoms as the dependent variable. All strengths use scales that significantly correlated with the dependent variable in question were used as independent variables. To evaluate whether the inferential test-statistics were appropriate, the assumptions of linearity, normality, homoscedasticity, and independence were tested. Standardized residuals were plotted against the standardized predicted values to test linearity, homoscedasticity, and independence. Histograms of the standardized residuals for well-being and depressive symptoms were created to examine the normality of residuals. For variables that were not normally distributed, bootstrapping was used in the multiple regression analysis.

Table 3

Norms for interpreting correlation scores in psychological research

Size of correlation	Interpretation
1 (-1)	Perfect correlation
.7 to .9 (-.7 to -.9)	Strong correlation
.4 to .6 (-.4 to -.6)	Moderate correlation
.1 to .3 (-.1 to -.3)	Weak correlation
0	No correlation

Note. Adapted from “Statistics without maths for psychology” by C. P. Dancey and J. Reidy, 2007, Essex, England: Pearson.

To examine whether strengths overuse or strengths underuse is stronger related to depressive symptoms (question 1a), Steiger’s z was used. It was tested whether there is a significant difference between the two independent correlations of strengths overuse and strengths underuse with depressive symptoms. Steiger’s z was calculated manually according to Meng, Rosenthal, and Rubin (1992), as it was not possible using SPSS. Resulting z -scores higher than 1.96 indicated a significant difference.

To explore the differences in well-being and depressive symptoms between students that mainly use their strengths optimally and those that mainly over- or underuse strengths (question 1b), a new variable summarizing the strengths use was created. It was computed by subtracting the sum of the score for strengths underuse and overuse from the score of optimal strengths use so that scores could range from minus one to one. The distribution was examined with a histogram. To differentiate between participants that mainly use their strengths optimally and those that do not, the new variable was recoded into a dichotomous variable. All scores of zero and smaller represented the category of participants that mainly under- or overused strengths, whereas all scores higher than zero were indicative for participants mainly using their strengths optimally. With Chi-square tests and t -tests, differences in gender, nationality, level and field of study, and age were investigated. Lastly, a MANOVA was used to test the difference between the two groups across well-being and depressive symptoms simultaneously.

To examine the second research question, which strengths’ underuse and overuse are related to depressive symptoms, Pearson’s or Spearman’s correlations were computed to describe the relationship of overuse and underuse of each strength with depressive symptoms. Again, a two-tailed test was used to include both directions of the relationship. Afterward, a multiple linear regression analysis was performed with depressive symptoms as the dependent variable. All strengths whose overuse or underuse significantly correlated with depressive

symptoms were included as independent variables to see which strengths' use significantly contributed to the variance in depressive symptoms. Bootstrapping was used in case of not normally distributed data. In the next step, all strengths with a significant correlation were included in a discriminant analysis to test how well the cluster of identified strengths use could predict depressive symptoms. The correlations between the discriminant function and the outcomes were interpreted according to Table 3. Based on their score on depressive symptoms, participants were grouped into a healthy group and one with depressive symptoms. According to the guidelines provided by Beck et al. (1996), scores from zero to 13 indicate minimal depressive symptoms and were, therefore, the inclusion criteria for the healthy group. A score of at least 14 indicates a mild to severe level of symptoms (Beck et al., 1996) and was used as the inclusion criterion for the second group. To control for baseline differences in depressive symptoms between the groups, an independent sample t-test was conducted. Using Chi-square tests and t-tests, the differences in gender, nationality, level and field of study, age, general strengths use, and well-being between the groups were tested.

Results

After removing incomplete responses, 112 from the initial 152 participants formed the final sample. Five extreme to probable outliers were detected but none were removed because there was no unusual pattern found in the responses. The sample showed slightly higher well-being ($M=3.15$, $SD=.84$) compared to the norm group of the same age ($M=3.05$, $SD=.78$) and was, on average, minimally depressed. Participants mainly used their strength optimally, followed by underuse and overuse (Table 4). Well-being and all three types of strengths use were approximately normally distributed, whereas the distribution of depressive symptoms was highly positively skewed and heavily tailed. The Shapiro-Wilk test for depressive symptoms showed a significant departure from normality, $W(112)=.82$, $p=.00$. An overview of the descriptive statistics for the individual strengths can be found in Appendix G.

Table 4

Descriptive statistics for well-being, depressive symptoms, and the strengths use scales

Variable	<i>M</i> (<i>SD</i>)	Skewness	Kurtosis
	<i>Mdn</i> (range)*	(<i>SE</i> =.23)	(<i>SE</i> =.45)
Well-being	3.15 (.84)	-.66	.63
Depressive symptoms	8 (0-43)*	1.73	3.05
Strengths underuse	.25 (.09)	.91	1.75
Optimal strengths use	.58 (.12)	-.38	.02
Strengths overuse	.17 (.08)	.64	.24

Note. *Mean and standard deviation are shown for the normally distributed variables, whereas median and range are shown for the not normally distributed variable depressive symptoms.

Research question 1: To what extent are the overuse, underuse, and optimal use of strengths related to well-being and depressive symptoms in students?

Investigating the first research question, Pearson's correlation test revealed a significant moderate negative association between strengths underuse and well-being and a significant weak positive association between optimal strengths use and well-being (Table 5). Further, Spearman's correlation revealed a significant weak positive association between strengths underuse and depressive symptoms and a significant weak negative association between optimal strengths use and depressive symptoms. Strengths overuse was not significantly associated with well-being or depressive symptoms.

Table 5

Correlations for well-being and depressive symptoms with the strengths use scales

	Underuse		Optimal use		Overuse	
	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
Well-being	-.46**	.00	.37**	.00	-.07	.44
Depressive symptoms	.21*	.03	-.22*	.02	.11	.27

Note. **The correlation is significant at the level of .01 (2-tailed). *The correlation is significant at the level of .05 (2-tailed).

The multiple regression analyses were conducted with only strengths underuse and optimal use as independent variables, as overuse was not significantly correlated with well-being or depression. The prediction of well-being from strengths underuse and optimal use was evaluated first (Table 6). A significant regression equation was found ($F(2, 109)=14.51, p=.00$),

with an adjusted R^2 of .20. However, the results revealed only strengths underuse, but not optimal strengths use to be a significant predictor of the model. All assumptions were met.

Table 6

Results of the multiple regression analysis for variables predicting well-being

Predictor	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>
(Intercept)	3.96	.81		4.89	.00
Optimal strengths use	.30	.92	.04	.32	.75
Strengths underuse	-3.98	1.28	-.42	-3.11	.00

Note. The dependent variable is well-being.

In the second multiple regression analysis, the prediction of depressive symptoms from strengths underuse and optimal use was evaluated with bootstrapping (Table 7). Again, a significant regression equation was found ($F(2, 109)=6.45, p=.00$), with an adjusted R^2 of .09. However, the results of the bootstrapping revealed that optimal strengths use and strengths underuse were no significant predictors.

Table 7

Results of the bootstrapped multiple regression analysis for variables predicting depressive symptoms

Predictor	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>
(Intercept)	3.12	10.52		.33	.79
Optimal strengths use	-1.61	11.67	-.02	-.15	.07
Strengths underuse	32.11	17.58	.31	2.13	.88

Note. The dependent variable is depressive symptoms.

In summary, the results showed that strengths underuse as a predictor was negatively related to well-being. Although optimal strengths use was positively associated with well-being and negatively with depressive symptoms, it was not a significant predictor of these outcomes.

Research question 1a: Is strengths underuse or strengths overuse stronger related to depressive symptoms?

Calculating Steiger's z revealed that there was no significant difference between the correlations of strengths overuse and strengths underuse with depressive symptoms ($z=.79, p \geq .05$). Therefore, the strength of the relationship with depressive symptoms was assumed to be equal for strengths underuse and overuse.

Research question 1b: What are the differences in well-being and depressive symptoms between students that mainly use their strengths optimally and those that mainly over- or underuse strengths?

The new variable summarizing the strengths use was computed and showed a normal distribution ($M=.17$, $SD=.25$, range: $-.53 - .65$). Being recoded into a dichotomous variable, strengths use revealed that $n=88$ (78.6%) participants were in the optimal use group, whereas $n=24$ (21.4%) participants were in the over-/ underuse group (Table 8). There was no significant interaction with gender ($\chi^2(2)=1.29$, $p=.52$), nationality ($\chi^2(10)=3.48$, $p=.97$), level of studies ($\chi^2(4)=2.02$, $p=.73$), and field of studies ($\chi^2(27)=24.48$, $p=.60$), and no significant differences in age ($t(31.48)=-.76$, $p=.45$) between the groups.

Table 8

Characteristics of the different strengths use groups

Characteristics	Group	
	Optimal use	Over-/underuse
Gender <i>n</i> (%)		
Male	14 (16)	6 (25)
Female	73 (83)	18 (75)
Other	1 (1)	0 (0)
Nationality <i>n</i> (%)		
German	71 (81)	20 (83)
Other	17 (19)	4 (17)
Level of study <i>n</i> (%)		
Year 1	20 (23)	4 (17)
Year 2	12 (14)	2 (8)
Year 3	25 (28)	10 (42)
Year 4 or higher	31 (35)	8 (33)
Field of study <i>n</i> (%)		
Psychology	44 (50)	13 (54)
Business	9 (10)	3 (13)
Medicine	7 (8)	1 (4)
Communication Sciences	5 (6)	3 (13)
Teaching	5 (6)	0 (0)
Engineering	4 (4)	0 (0)
Other	14 (16)	4 (17)
Age <i>M</i> (<i>SD</i>)	22.60 (2.49)	23.13 (3.11)
Strengths use* <i>M</i> (<i>SD</i>)	.26 (.17)	-.19 (.15)
Well-being* <i>M</i> (<i>SD</i>)	3.27 (.80)	2.71 (.86)
Depressive symptoms <i>M</i> (<i>SD</i>)	9.10 (8.32)	13.96 (11.62)

Note. The percentages indicate the distribution within one strengths use group. *The characteristic is significantly different between the groups.

The Box's test of the MANOVA revealed that the assumption of the equality of covariance matrices was violated ($Box-M=8.78$, $p=.04$), so it was decided to replace the MANOVA by two bootstrapped independent t-tests (Table 8). Participants mainly using their strengths optimally scored significantly higher on well-being than those mainly under-

/overusing their strengths ($t(34.65)=-2.90, p=.01$) and lower on depressive symptoms. However, the latter difference was not statistically significant ($t(29.73)=1.92, p=.06$). These results showed that students who mainly optimally use their strengths differed in their higher well-being from those that mainly under/-overuse their strengths, but not in depressive symptoms.

Research question 2: Which strengths' underuse and overuse are related to depressive symptoms?

The spearman's correlations revealed nine statistically significant associations between a specific strength use and depressive symptoms (Table 9). The underuse of humility was weakly negatively associated with depressive symptoms, whereas the underuse of curiosity, self-regulation, bravery, creativity, perseverance, zest, and the overuse of humility were weakly positively associated with the variable. There was a moderate positive association between the underuse of hope and depressive symptoms.

Table 9

Significant correlations for specific strengths use with depressive symptoms

	Depressive symptoms	
	<i>r</i>	<i>p</i>
Underuse of humility	-.19*	.05
Underuse of curiosity	.20*	.03
Underuse of self-regulation	.21*	.02
Underuse of bravery	.22*	.02
Overuse of humility	.23*	.02
Underuse of creativity	.28**	.00
Underuse of perseverance	.29**	.00
Underuse of zest	.35**	.00
Underuse of hope	.48**	.00

Note. *The correlation is significant on the level of 0.05 (2-tailed). **The correlation is significant on the level of 0.01 (2-tailed).

A bootstrapped multiple regression analysis was conducted to predict depressive symptoms from the underuse of humility, curiosity, self-regulation, bravery, creativity, perseverance, zest, and hope and the overuse of humility (Table 10). The predictors explained a significant amount of variance in depressive symptoms ($F(4, 107)=26.18, p=.00, R^2_{adj}=.48$).

However, bootstrapping revealed that the underuse of humility, curiosity, self-regulation, bravery, creativity, perseverance, zest, and the overuse of humility were all no significant predictors for the model. The only significant predictor was the underuse of hope.

Table 10

Results of the bootstrapped multiple regression analysis for variables predicting depressive symptoms

Predictor	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>
(Intercept)	3.87	1.68		2.24	.03
Underuse humility	-4.64	3.35	-.13	-1.62	.18
Underuse curiosity	-.03	5.05	.00	-.01	1.00
Underuse self-regulation	3.81	2.98	.11	1.36	.20
Underuse bravery	3.24	3.33	.09	1.11	.35
Underuse creativity	-8.96	4.72	-.19	-2.21	.08
Underuse perseverance	7.49	6.24	.14	1.63	.23
Underuse zest	8.78	5.20	.23	2.54	.10
Underuse hope	16.64	3.73	.47	5.17	.00
Overuse humility	-2.03	4.48	-.05	-.57	.64

Note. The dependent variable is depressive symptoms.

To follow up on the multiple regression analysis with discriminant analysis, one healthy group consisting of $n=86$ (76.8%) participants and one depressive group with $n=26$ (23.2%) participants were created (Table 11). The healthy group scored significantly lower on depressive symptoms than the depressive group ($t(27.45)=-9.74$, $p=.00$) and significantly higher on well-being ($t(31.46)=5.51$, $p=.00$). A Chi-square test of independence revealed a significant interaction between group of depressive symptoms and gender ($\chi^2(2)=7.54$, $p=.02$) and group of strengths use ($\chi^2(1)=8.77$, $p=.00$), with a higher proportion of people from the healthy group being in the group of optimal strengths use and women being more likely to be in the depressive group than men. However, there was no significant interaction with nationality ($\chi^2(10)=12.30$, $p=.27$), level of studies ($\chi^2(4)=3.87$, $p=.42$), and field of studies ($\chi^2(27)=22.70$, $p=.70$). The age difference between the groups was also not significant ($t(38.56)=-.70$, $p=.49$).

Table 11

Characteristics of the different groups of depressive symptoms

Characteristics	Group	
	Healthy	Depressive
Gender* <i>n</i> (%)		
Male	19 (22)	1 (4)
Female	67 (78)	24 (92)
Other	0 (0)	1 (4)
Nationality <i>n</i> (%)		
German	71 (83)	20 (77)
Other	15 (17)	6 (23)
Level of study <i>n</i> (%)		
Year 1	18 (21)	6 (23)
Year 2	11 (13)	3 (12)
Year 3	24 (28)	11 (42)
Year 4 or higher	33 (38)	6 (23)
Field of study <i>n</i> (%)		
Psychology	42 (49)	15 (58)
Business	10 (12)	2 (8)
Medicine	7 (8)	1 (4)
Communication Sciences	7 (8)	1 (4)
Teaching	3 (4)	2 (8)
Engineering	4 (5)	0 (0)
Other	13 (16)	5 (19)
Age <i>M</i> (<i>SD</i>)	22.81 (2.56)	22.38 (2.82)
Strengths use group* <i>n</i> (%)		
Optimal use	73 (85)	15 (58)
Over-/underuse	13 (15)	11 (42)
Well-being* <i>M</i> (<i>SD</i>)	3.40 (.61)	2.31 (.95)
Depressive symptoms* <i>M</i> (<i>SD</i>)	5.99 (3.65)	23.85 (9.13)

Note. The percentages indicate the distribution within one group of depressive symptoms.

*The characteristic is significantly different between the groups.

The discriminant analysis revealed one discriminant function, which explained 100% of the variance, canonical $R^2=.63$. It differentiated the healthy group from the group with depressive symptoms correctly in 84.8% of the cases ($\Lambda=.61$, $\chi^2(9)=51.74$, $p=.00$). The correlations between the outcomes and the discriminant function (Table 12) revealed that underuse of hope loaded strongly onto the function, while underuse of perseverance and zest, and overuse of humility loaded moderately onto the function. Weak loadings were found for underuse of curiosity, self-regulation, bravery, and creativity. The underuse of humility did not considerably contribute to the function. This analysis confirmed the results of the regression that the underuse of hope is an important significant positive predictor of depressive symptoms. The other eight significantly associated strengths use types turned out to not be significant predictors of depressive symptoms and less influential in discriminating the healthy from the depressive group.

Table 12

Discriminant function correlations and standardized coefficients of the variables

Variable	r	β
Underuse hope	.90	.76
Underuse perseverance	.46	.17
Underuse zest	.46	.12
Overuse humility	.40	.22
Underuse curiosity	.31	.02
Underuse self-regulation	.29	.14
Underuse bravery	.29	.23
Underuse creativity	.24	-.06
Underuse humility	-.04	.01

Note. Correlations (r) are between the variables and the discriminant function. Standardized coefficients (β) are for the discriminant function.

Discussion

Relationships of general overuse, underuse, and optimal use of strengths with well-being and depressive symptoms

Concerning the first research question, students' general strengths use seems to be stronger related to well-being than to depressive symptoms. Well-being was negatively predicted by strengths underuse and positively associated with optimal use, while depressive symptoms were positively associated with strengths underuse and negatively with optimal

strengths use. Although showing the same directions of relationships as strengths underuse, strengths overuse did not play any significant role.

The pattern that strengths use showed stronger relationships with well-being than with depressive symptoms resembles the results from other studies with students (Bachik et al., 2020; Weber et al., 2016). This could be explained through findings by Tehranchi, Doost, Amiri, and Power (2018) that character strengths are only indirectly related to depression with mediating effects of happiness and dysfunctional attitudes. Therefore, the over-, under-, and optimal use of strengths might rather be indirectly related to depressive symptoms through the mediation of, for example, well-being.

The directions of relationships between the three strengths use types and well-being and depressive symptoms corroborate with previous research that used the OUOU (Freidlin et al., 2017; Littman-Ovadia & Freidlin, 2019). Therefore, they seem to support the model by Niemiec (2014) regarding the quality of strengths use and question the monotonic effect of strengths use suggested by other studies. In these other studies, strengths use was related to higher well-being (Biswas-Diener et al., 2010; Govindji & Linley, 2007; Loton & Waters, 2017) and reduced depressive symptoms (Gander et al., 2013; Huta & Hawley, 2010), which resembles the relationships with optimal strengths use in this study. On the contrary, the relationships with strengths under- and overuse showed the opposite direction. This supports the claim that extreme forms of strengths use are related to negative mental health (Kern, 2017; Peterson, 2006; Schwartz & Scharpe, 2006). However, especially the relationships with strengths overuse in this study were not as strong as in previous studies, so they only provide limited support for the model.

The significance of strengths overuse for well-being and depressive symptoms found in previous studies (Freidlin et al., 2017; Littman-Ovadia & Freidlin, 2019) was not replicated. However, a similar pattern was found by Bergen (2019). Her study revealed optimal strengths use and strengths underuse, but not strengths overuse, as predictors of mental health. Instead, strengths overuse predicted other negative outcomes like more negative emotions and lower physical health (Bergen, 2019). As negative emotions play a role in general mental health, depending on the level of acceptance of these emotions (Ford, Lam, John, & Mauss, 2018), it can be assumed that strengths overuse might be indirectly involved in mental health.

In general, strengths overuse was less prevalent than the other use types. This could be a consequence of the assumption that not all strengths can be overused. The explanation is that Aristotle's concept of practical wisdom, which is required to use strengths optimally (Barlett & Collins, 2007), includes the character strengths prudence, perspective, and judgment, so

excessive use of these strengths would rule out inappropriate use of strengths (Hall-Simmonds & McGrath, 2017). Further support for a strength that cannot be overused comes from Marques, Lopez, Fontaine, Coimbra, and Mitchell (2015), who found that excessive use of hope was related to more positive outcomes than average use. For a clearer picture of the relationship of strengths overuse with well-being and depressive symptoms, the overuse of each strength should be investigated separately.

However, the results of the first sub-question suggest that underuse and overuse are equally strongly related with depressive symptoms. This questions the considerations that strengths overuse might be less directly and less consistently related to mental health. Also, previous research contradicts this result and suggests that underuse is stronger related to depressive symptoms than overuse (Freidlin et al., 2017; Littman-Ovadia & Freidlin, 2019). These disparities highlight the ambiguity about the role and importance of strengths overuse for mental health. On the one hand, there is evidence suggesting no significant direct relationship, and, on the other hand, there is evidence for strengths overuse being as important as strengths underuse for mental health. The evidence for a significant relationship that is just not as strong as with strengths underuse might be a compromise of those two extremes. To clarify this issue, further research is needed.

For the second sub-question, the main finding was that students who mainly optimally used their strengths reported higher levels of well-being, but not significantly lower levels of depressive symptoms. This is in line with the findings from the first research question that the quality of strengths use is stronger related to well-being than to depressive symptoms. Therefore, it supports the assumption of a mediation effect between these variables. However, in the established groups based on depressive symptoms, more people from the group of optimal strengths use were in the group of healthy students and more people from the group of strengths misuse were in the group of students with depressive symptoms. This highlights that the quality of strengths use is indeed important for depressive symptoms. Overall, the findings support the nonmonotonic effects of strengths use and emphasize the importance of optimal strengths use for well-being in students.

Relationships of underuse and overuse of specific strengths with depressive symptoms

Considering the results for the second research question, the underuse of humility, curiosity, self-regulation, bravery, creativity, perseverance, zest, and hope, and overuse of humility were related to depressive symptoms and could be used as a cluster to differentiate between healthy students and those with depressive symptoms. However, the underuse of hope

turned out to be the most important factor in all three analyses and was the only significant predictor of depressive symptoms in the model.

These outcomes challenge one finding of the first research question but support the finding by Freidlin et al. (2017) and Littman-Ovadia and Freidlin (2019) that underuse is stronger related to depressive symptoms than overuse. This is because eight underuses of strengths were related to depressive symptoms, whereas only one overuse of a strength was related to it. Thus, this pattern corresponds to the languishing state of mental health in which people are restricted in their activities (Keyes, 2002) and, apparently, also in their strengths use. The negative relationships with overuse of strengths from the categories wisdom, courage, humanity, and justice found in the study by Grant and Schwartz (2011) are thus not supported by this study and the concept of languishing. Rather, the role of strengths overuse in depressive symptoms remains questionable.

Some relationships between specific strengths use and depressive symptoms were weak and are not completely supported by other research. For example, the link between maladaptive use of creativity and depressive symptoms was found in different types of studies (Brenner, 2019). However, Brenner (2019) discovered that rather the overuse of creativity is related to depression instead of the underuse as found in this study. Further, this study revealed that maladaptive use of humility in both directions is associated with depressive symptoms, but overuse more strongly. As it includes to belittle oneself (Niemiec, 2014), it could contribute to the feelings of worthlessness in depressed people. But, until now, there is only evidence for a monotonic relationship suggesting that humility serves as a buffer against stressors and, therefore, is related to less depressive symptoms (Krause, 2016). Also, the weak relationships concerning the underuse of bravery and underuse of curiosity with depressive symptoms are largely understudied but could be explained by looking at the conceptualizations in the DSM-5 and the mental health continuum model. As the underuse of bravery is defined by avoiding actions that may cause discomfort (Niemiec, 2014), it fits the idea of languishing mental health, which is to be restricted in daily activities (Keyes, 2002). A lack of curiosity directly addresses the depressive symptom of lost interest in activities (American Psychiatric Association, 2013), which also implies a state of languishing in which less activity is present. As the detected relationships are either contradictory to or not extensively studied in existing research, further evidence is needed to clarify the links.

On the other hand, some relationships of specific strengths use and depressive symptoms in this study are supported by previous research and seem to be important. The association between underuse of self-regulation and depressive symptoms is in line with the findings of

Acuff et al. (2019) and Strauman (2010), suggesting that low self-regulation plays a role in depressive symptoms. As the underuse of self-regulation includes a lack of emotion regulation (Niemic, 2014), it might be linked to the irritable and low mood present in depressed people. Besides, the found relationship between underuse of perseverance and depressive symptoms corroborates with several studies which revealed a link between helplessness and depression (Gladstone & Kaslow, 1995; Joiner & Wagner, 1995). As the underuse of perseverance is described as helpless behavior (Niemic, 2014), the reformulated theory of learned helplessness of depression can explain the relationship. It claims that individuals with a certain attributional style are more at risk for depression, which is characterized by attributing the causes of negative events to factors that are internal, unchangeable, and universal (Abramson, Seligman, & Teasdale, 1978). Another relevant relationship in this study between the underuse of zest and depressive symptoms is also supported by other studies (Bachik et al., 2020). Passiveness and tiredness are aspects of underusing zest (Niemic, 2014), which correspond to the symptom of fatigue in depression. Compared to the general population, medical students reported more symptoms of fatigue and tiredness in relation with depression (Suarez, Cardozo, Ellmer, & Trujillo, 2020). This suggests that the underuse of zest might be especially relevant for students suffering from depressive symptoms.

That the underuse of hope was the only significant predictor suggests that it plays the most important role for depressive symptoms because testing all 24 character strengths simultaneously has more explanatory power than investigating single associations of strengths with depression (Bachik et al., 2020). The importance of the underuse of hope also corroborates with findings from previous studies (Padilla-Walker et al., 2020; Rose et al., 2018; Wan & Tsui, 2019). Notably, it turned out that excessive use of hope was even more beneficial for mental health than average use of hope (Marques et al., 2015), so it may be a character strength with a monotonic effect. Thus, students who underuse hope seem to be especially far away from a beneficial use when positive outcomes are highest at an extreme level of use. Hope is defined as having an optimistic outlook on the future and believing that one can shape it positively with one's actions (Park et al., 2004). When underusing hope, people may think they have no positive influence on events and therefore be more pessimistic about their future. Depressive symptoms, such as feelings of worthlessness and loss of interest in activities, may be a sign of feeling unable to control the positive things in life. Similarly, the hopelessness theory of depression proposes that negative life events, interacting with negative inferential styles, lead to hopelessness, which can in turn cause depression (Abramson, Metalsky, & Alloy, 1989). This theory is an elaborated version of the helplessness theory, with the difference that inferential

instead of attributional styles play a role. Next to the attribution of unchangeable and universal causes, negative self-characteristics and consequences of an event are exaggerated by the depressed person (Liu, Kleiman, Nestor, & Cheek, 2015). Hopelessness was found to be a mediator between inferential style and depressive symptoms (Hong, Gwee, & Karia, 2006), but also a factor itself leading to depression in young adults (Waszczuk, Coulson, Gregory, & Eley, 2016). The findings of this study that the underuse of hope plays a larger role than the underuse of perseverance are, therefore, in line with the revision of the helplessness theory into the hopelessness theory of depression. Thus, the underuse of hope seems to be the most important factor to work on to decrease depressive symptoms in students.

The overuse of forgiveness and the underuse of gratitude did not play a significant role for depressive symptoms in this study, contradictory to studies that linked the overuse of forgiveness (Hirsch et al., 2011) and the underuse of gratitude (Padilla-Walker et al., 2020; Petrocchi & Couyoumdjian, 2016) to depression. This contradiction, together with the observation that only a few strengths had important and clearly identifiable relationships with depressive symptoms, raises doubts on the usefulness of the approach to find a cluster of quality of strengths uses predicting depressive symptoms. Rather, it indicates that this approach needs reconsideration. For example, Hall-Simmonds and McGrath (2017) proposed another model that does not necessarily contradict the previous one but introduces a new perspective. Their “strengths as moderators model” suggests that strengths, especially signature strengths, can increase and alleviate psychological disorders and, therefore, function as moderators. This implies that the use of strengths that is associated with a certain disorder can differ from person to person and needs to be considered individually.

Limitations

The validity of this study is limited in that its data are based on a homogenous sample of mainly female and psychology students, so it is not representative of the whole student population. Also, the German translation of the OUOU reduced the reliability of the underuse scale to a slightly lower than good internal consistency. In general, the OUOU might be a very subjective measurement tool as strengths use is subjective (Niemic, 2019) and it might be difficult for participants to estimate the extent of negative consequences of their behavior in all kinds of situations. Additionally, it might be problematic to distinguish between consequences for oneself and for others and combine them in one measure and the self-report nature of the questionnaire may lead to social desirability bias (systematic response distortions). Also, no claims about causality can be made because the study design was cross-sectional.

A general note to address is that this study was conducted at the time the coronavirus disease became a pandemic. The situation was likely to cause stress in people and evoke anxieties and sadness (World Health Organization, 2020). This could explain the large group of students identified as having depressive symptoms in this study. The external circumstances could have distorted the usual pattern of depressive symptoms in students and, therefore, might have influenced the relationship between strengths use and depressive symptoms.

Implications and future research

This study provides valuable insights that can be used to optimize and establish strengths-based interventions for students. The aim of these interventions should be refined from a general increase of strengths use to the enhancement of optimal strengths use. In these interventions, awareness should be raised about the continuum of strengths use to provide students with a more differentiated understanding of character strengths. Learning how to use their strengths in a balanced way helps to increase students' well-being and, thus, could improve their resilience against stress. To tackle the problem of depressive symptoms, the primary focus should be on optimizing students' use of hope, and then also zest, perseverance, and self-regulation. For example, to enhance their use of hope, students should be educated on how to set goals, divide these goals into smaller sub-goals, and increase agency by finding motivation (Lopez, Rose, Robinson, Marques, & Pais-Ribeiro, 2014). Additionally, it might be necessary to focus on everyone's individual pattern of strengths use and identify problematic use. To further refine strengths-based interventions for students and help them alleviating depressive symptoms, more research building on the findings of this study is needed.

In future studies, the German translation of the OUOU should be revised. Also, it should be considered to revise the OUOU by dividing each item into two, one examining consequences for oneself and one for others. However, this would increase the length of the questionnaire that is already time-intensive. To test its fit with the VIA assessment and identify the best way to measure the continuum of strengths use, the OUOU and a curvilinear analysis of the VIA should be compared. Further, this study should be replicated with a more heterogeneous sample with an equal distribution of gender and multiple study directions to clarify the role of strengths overuse and to validate the relevant strengths for depressive symptoms. It should also be investigated whether there is a mediation effect between the quality of strengths use and depressive symptoms. To test causality, longitudinal studies or experiments are needed. Findings from Disabato, Short, Kashdan, Curby, and Jarden (2014) already suggest that character strengths reduce depressive symptoms, but not the other way around. Also, future

studies need to investigate the strengths as moderators model in relation with depressive symptoms to determine whether it provides an alternative or an addition to the model examined in this study.

Conclusion

This study contributes to the validation of the model of a continuum of strengths use by demonstrating that optimal strengths use is related to better mental health, whereas extreme forms of strengths use are related to lower mental health, including depressive symptoms in students. It also uncovers potential weaknesses of the model and a perspective for more extensive elaboration: The role of strengths overuse is still ambiguous, and the quality of strengths use and depressive symptoms could be mediated by factors like well-being. This study also contributes to the characterization of depressive symptoms in the light of positive psychology, showing that the underuse of hope plays a major role and that the underuse of zest, perseverance, and self-regulation also are important. Since there were only weak or ambiguous relationships between depressive symptoms and most strengths, the approach to identify a cluster of strengths use seems not to be sufficient to explain this mental health problem. Rather, the strengths as moderators model should additionally be taken into consideration.

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Appendix A

The 24 VIA character strengths with the corresponding virtues

Virtue	Strength
Wisdom	Creativity
	Curiosity
	Judgment
	Love of learning
	Perspective
Courage	Bravery
	Honesty
	Perseverance
	Zest
Humanity	Kindness
	Love
	Social intelligence
Justice	Fairness
	Leadership
	Teamwork
Temperance	Forgiveness
	Humility
	Prudence
	Self-regulation
Transcendence	Appreciation of beauty and excellence
	Gratitude
	Hope
	Humor
	Spirituality

Adapted from “Character strengths and virtues: A handbook and classification”, by C. Peterson and M. E. P. Seligman, 2004, New York, NY: Oxford University Press.

Appendix B

Frequencies of the nationalities in the sample

Nationality	<i>n</i> (%)
German	91 (81)
Austrian	6 (5)
British	3 (3)
Italian	3 (3)
Dutch	2 (2)
Swiss	2 (2)
American	1 (1)
Brazilian	1 (1)
Denmark	1 (1)
Hungarian	1 (1)
Norwegian	1 (1)

Appendix C

Optimal/over/under used Strengths Inventory (OUOI) English version

Consider all situations and relationships in your life. For each item, indicate the extent to which each option applies to you, considering your entire life (situations, people, places, etc.), out of 100%.

For example:

How much do you eat?

<i>Too little, not enough, remain hungry</i>	Just enough, do not feel hungry or too full after a meal	Too much, feel too full or even sick
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10% + 70% + 20%.

You are indicating that 10% of the time/of your meals you remain hungry/do not eat enough, 70% of the time you eat just enough, and 20% of the time you eat too much.

Considering your entire life (time, people, places, etc.), to what extent to do you act according to the following descriptions?

Creativity	Underuse	I am uncreative or unimaginative, not coming up with unique ideas.
	Optimal	I am creative, conceptualizing something useful, coming up with useful ideas.
	Overuse	I am creative without being useful; or I come up with solutions that don't work or are unnecessary; or I overwhelm people with too many ideas.
Curiosity	Underuse	I quickly become disinterested in new experiences.
	Optimal	I seek out situations in which I gain new experiences without getting in my own or others' way.
	Overuse	I seek out new experiences regardless of the consequences to myself or others and it gets in my own or others' way (e.g., privacy).
Judgment/Critical Thinking	Underuse	I make decisions quickly; the first thing that comes to my mind is the right way to go.
	Optimal	I weigh all aspects objectively in making decisions, including arguments that conflict with my convictions.

	Overuse	I critically examine the finest details in making a decision and come across as judgmental, completely “in my head,” or indecisive.
Love of Learning	Underuse	I’m satisfied with what I know and the skills I have, so I do not make an effort to learn more.
	Optimal	I am motivated to acquire new levels of knowledge, or deepen my existing knowledge or skills in a significant way.
	Overuse	I seek knowledge so much that this negatively impacts my relationships or my work/school.
Perspective	Underuse	I avoid giving advice to others.
	Optimal	I give advice to others by means of considering different (and relevant) perspectives and using my own experiences and knowledge.
	Overuse	I consider too many ideas and experiences, and I have too much advice to give.
Bravery	Underuse	I’m very careful to avoid challenges and situations that cause me difficulty or discomfort.
	Optimal	I act on my convictions, facing threats, challenges, difficulties, and pains, despite my doubts and fears.
	Overuse	I act on my convictions and risk injury or loss without truly weighing the pros and cons of my actions, just for the thrill of it.
Perseverance	Underuse	I give up when faced with obstacles or adversity, despite the possibility of reward.
	Optimal	I persist toward my goals despite obstacles, discouragements, or disappointments.
	Overuse	I keep going with what I start, even if the costs outweigh the benefits.
Honesty	Underuse	I present myself in a way to make others like me; or I evade the truth.
	Optimal	I am honest with myself and with others, I present myself accurately to each person, and I take responsibility for my actions.
	Overuse	I act exactly the way I feel, honest at any cost, impacting my relationships, my work, or myself.
Zest	Underuse	I am uninterested and have very little energy.

	Optimal	I feel full of energy and vital, approaching life feeling activated.
	Overuse	I feel energetic and excited by everything, being hyperactive.
Love	Underuse	I'm less inclined to reciprocate warmth, love, or closeness that others share.
	Optimal	I experience close, loving relationships that are characterized by giving and receiving love, warmth, and caring.
	Overuse	I feel close and emotional, even in relationships not characterized by mutual love and caring.
Kindness	Underuse	I'm helpful to others when there's something in it for me.
	Optimal	I am helpful and empathic and do nice favors for others without expecting anything in return.
	Overuse	I am helpful to the point of taking on others' problems, even when my help or support isn't really needed.
Social Intelligence	Underuse	I am unaware of my feelings or the feelings of others.
	Optimal	I am aware of and understand my feelings and thoughts, as well as the feelings of those around me.
	Overuse	I analyze my thoughts and feelings too much; or I over-analyze the intentions and actions of others.
Teamwork	Underuse	I work alone and work well alone, rather than in a group or team.
	Optimal	I am a helpful and contributing group and team member and feel responsible for helping the team reach its goals.
	Overuse	It is difficult for me to function without a team; or I focus on the team's goals at the expense of my individuality and independence.
Fairness	Underuse	I let personal feelings bias my decisions about others.
	Optimal	I treat everyone equally and fairly, and give everyone the same chance, applying the same rules for everyone.
	Overuse	I rigidly follow the rules, making no exceptions.
Leadership	Underuse	I am reluctant to take charge or organize groups.
	Optimal	I take charge and guide groups to meaningful goals and ensure good relations between group members.

	Overuse	I take charge to be in power; or I stay in charge even at the cost of the group's goals or well-being.
Forgiveness	Underuse	I am unforgiving; hold grudges; or I seek revenge.
	Optimal	I forgive others when they upset me and/or when they commit a wrongdoing.
	Overuse	I forgive so easily that I don't hold others responsible for hurting me or others.
Humility	Underuse	When I do anything, I do it well and deserve recognition and praise.
	Optimal	I see my strengths, but I am modest, not seeking to be the center of attention or to receive recognition.
	Overuse	When I do good, I feel like I am praised for no reason; my <i>accomplishments</i> shouldn't be mentioned at all.
Prudence	Underuse	I do what I feel like doing rather than plan and set goals.
	Optimal	I act carefully and cautiously, looking to avoid risks and plan toward distant goals.
	Overuse	I meticulously plan my every step—words and actions.
Self-Regulation	Underuse	I struggle to manage my emotions, habits, or reactions to others.
	Optimal	I manage my feelings and actions and am disciplined and self-controlled.
	Overuse	I rigidly regulate my impulses, emotions, and reactions to others.
Appreciation of Beauty & Excellence	Underuse	I am unmoved by the beauty around me or the skills/excellence of others.
	Optimal	I recognize, emotionally experience, and appreciate the beauty around me and the excellence of others.
	Overuse	I see the beauty and excellence in everything around me and am startled or upset by those that do not.
Gratitude	Underuse	I only have myself to thank for my achievements.
	Optimal	I am grateful for many things and I express that thankfulness to others.
	Overuse	I express so much thankfulness to others that it seems excessive to them or it irritates them.
Hope	Underuse	I am pessimistic about the future and about my goals.

	Optimal	I am full of optimism about the future, believing in my actions and feeling confident things will turn out well.
	Overuse	I am very confident things will turn out well for me no matter what, even if I don't do anything.
Humor	Underuse	I am very serious and less inclined to joke, smile, or see the lighter side of things.
	Optimal	I approach life playfully, making others laugh, and finding humor at difficult/stressful times.
	Overuse	I make jokes and find playfulness in everything, even at the expense of others.
Spirituality	Underuse	I don't believe there is a higher power; or I don't feel I have a place or purpose in the universe.
	Optimal	I feel spiritual and believe in a higher purpose or higher power; and I see my place in the grand scheme of the universe.
	Overuse	I feel that a higher power directs me and that things happen because of my place in the universe; or I impose my spiritual beliefs on others.

Optimal/over/under used Strengths Inventory (OUOU) German translation

Denke an alle Situationen und Beziehungen in deinem Leben. Gib bei jeder Frage an, in welchem Ausmaß jede Option auf dich zutrifft, bezogen auf dein ganzes Leben (Situationen, Menschen, Orte, etc.). Dabei verteilst du 100% auf die drei Optionen.

Zum Beispiel:

Wieviel isst du?

Zu wenig, nicht genug, ich bleibe hungrig	Gerade genug, ich fühle mich nicht hungrig oder zu voll nach dem Essen	Zu viel, ich fühle mich zu voll oder mir ist sogar schlecht
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10% + 70% + 20%

Du gibst an, dass du in 10% der Zeit/deiner Mahlzeiten hungrig bleibst/nicht genug isst, 70% der Zeit gerade genug isst und 20% der Zeit zu viel isst.

Unter Berücksichtigung deines ganzen Lebens (Zeit, Leute, Orte, etc.), inwieweit verhältst du dich gemäß den folgenden Beschreibungen?

Kreativität	Unternutzung	Ich bin unkreativ oder phantasielos, habe keine ausgefallenen Ideen.
	Optimale Nutzung	Ich bin kreativ, entwerfe Nützliches, habe nützliche Ideen.
	Übernutzung	Ich bin kreativ, ohne, dass es nützlich ist; oder ich habe Ideen, die nicht funktionieren oder unnötig sind; oder ich überfordere andere mit zu vielen Ideen.
Neugier	Unternutzung	Ich verliere schnell das Interesse an neuen Erfahrungen.
	Optimale Nutzung	Ich suche Situationen, in denen ich neue Erfahrungen sammeln kann, ohne mir oder anderen dabei im Weg zu stehen.
	Übernutzung	Ich suche nach neuen Erfahrungen, egal welche Konsequenzen es für mich oder andere hat und es behindert mich oder andere (z.B. Privatbereich).
Urteilsvermögen und Aufgeschlossenheit	Unternutzung	Ich fälle schnell Entscheidungen; das erste, das mir einfällt, ist das Richtige.
	Optimale Nutzung	Ich wiege alle Aspekte objektiv ab, wenn ich Entscheidungen fälle, eingenommen Argumente, die gegen meine Überzeugungen sind.

	Übernutzung	Ich prüfe kritisch die kleinsten Details, wenn ich eine Entscheidung treffe und komme voreingenommen, komplett in meinem Kopf oder unentschlossen rüber.
Liebe zum Lernen	Unternutzung	Ich bin zufrieden mit dem, was ich weiß, und den Fähigkeiten, die ich habe. Deshalb mache ich mir nicht die Mühe, mehr zu lernen.
	Optimale Nutzung	Ich bin motiviert, ein höheres Level an Wissen zu erlangen oder mein Wissen oder meine Fähigkeiten erheblich zu vertiefen.
	Übernutzung	Ich suche so viel nach Wissen, dass es sich negativ auf meine Beziehungen oder Arbeit/Schule auswirkt.
Weitsicht	Unternutzung	Ich vermeide es, anderen Ratschläge zu geben.
	Optimale Nutzung	Ich gebe anderen Ratschläge, indem ich verschiedene (relevante) Perspektiven berücksichtige und meine eigenen Erfahrungen und Wissen mit einbeziehe.
	Übernutzung	Ich berücksichtige zu viele Ideen und Erfahrungen und habe zu viele Ratschläge zu geben.

Tapferkeit	Unternutzung	Ich bin sehr vorsichtig und meide Herausforderungen und Situationen, die mir Schwierigkeiten oder Unbehagen bringen.
	Optimale Nutzung	Ich handle nach meinen Überzeugungen, stelle mich Ängsten, Herausforderungen, Schwierigkeiten und Schmerzen trotz meiner Zweifel und Ängste.
	Übernutzung	Ich handle nach meinen Überzeugungen und riskiere Verletzungen oder Verlust, ohne wirklich die Vor- und Nachteile meiner Handlungen abzuwiegen, einfach für den Nervenkitzel.
Ausdauer	Unternutzung	Ich gebe auf, wenn ich mit Hindernissen oder Widrigkeiten konfrontiert werde, trotz möglicher Belohnung.
	Optimale Nutzung	Ich verfolge meine Ziele weiter trotz Hindernissen, Entmutigungen oder Enttäuschungen.
	Übernutzung	Ich mache weiter mit dem, was ich angefangen habe, selbst wenn die Kosten größer sind als die Vorteile.

Ehrlichkeit	Unternutzung	Ich präsentiere mich so, dass andere mich mögen oder umgehe der Wahrheit.
	Optimale Nutzung	Ich bin ehrlich zu mir selbst und anderen, ich präsentiere mich „richtig“ vor jedem und übernehme Verantwortung für mein Handeln.
	Übernutzung	Ich handele so, wie ich mich fühle, ehrlich um jeden Preis, was ich auf meine Beziehungen, Arbeit oder mich selbst auswirkt.
Enthusiasmus und Tatendrang	Unternutzung	Ich bin uninteressiert und habe sehr wenig Energie.
	Optimale Nutzung	Ich fühle mich voller Energie und vital, gehe das Leben aktiv an.
	Übernutzung	Ich fühle mich energiegeladen und aufgeregt durch alles, bin hyperaktiv.
Fähigkeit zu lieben	Unternutzung	Ich tendiere weniger dazu, Wärme, Liebe oder Nähe zu erwidern die andere mit mir teilen.
	Optimale Nutzung	Ich erfahre enge, liebevolle Beziehungen, in denen Liebe gegeben und empfangen wird, Wärme und Fürsorge herrscht.

	Übernutzung	Ich fühle mich nahe und emotional, selbst in Beziehungen, in denen keine gegenseitige Liebe und Fürsorge herrscht.
Freundlichkeit	Unternutzung	Ich bin hilfsbereit gegenüber anderen, wenn etwas für mich dabei herauspringt.
	Optimale Nutzung	Ich bin hilfsbereit und einfühlsam und mache anderen einen netten Gefallen, ohne etwas im Gegenzug dafür zu erwarten.
	Übernutzung	Ich bin so hilfsbereit, dass ich die Probleme anderer annehme, selbst wenn meine Hilfe oder Unterstützung nicht wirklich gebraucht wird.
Soziale Intelligenz	Unternutzung	Meine Gefühle oder die Gefühle anderer sind mir nicht bewusst.
	Optimale Nutzung	Mir sind meine Gefühle und Gedanken bewusst und ich verstehe sie, genauso wie die Gefühle meiner Mitmenschen.
	Übernutzung	Ich analysiere meine Gedanken und Gefühle zu viel; oder ich überanalysiere die Intentionen und Handlungen anderer Leute.

Teamwork	Unternutzung	Ich arbeite allein und arbeite gut allein, besser als in einer Gruppe oder einem Team.
	Optimale Nutzung	Ich bin ein hilfsbereites und aktives Gruppen- und Teammitglied und fühle mich verantwortlich, dem Team zu helfen, seine Ziele zu erreichen.
	Übernutzung	Es ist schwer für mich, ohne ein Team zu funktionieren; oder ich fokussiere mich auf die Ziele meines Teams auf Kosten meiner Individualität und Unabhängigkeit.
Fairness	Unternutzung	Ich lasse persönliche Gefühle meine Entscheidungen über andere beeinflussen.
	Optimale Nutzung	Ich behandle jeden gleich und fair und gebe jedem dieselbe Chance, wende dieselben Regeln bei allen an.
	Übernutzung	Ich folge strikt den Regeln und mache keine Ausnahme.
Führungsvermögen	Unternutzung	Ich möchte nicht die Leitung oder Organisation von Gruppen übernehmen.
	Optimale Nutzung	Ich übernehme die Leitung und führe Gruppen zu bedeutungsvollen Zielen und stelle sicher, dass gute

		Beziehungen zwischen den Gruppenmitgliedern herrschen.
	Übernutzung	Ich übernehme die Leitung, um die Macht zu haben; oder ich bleibe in der Leitung auf Kosten der Ziele oder des Wohlbefindens der Gruppe.
Vergebungsbereitschaft und Gnade	Unternutzung	Ich bin nachtragend; hebe einen Groll; oder bin auf Rache aus.
	Optimale Nutzung	Ich vergebe anderen, wenn sie mich verärgern und/oder wenn sie sich falsch verhalten.
	Übernutzung	Ich vergebe so schnell, dass ich andere nicht dafür verantwortlich mache, dass sie mir oder anderen wehtun.
Bescheidenheit und Demut	Unternutzung	Wenn ich etwas mache, mache ich es gut und verdiene Anerkennung und Lob.
	Optimale Nutzung	Ich sehe meine Stärken, bin aber bescheiden und versuche nicht, im Mittelpunkt zu stehen oder Anerkennung zu bekommen.
	Übernutzung	Wenn ich etwas gut mache, fühle ich mich, als werde ich grundlos gelobt; meine Leistungen sollten gar nicht erwähnt werden.

Vorsicht	Unternutzung	Ich tue das, wonach ich mich fühle, anstatt zu planen und Ziele zu setzen.
	Optimale Nutzung	Ich handle gewissenhaft und vorsichtig, versuche, Risiken zu vermeiden und plane entfernte Ziele im Voraus.
	Übernutzung	Ich plane sorgfältig jeden Schritt—Worte und Taten.
Selbstregulation	Unternutzung	Ich habe Schwierigkeiten, meine Emotionen, Gewohnheiten oder Reaktionen auf andere zu managen.
	Optimale Nutzung	Ich manage meine Gefühle und Handlungen und bin diszipliniert und selbstbeherrscht.
	Übernutzung	Ich reguliere strikt meine Impulse, Emotionen und Reaktionen auf andere.
Sinn für das Schöne und Exzellenz	Unternutzung	Ich bin ungerührt durch die Schönheit um mich herum oder die Fähigkeiten/Spitzenleistungen anderer.
	Optimale Nutzung	Ich nehme die Schönheit um mich herum und Spitzenleistungen anderer wahr, erfahre sie emotional und schätze sie wert.

	Übernutzung	Ich sehe die Schönheit und Spitzenleistungen in allem um mich herum und bin bestürzt oder verärgert über alle, die das nicht tun.
Dankbarkeit	Unternutzung	Ich habe nur mir selbst zu danken für meine Leistungen.
	Optimale Nutzung	Ich bin dankbar für viele Sachen und drücke diese Dankbarkeit anderen gegenüber aus.
	Übernutzung	Ich drücke so viel Dankbarkeit anderen gegenüber aus, dass es übertrieben wirkt oder andere verwirrt.
Hoffnung	Unternutzung	Ich bin pessimistisch gegenüber der Zukunft und meinen Zielen.
	Optimale Nutzung	Ich bin voller Optimismus über die Zukunft, glaube an meine Handlungen und bin mir sicher, dass alles gut enden wird.
	Übernutzung	Ich bin sehr sicher, dass alles in jedem Fall für mich gut werden wird, selbst wenn ich nichts mache.
Humor	Unternutzung	Ich bin sehr ernst und tendiere weniger zum Scherzen, Lächeln, oder dazu, die leichtere Seite der Dinge zu sehen.

	Optimale Nutzung	Ich gehe das Leben ausgelassen an, bringe andere zum Lachen und finde Humor in schwierigen/stressigen Zeiten.
	Übernutzung	Ich mache Witze und finde in allem Munterkeit, selbst auf Kosten anderer.
	Unternutzung	Ich glaube nicht an eine höhere Macht; oder ich fühle mich nicht, als hätte ich einen Platz oder Sinn im Universum.
Spiritualität	Optimale Nutzung	Ich fühle mich spirituell und glaube an einen höheren Sinn oder eine höhere Macht; und ich sehe meinen Platz im großen Plan des Universums.
	Übernutzung	Ich habe das Gefühl, eine höhere Macht steuert mich und dass Dinge passieren aufgrund meines Platzes im Universum; oder ich drücke anderen meine spirituellen Überzeugungen auf.

Appendix D

Mental Health Continuum-Short Form (MHC-SF) English version

Adult MHC-SF (ages 18 or older)

Please answer the following questions about how you have been feeling during the past month. Place a check mark in the box that best represents how often you have experienced or felt the following:

During the past month, how often did you feel ...	NEVER	ONCE OR TWICE	ABOUT ONCE A WEEK	ABOUT 2 OR 3 TIMES A WEEK	ALMOST EVERY DAY	EVERY DAY
1. happy						
2. interested in life						
3. satisfied with life						
4. that you had something important to contribute to society						
5. that you belonged to a community (like a social group, or your neighborhood)						
SEE BELOW 6. that our society is a good place, or is becoming a better place, for all people						
7. that people are basically good						
8. that the way our society works makes sense to you						
9. that you liked most parts of your personality						
10. good at managing the responsibilities of your daily life						
11. that you had warm and trusting relationships with others						
12. that you had experiences that challenged you to grow and become a better person						
13. confident to think or express your own ideas and opinions						
14. that your life has a sense of direction or meaning to it						

Note: The original wording for item 6 was “that our society is becoming a better place for people like you.” This item does not work in all cultural contexts. However, when validating the MHC-SF, test both versions of item 6 to see which one works best in your context.

Mental Health Continuum-Short Form (MHC-SF) German version

Die folgenden Fragen beschreiben Gefühle die Menschen erfahren können. Lesen Sie bitte jede Aussage gründlich durch und markieren Sie die Antwort, die am besten beschreibt wie Sie sich im vergangenen Monat gefühlt haben.

Im letzten Monat, wie oft hatten Sie das Gefühl,

	N ie	1- 2ma l im Mon at	1mal i n der Woch e	2- 3mal i n der W oche	Fast tä glich	Täg lich
dass Sie glücklich waren?						
dass Sie Interesse am Leben hatten?						
dass Sie zufrieden waren?						
dass Sie einen wichtigen gesellschaftlichen Beitrag geleistet ha ben?						
dass Sie zu einer Gemeinschaft gehörten (z.B. einer sozialen G ruppe, Ihrer Nachbarschaft oder Ihrer Stadt)?						
dass unsere Gesellschaft besser für Ihre Bürger wird?						
dass Menschen von Natur aus gut sind?						
dass Sie verstehen, wie unsere Gesellschaft funktioniert?						
dass Sie die meisten Aspekte Ihrer Persönlichkeit wertschätzen ?						
dass Sie Ihre täglichen Aufgaben und Verpflichtungen gut erfü llen konnten?						
dass Sie warme und vertraute Beziehungen zu anderen haben?						
dass Sie sich entwickeln oder ein besserer Mensch werden?						
dass Sie selbstbewusst Ihre eigenen Ideen und Gedanken geda cht und geäußert haben?						
dass Ihr Leben Richtung und Sinn hat.						

Appendix E

Beck Depression Inventory, 2nd Edition (BDI-II) English version

BDI - II

Instructions: This questionnaire consists of 21 groups of statements. Please read each group of statements carefully. And then pick out the one statement in each group that best describes the way you have been feeling during the past two weeks, including today. Circle the number beside the statement you have picked. If several statements in the group seem to apply equally well, circle the highest number for that group. Be sure that you do not choose more than one statement for any group, including Item 16 (Changes in Sleeping Pattern) or Item 18 (Changes in Appetite).

1. Sadness

- 0. I do not feel sad.
- 1. I feel sad much of the time.
- 2. I am sad all the time.
- 3. I am so sad or unhappy that I can't stand it.

2. Pessimism

- 0. I am not discouraged about my future.
- 1. I feel more discouraged about my future than I used to.
- 2. I do not expect things to work out for me.
- 3. I feel my future is hopeless and will only get worse.

3. Past Failure

- 0. I do not feel like a failure.
- 1. I have failed more than I should have.
- 2. As I look back, I see a lot of failures.
- 3. I feel I am a total failure as a person.

4. Loss of Pleasure

- 0. I get as much pleasure as I ever did from the things I enjoy.
- 1. I don't enjoy things as much as I used to.
- 2. I get very little pleasure from the things I used to enjoy.
- 3. I can't get any pleasure from the things I used to enjoy.

5. Guilty Feelings

- 0. I don't feel particularly guilty.
- 1. I feel guilty over many things I have done or should have done.
- 2. I feel quite guilty most of the time.
- 3. I feel guilty all of the time.

6. Punishment Feelings

- 0. I don't feel I am being punished.
- 1. I feel I may be punished.
- 2. I expect to be punished.
- 3. I feel I am being punished.

7. Self-Dislike

- 0. I feel the same about myself as ever.
- 1. I have lost confidence in myself.
- 2. I am disappointed in myself.
- 3. I dislike myself.

8. Self-Criticalness

- 0. I don't criticize or blame myself more than usual.
- 1. I am more critical of myself than I used to be.
- 2. I criticize myself for all of my faults.
- 3. I blame myself for everything bad that happens.

9. Suicidal Thoughts or Wishes

- 0. I don't have any thoughts of killing myself.
- 1. I have thoughts of killing myself, but I would not carry them out.
- 2. I would like to kill myself.
- 3. I would kill myself if I had the chance.

10. Crying

- 0. I don't cry anymore than I used to.
- 1. I cry more than I used to.
- 2. I cry over every little thing.
- 3. I feel like crying, but I can't.

11. Agitation

- 0. I am no more restless or wound up than usual.
- 1. I feel more restless or wound up than usual.
- 2. I am so restless or agitated, it's hard to stay still.
- 3. I am so restless or agitated that I have to keep moving or doing something.

16. Changes in Sleeping Pattern

- 0. I have not experienced any change in my sleeping.
- 1a I sleep somewhat more than usual.
- 1b I sleep somewhat less than usual.
- 2a I sleep a lot more than usual.
- 2b I sleep a lot less than usual.
- 3a I sleep most of the day.
- 3b I wake up 1-2 hours early and can't get back to sleep.

17. Irritability

- 0. I am not more irritable than usual.
- 1. I am more irritable than usual.
- 2. I am much more irritable than usual.
- 3. I am irritable all the time.

18. Changes in Appetite

- 0. I have not experienced any change in my appetite.
- 1a My appetite is somewhat less than usual.
- 1b My appetite is somewhat greater than usual.
- 2a My appetite is much less than before.
- 2b My appetite is much greater than usual.
- 3a I have no appetite at all.
- 3b I crave food all the time.

12. Loss of Interest

- 0. I have not lost interest in other people or activities.
- 1. I am less interested in other people or things than before.
- 2. I have lost most of my interest in other people or things.
- 3. It's hard to get interested in anything.

13. Indecisiveness

- 0. I make decisions about as well as ever.
- 1. I find it more difficult to make decisions than usual.
- 2. I have much greater difficulty in making decisions than I used to.
- 3. I have trouble making any decisions.

14. Worthlessness

- 0. I do not feel I am worthless.
- 1. I don't consider myself as worthwhile and useful as I used to.
- 2. I feel more worthless as compared to others.
- 3. I feel utterly worthless.

15. Loss of Energy

- 0. I have as much energy as ever.
- 1. I have less energy than I used to have.
- 2. I don't have enough energy to do very much.
- 3. I don't have enough energy to do anything.

19. Concentration Difficulty

- 0. I can concentrate as well as ever.
- 1. I can't concentrate as well as usual.
- 2. It's hard to keep my mind on anything for very long.
- 3. I find I can't concentrate on anything.

20. Tiredness or Fatigue

- 0. I am no more tired or fatigued than usual.
- 1. I get more tired or fatigued more easily than usual.
- 2. I am too tired or fatigued to do a lot of the things I used to do.
- 3. I am too tired or fatigued to do most of the things I used to do.

21. Loss of Interest in Sex

- 0. I have not noticed any recent change in my interest in sex.
- 1. I am less interested in sex than I used to be.
- 2. I am much less interested in sex now.
- 3. I have lost interest in sex completely.

Total Score: _____

Beck Depression Inventory, 2nd Edition (BDI-II) German version

Instruktionen: Dieser Fragebogen enthält 21 Gruppen von Aussagen. Bitte lesen Sie jede dieser Gruppen von Aussagen sorgfältig durch und suchen Sie sich dann in jeder Gruppe eine Aussage heraus, die am besten beschreibt, wie Sie sich in den letzten zwei Wochen, einschließlich heute, gefühlt haben. Kreuzen Sie die Zahl neben der Aussage an, die Sie sich herausgesucht haben (0, 1, 2 oder 3). Falls in einer Gruppe mehrere Aussagen gleichermaßen auf Sie zutreffen, kreuzen Sie die Aussage mit der höheren Zahl an. Kreuzen Sie bitte auch in Gruppe 16 (Veränderungen der Schlafgewohnheiten) und Gruppe 18 (Veränderungen des Appetits) nur eine Aussage an. Lesen Sie auf jeden Fall alle Aussagen in einer Gruppe, bevor Sie Ihre Wahl treffen. Wenn Sie sich beim Ankreuzen vertan haben oder Ihre Meinung ändern möchten, schwärzen Sie Ihr erstes Kreuzchen, z.B. ✖ und setzen ein neues Kreuzchen bei der Ziffer, für die Sie sich entschieden haben, z.B. ✕.

- | | |
|---|---|
| <p>1. Traurigkeit</p> <p>0 Ich bin nicht traurig</p> <p>1 Ich bin oft traurig</p> <p>2 Ich bin ständig traurig</p> <p>3 Ich bin so traurig oder unglücklich, dass ich es nicht aushalte</p> <hr/> <p>2. Pessimismus</p> <p>0 Ich sehe nicht mutlos in die Zukunft</p> <p>1 Ich sehe mutloser in die Zukunft als sonst</p> <p>2 Ich bin mutlos und erwarte nicht, dass meine Situation besser wird</p> <p>3 Ich glaube, dass meine Zukunft hoffnungslos ist und nur noch schlechter wird</p> <hr/> <p>3. Versagensgefühle</p> <p>0 Ich fühle mich nicht als Versager</p> <p>1 Ich habe häufiger Versagensgefühle</p> <p>2 Wenn ich zurückblicke, sehe ich eine Menge Fehlschläge</p> <p>3 Ich habe das Gefühl, als Mensch ein völliger Versager zu sein</p> <hr/> <p>4. Verlust von Freude</p> <p>0 Ich kann die Dinge genauso gut genießen wie früher</p> <p>1 Ich kann die Dinge nicht mehr so genießen wie früher</p> <p>2 Dinge, die mir früher Freude gemacht haben, kann ich kaum mehr genießen</p> <p>3 Dinge, die mir früher Freude gemacht haben, kann ich überhaupt nicht mehr genießen</p> <hr/> <p>5. Schuldgefühle</p> <p>0 Ich habe keine besonderen Schuldgefühle</p> <p>1 Ich habe oft Schuldgefühle wegen Dingen, die ich getan habe oder hätte tun sollen</p> <p>2 Ich habe die meiste Zeit Schuldgefühle</p> <p>3 Ich habe ständig Schuldgefühle</p> <hr/> | <p>6. Bestrafungsgefühle</p> <p>0 Ich habe nicht das Gefühl, für etwas bestraft zu sein</p> <p>1 Ich habe das Gefühl, vielleicht bestraft zu werden</p> <p>2 Ich erwarte, bestraft zu werden</p> <p>3 Ich habe das Gefühl, bestraft zu sein</p> <hr/> <p>7. Selbstablehnung</p> <p>0 Ich halte von mir genauso viel wie immer</p> <p>1 Ich habe Vertrauen in mich verloren</p> <p>2 Ich bin von mir enttäuscht</p> <p>3 Ich lehne mich völlig ab</p> <hr/> <p>8. Selbstvorwürfe</p> <p>0 Ich kritisiere oder tadle mich nicht mehr als sonst</p> <p>1 Ich bin mir gegenüber kritischer als sonst</p> <p>2 Ich kritisiere mich für all meine Mängel</p> <p>3 Ich gebe mir die Schuld für alles Schlimme, was passiert</p> <hr/> <p>9. Selbstmordgedanken</p> <p>0 Ich denke nicht daran, mir etwas anzutun</p> <p>1 Ich denke manchmal an Selbstmord, aber ich würde es nicht tun</p> <p>2 Ich möchte mich am liebsten umbringen</p> <p>3 Ich würde mich umbringen, wenn ich die Gelegenheit dazu hätte</p> <hr/> <p>10. Weinen</p> <p>0 Ich weine nicht öfter als früher</p> <p>1 Ich weine jetzt mehr als früher</p> <p>2 Ich weine beim geringsten Anlass</p> <p>3 Ich möchte gern weinen, aber ich kann nicht</p> <hr/> <p>11. Unruhe</p> <p>0 Ich bin nicht unruhiger als sonst</p> <p>1 Ich bin unruhiger als sonst</p> <p>2 Ich bin so unruhig, dass es mir schwerfällt, stillzusitzen</p> <p>3 Ich bin so unruhig, dass ich mich ständig bewegen oder etwas tun muss</p> <hr/> |
|---|---|

12. Interessenverlust

- 0 Ich habe das Interesse an anderen Menschen oder an Tätigkeiten nicht verloren
- 1 Ich habe weniger Interesse an anderen Menschen oder an Dingen als sonst
- 2 Ich habe das Interesse an anderen Menschen oder an Dingen zum größten Teil verloren
- 3 Es fällt mir schwer, mich überhaupt für irgend etwas zu interessieren

13. Entschlussunfähigkeit

- 0 Ich bin so entschlossen wie immer
- 1 Es fällt mir schwerer als sonst, Entscheidungen zu treffen
- 2 Es fällt mir sehr viel schwerer als sonst, Entscheidungen zu treffen
- 3 Ich habe Mühe, überhaupt Entscheidungen zu treffen

14. Wertlosigkeit

- 0 Ich fühle mich nicht wertlos
- 1 Ich halte mich für weniger wertvoll und nützlich als sonst
- 2 Verglichen mit anderen Menschen fühle ich mich viel weniger wert
- 3 Ich fühle mich völlig wertlos

15. Energieverlust

- 0 Ich habe so viel Energie wie immer
- 1 Ich habe weniger Energie als sonst
- 2 Ich habe so wenig Energie, dass ich kaum noch etwas schaffe
- 3 Ich habe keine Energie mehr, um überhaupt noch etwas zu tun

16. Veränderungen der Schlafgewohnheiten

- 0 Meine Schlafgewohnheiten haben sich nicht verändert
- 1a Ich schlafe etwas mehr als sonst
- 1b Ich schlafe etwas weniger als sonst
- 2a Ich schlafe viel mehr als sonst
- 2b Ich schlafe viel weniger als sonst
- 3a Ich schlafe fast den ganzen Tag
- 3b Ich wache 1-2 Stunden früher auf als gewöhnlich und kann nicht mehr einschlafen

17. Reizbarkeit

- 0 Ich bin nicht reizbarer als sonst
- 1 Ich bin reizbarer als sonst
- 2 Ich bin viel reizbarer als sonst
- 3 Ich fühle mich dauernd gereizt

18. Veränderungen des Appetits

- 0 Mein Appetit hat sich nicht verändert
- 1a Mein Appetit ist etwas schlechter als sonst
- 1b Mein Appetit ist etwas größer als sonst
- 2a Mein Appetit ist viel schlechter als sonst
- 2b Mein Appetit ist viel größer als sonst
- 3a Ich habe überhaupt keinen Appetit
- 3b Ich habe ständig Heißhunger

19. Konzentrationsschwierigkeiten

- 0 Ich kann mich so gut konzentrieren wie immer
- 1 Ich kann mich nicht mehr so gut konzentrieren wie sonst
- 2 Es fällt mir schwer, mich längere Zeit auf irgend etwas zu konzentrieren
- 3 Ich kann mich überhaupt nicht mehr konzentrieren

20. Ermüdung oder Erschöpfung

- 0 Ich fühle mich nicht müde oder erschöpfter als sonst
- 1 Ich werde schneller müde oder erschöpft als sonst
- 2 Für viele Dinge, die ich üblicherweise tue, bin ich zu müde oder erschöpft
- 3 Ich bin so müde oder erschöpft, dass ich fast nichts mehr tun kann

21. Verlust an sexuellem Interesse

- 0 Mein Interesse an Sexualität hat sich in letzter Zeit nicht verändert
- 1 Ich interessiere mich weniger für Sexualität als früher
- 2 Ich interessiere mich jetzt viel weniger für Sexualität
- 3 Ich habe das Interesse an Sexualität völlig verloren

Appendix F

Consent form

Welcome to my research project about character strengths!

Thank you for your time and support! With your participation in this study you will help to find out about how the use of character strengths is related to well-being in students. It will take about 20 minutes to fill out the online questionnaire. You can participate if you are a student and at least 18 years old.

There are no risks to you from this research. Your participation is entirely voluntary. If you wish to withdraw from this study, you can do so at any time without giving a reason.

Your answers will be handled confidentially. Responses are saved anonymously and may eventually be presented in a research publication.

If you have any questions or concerns, do not hesitate to contact the researcher Ronja Deiters (r.deiters@student.utwente.nl).

If you are interested in the outcomes of the study, feel free to write me an email.

I have fully read and understand the above text and I am willing to participate in this research study

Yes

No

Appendix G

Distribution of strengths use for each strength

Strength	Use type	<i>M</i>	<i>SD</i>	Skewness (<i>SE</i> =.23)	Kurtosis (<i>SE</i> =.45)
Creativity	Underuse	.23	.20	1.20	1.11
	Optimal use	.49	.22	-.01	-.76
	Overuse	.28	.18	.68	.29
Curiosity	Underuse	.20	.18	1.20	1.87
	Optimal use	.63	.24	-.46	-.28
	Overuse	.17	.18	1.78	4.31
Judgment	Underuse	.23	.23	1.34	1.26
	Optimal use	.49	.23	.12	-.69
	Overuse	.28	.20	.48	-.78
Love of learning	Underuse	.18	.19	1.60	3.47
	Optimal use	.72	.21	-.67	.32
	Overuse	.10	.13	1.31	1.02
Perspective	Underuse	.17	.18	1.77	3.81
	Optimal use	.68	.21	-.60	-.10
	Overuse	.15	.14	.89	.41
Bravery	Underuse	.37	.26	.45	-.79
	Optimal use	.50	.25	-.08	-.96
	Overuse	.13	.16	1.70	2.97
Perseverance	Underuse	.18	.17	1.53	3.70
	Optimal use	.64	.21	-.36	-.10
	Overuse	.18	.16	.70	-.57
Honesty	Underuse	.22	.20	1.22	1.57
	Optimal use	.57	.23	-.42	-.32
	Overuse	.22	.20	1.66	3.38
Zest	Underuse	.23	.24	1.40	1.58
	Optimal use	.60	.27	-.53	-.53
	Overuse	.16	.18	1.57	2.37
Love	Underuse	.19	.26	1.60	1.82

Strength	Use type	<i>M</i>	<i>SD</i>	Skewness (<i>SE</i> =.23)	Kurtosis (<i>SE</i> =.45)
Kindness	Optimal use	.66	.30	-.61	-.71
	Overuse	.15	.19	1.68	3.29
	Underuse	.18	.19	1.41	2.44
Social intelligence	Optimal use	.62	.24	-.46	-.26
	Overuse	.19	.20	1.45	2.49
	Underuse	.07	.15	4.53	24.41
Teamwork	Optimal use	.52	.28	-.23	-.83
	Overuse	.41	.28	.52	-.54
	Underuse	.42	.27	.49	-.41
Fairness	Optimal use	.50	.25	-.14	-.38
	Overuse	.08	.12	2.19	5.48
	Underuse	.31	.24	-.69	-.09
Leadership	Optimal use	.55	.27	-.20	-.78
	Overuse	.14	.19	2.19	6.04
	Underuse	.33	.32	.65	-.80
Forgiveness	Optimal use	.60	.33	-.29	-1.21
	Overuse	.08	.17	3.23	11.75
	Underuse	.25	.26	1.04	.31
Humility	Optimal use	.57	.25	-.28	-.32
	Overuse	.18	.22	1.62	2.44
	Underuse	.29	.26	1.00	.62
Prudence	Optimal use	.53	.28	-.07	-.78
	Overuse	.18	.23	1.76	3.04
	Underuse	.26	.25	1.33	1.34
Self-regulation	Optimal use	.53	.25	-.27	-.57
	Overuse	.20	.21	1.34	1.57
	Underuse	.31	.28	.94	.01
	Optimal use	.53	.29	-.13	-.99
	Overuse	.16	.20	1.54	2.49

Strength	Use type	<i>M</i>	<i>SD</i>	Skewness (<i>SE</i> =.23)	Kurtosis (<i>SE</i> =.45)
Appreciation of beauty and excellence	Underuse	.12	.20	2.68	8.27
	Optimal use	.69	.27	-1.00	.48
	Overuse	.19	.22	1.80	3.85
Gratitude	Underuse	.19	.22	1.35	1.76
	Optimal use	.71	.27	-.87	.10
	Overuse	.09	.18	2.99	10.49
Hope	Underuse	.26	.26	.97	.21
	Optimal use	.64	.30	-.53	-.74
	Overuse	.10	.16	2.00	4.65
Humor	Underuse	.17	.22	1.84	3.11
	Optimal use	.66	.27	-.85	.08
	Overuse	.18	.22	2.02	4.70
Spirituality	Underuse	.58	.38	-.34	-1.44
	Optimal use	.37	.35	.46	-1.17
	Overuse	.05	.10	2.71	8.63