



UNIVERSITY OF TWENTE.

Faculty of Behavioural, Management & Social Sciences

B.Sc. Thesis

**Play to Your Strengths -
How Emerging Adults' Strengths Use Relates to
an Increased Mental Health:
The Role of Self-Esteem**

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Abstract

Background: The term ‘Quarterlife crisis’ emerged during the last years and describes the unique challenges of emerging adults, individuals between 18 and 29 years, who go through a life period that is usually characterised by transitions and changes, which often lead to a decreased mental health. Strengths as well as self-esteem have been found to be positively related to mental health. However, the use of strengths is not well researched yet, especially under consideration of other third variables such as self-esteem. This is important because the association between strengths use and mental health is suspected to be caused by other variables that are related to strengths use and known to influence mental health. The aim of this study was to investigate the implications of strengths use on mental health in emerging adults under consideration of self-esteem, which is known to benefit mental health. Hence, this study investigated whether self-esteem acts as a mediator in the relationship between strengths use and mental health in emerging adults. Therefore, the hypotheses state that there are positive relationships among the variables strengths use, self-esteem and mental health, as well as a mediation effect between the variables with self-esteem as a mediator.

Methods: In a cross-sectional study, the hypotheses were examined. A convenience sample of 125 emerging adults completed the electronic survey pertaining their perceived levels of the three variables. The data was analysed in SPSS, using Hayes’ (2012) PROCESS macro.

Results: The results indicate significant positive relationships between strengths use and mental health, strengths use and self-esteem, as well as self-esteem and mental health. Moreover, self-esteem is found to be a significant mediator in the relationship between strengths use and mental health. Therefore, the results provide evidence for the hypothesis that strengths use functions as a predictor of mental health and self-esteem for emerging adults. Moreover, self-esteem explains, as a mediator, the underlying process through which strengths use is associated with mental health.

Conclusion: Emerging adults who use their strengths show higher levels of self-esteem and mental health. Hence, the study demonstrates the importance of strengths use in connection to self-esteem in emerging adults since it supports them in withstanding outside pressures and influences their mental health. Future research should be directed at interventions, which aim at encouraging strengths use to increase self-esteem. They might be beneficial for emerging adults to protect their mental health from the stressors they face in this life period.

Keywords: strengths use, mental health, self-esteem, emerging adults

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“Who do I want to be?” This is a question commonly asked among emerging adults who are currently in a life phase characterized by imprinting changes and important decisions, for instance the choice of one’s study programme (Murphy et al., 2011). Nowadays, emerging adults, that are individuals at age of 18-29 years, are still determining what their own values are and are forming a picture of the person they want to become and can work towards. Most of the times they do not opt for permanent employment, marriage, or parenthood yet (Arnett et al., 2014). Instead, the trend goes towards a longer time in education and more room for self-exploration and self-development before making long-lasting decisions (Arnett et al., 2014).

Likewise, many emerging adults report a lack of readiness for long-lasting decisions, such as settling for employment (Viola et al., 2016). This is often caused by their need for self-exploration, which leads to an extended time period that emerging adults use to explore various career options (Viola et al., 2016). The experienced lack of readiness stands in conflict with the difficult conditions on the labour market and causes distress for emerging adults (Palmeroni et al., 2019). The increasing number of people following higher education, which leads in turn to a higher competition on the labour market, is only one example of the experienced stressors (Martin et al., 2007).

Emerging adults do not only face several stressors of competitive nature when entering the labour market, but are often also spoilt for choice. Nowadays, they have numerous possibilities to form their life according to their own expectations. This can sometimes be perceived as threatening when thinking about the implications of choices on the future and can cause stress (LeBlanc et al., 2020). Emotional reactivity to stress has been found to have a tremendous impact on the mental health of a person (Howland et al., 2017). Next to a decreased general mental health, work-related stressors even favour the development of psychopathologies, with anxiety disorders highly prevalent (Law et al., 2020; LeBlanc et al., 2020). Typical work-related stressors that emerging adults experience include unemployment or only temporary employment, what might lead to the stress of searching for new employment, low-control jobs with high psychological demands, as well as conflicts at work and an unequal treatment in comparison to their colleagues (Law et al., 2020).

Hence, the question arises which factors decrease emotional reactivity to stress and thereby increase mental health, enabling emerging adults to flourish under these conditions. A promising approach to deal with the mental health of people is the growing body of research on positive psychology. Instead of putting psychopathology central, positive psychology focuses on the aspects that make a life worth living and foster the optimal functioning of

individuals (Gable & Haidt, 2005). This approach has drawn attention to the study of strengths (Peterson & Seligman, 2004). Especially the use of personal strengths has been suggested to have a positive effect on well-being, however, the majority of research focuses on the possession or awareness, and not the actual use of strengths (Wood et al., 2011).

The fact that merely the possession, and not the use, of strengths and its relationship to mental health has been investigated in previous research also applies for the connection of strengths with other variables that have been positively linked to mental health, such as self-esteem (Martínez-Martí & Ruch, 2017). Self-esteem is a significant predictor of well-being in emerging adults, especially because it supports them in withstanding outside pressures, such as social comparison as it is often the case when emerging adults search for employment (Olenik-Shemesh et al., 2018).

Although strengths and self-esteem are shown to be important factors relating to mental health, little is known on the actual use of strengths, as well as how these factors together account for mental health in emerging adults. Since the majority of research reports the tremendous impact of work- and study-related stress on the mental health of emerging adults, this study is going to focus on these factors and how their impact on the mental health of emerging adults can be decreased. Therefore, this research aims to investigate the relationship between strengths use, self-esteem and mental health in emerging adults. In the following, these variables and the associative relationships between them will be described.

Strengths Use

Personal strengths are the characteristics of individuals that support them to perform well or at their individual best (Wood et al., 2011). Park and Peterson (2009) acknowledge that strengths are also influenced by genes and the social environment, such as family, friends and communities. Furthermore, Proctor et al. (2011) define personal strengths as positive traits or natural capacities that can be improved by gaining knowledge or practicing certain skills that strengthen the positive trait. Hence, they treat strengths as a pre-existing capacity to act, think, or feel. Personal strengths have already been found to serve as a buffer for the negative effects caused by perceived stress on mental health since strengths enhance psychological well-being under normal circumstances and reduce psychological symptoms under stressful circumstances (Duan, 2016). In addition, personal strengths have been shown to indirectly decrease depressive symptoms by having positive effects on happiness (Tehranchi et al., 2018).

Even though the use of personal strengths has been suggested to have a positive effect on well-being, the majority of research focuses on the possession or awareness, and not the actual use of strengths (Wood et al., 2011). More recent studies that made a first start in the investigation of the use of strengths came to numerous conclusions. A literature review of Ghielen et al. (2017) states that strengths use has been shown to be motivating and to enhance an individuals' confidence. Moreover, it is linked to an increased well-being and positive feelings such as excitement and joy. This finding could be supported by Proctor et al. (2011) who found that strengths use can enhance subjective well-being, with the Values in Action Inventory (VIA) strengths of hope and zest positively related to life satisfaction. Thomas and Jose (2018) stress the importance of interventions that foster strengths in early years, suggesting that the use of these strengths might support individuals later in emerging adulthood to become successful. However, more research is needed to investigate the implications of strengths use on emerging adults who face many study- or work-related stressors. Lastly, since there is a positive relationship between strengths and self-esteem, and self-esteem is known to foster focusing on positive attributes especially after failure, it would be interesting to investigate the relationship between strengths use and self-esteem in emerging adults, who often suffer from disappointments, for instance during their studies (Johnson et al., 2017).

Self-Esteem

Self-esteem refers to an individuals' subjective evaluation of their personal worth (Orth & Robins, 2019). Therefore, the concept does not include any external evaluations or objective attributes, but accepting and showing respect for the own person instead (Orth & Robins, 2019). Since emerging adults face a lot of stressors, it is important to investigate factors that protect their mental health. Balgiu (2017) and Olenik-Shemesh et al. (2018) have shown that emerging adults who seem to be more resilient than others when facing negative life events score high on self-esteem. Hence, self-esteem is a significant predictor of well-being in emerging adults, especially because it supports them in withstanding outside pressures, such as social comparison, as it is often the case when emerging adults search for employment. In previous studies, high levels of self-esteem have been identified to foster focusing on positive attributes and, consequently, focus less on negative thoughts after failure (Johnson et al., 2017).

However, self-esteem can also decrease the mental health of emerging adults when they determine their own worth based on their performance. Research has shown that job

insecurity is significantly linked to burnout and depressive symptoms, especially when individuals score high on performance-based self-esteem (Blom et al., 2015). Since the result that performance-based self-esteem decreases the mental health of emerging adults is in contrast to what is expected based on other studies, namely that self-esteem increases mental health, it is important to investigate the influence of self-esteem in the target group of emerging adults who are often in a situation where they are being evaluated by others based on their performance. Consequently, self-esteem seems to be an important factor when investigating the mental health in emerging adults who suffer from many work-related as well as personal stressors.

Mental Health

The concept of mental health was subjected to some crucial changes during the last years. For many years it has been defined as the absence of mental illnesses, for instance depression or anxiety. However, the concept has now been defined as the absence of psychopathologies in combination with a positive mental health since the mere absence of illnesses is not equivalent to well-being (Westerhof & Keyes, 2010). Therefore, when talking about the decreased mental health that emerging adults experience, it does not necessarily refer to psychopathologies but often just addresses their low level of well-being, such as in the study of Olenik-Shemesh et al. (2018).

In the past years, the mental health of emerging adults received increased attention since a growing amount of emerging adults seem to experience a decreased mental health due to the challenges they experience, for instance after graduation. This has been defined as ‘Quarterlife crisis’ (Rossi & Mebert, 2011). Many emerging adults suffer from the academic working conditions and show a lower level of mental health as a consequence (Levecque et al., 2017). They found that among others especially high job demands and work-family interface are linked to mental health problems. Previous studies focused mainly on external factors that protect the mental health of emerging adults, such as social support and especially parental support (Bishop et al., 2018; Martínez-Hernández et al., 2016). However, research focusing on internal factors that increase the mental health of emerging adults has not been extensive. Consequently, as the previously discussed studies demonstrate, the connection of strengths use and self-esteem might be an interesting approach with regard to the mental health of emerging adults.

The Relationship between Strengths Use, Self-Esteem and Mental Health

The necessity of combining these constructs will be illustrated in more detail below. Firstly, personal strengths have been found to serve as a buffer when individuals face stressors, as emerging adults often experience them during the transition to the labour market (Duan, 2016). Since strengths use can enhance an individuals' confidence, it is an interesting construct for emerging adults who might be searching for employment (Ghielen et al., 2017). Moreover, strengths use is related to feelings such as excitement and joy, which might be one factor that lets emerging adults approach the new life period with optimism instead of feelings of fear and depression (Ghielen et al., 2017).

Secondly, another study found that strengths are a significant predictor of self-esteem, meaning that strengths are positively related to self-esteem (Martínez-Martí & Ruch, 2017). This result was confirmed in the study of Huber et al. (2017) who again found a positive relationship between strengths use and self-esteem since knowing one's strengths let people experience a feeling of higher self-worth that can protect the mental health of emerging adults after experiencing failure or disappointment.

Thirdly, in a study of Olenik-Shemesh et al. (2018) it was investigated why some emerging adults differ in their perception of stressors and why they cope with them differently. The results indicated that self-esteem supports them in withstanding outside pressures and benefits their well-being. Consequently, the studies of Martínez-Martí and Ruch (2017) and Olenik-Shemesh et al. (2018) highlight the importance of strengths and self-esteem, stating that certain skills, such as resilience, should be reinforced in order to provide individuals with certain skills that they can use to manage the stressors of emerging adulthood and protect their well-being. The emphasis on the use of those skills suggests that there might be a connection between strengths use and self-esteem influencing the mental health in emerging adults that has not been investigated yet. All these findings taken together lead to the proposed hypotheses below.

Study Hypotheses

Based on the aforementioned information, the following research hypotheses were established and formulated into a conceptual model (see Figure 1).

H₁: There is a significant positive relationship between strengths use and mental health.

H₂: There is a significant positive relationship between strengths use and self-esteem.

H₃: There is a significant positive relationship between self-esteem and mental health.

H₄: Self-esteem mediates the relationship between strengths use and mental health.

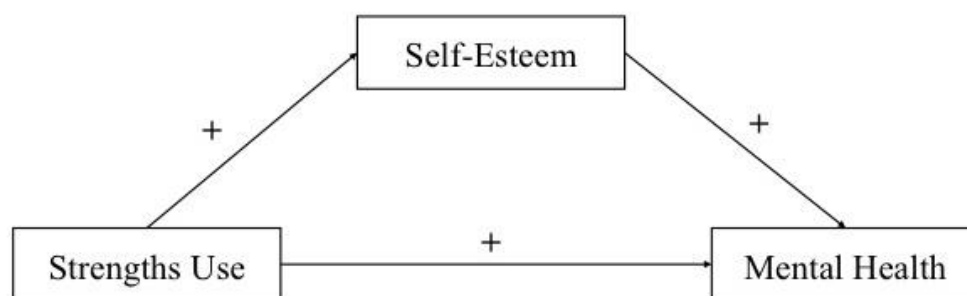


Figure 1. Conceptual model of the expected mediation effect.

Methods

Design

A cross-sectional survey was employed to investigate the linear relationships between strengths use, self-esteem and mental health, as well as the proposed mediation effect. The goal is to identify to what extent the relationship between strengths use and mental health is mediated by self-esteem.

Participants

A total of 161 people participated in the research. To fulfil the inclusion criteria, they were required to be between 18 and 29 years old. Participants who did not finish the questionnaire, or stated to be older or younger than 18-29 years and were not part of the target group, were excluded from the sample. Consequently, 36 participants had to be removed from the sample that, hence, consisted of 125 participants for further analysis. Table 1 displays the general biographical characteristics of the 125 participants.

Table 1

General Biographical Characteristics of the Participants (N=125).

<i>Item</i>	<i>Category</i>	<i>Frequency</i>	<i>Percentage</i>
Gender	Female	85	68
	Male	40	32
Age	Range	18-29	
	Mean	22.96	
	Standard Deviation	2.88	
Nationality	German	95	76
	Dutch	24	19.2
	Other	6	4.8
	Tunesian	1	.8
	Italian	3	2.4
	Spanish	2	1.6
Occupation	Student	86	68.8
	Employed	37	29.6
	Searching for employment	2	1.6

Materials

The participants of this study were asked to fill in a questionnaire which was created using “Qualtrics”. The total questionnaire measured demographic information, strengths use, self-esteem and mental health in 42 items.

Strengths use was measured with the Strengths Use Scale (SUS) that was developed by Govindji & Linley (2007) and consists of 14 items asking about the extent to which people use their strengths. These can be answered using a seven-point Likert scale (1 = “Strongly Disagree” to 7 = “Strongly Agree”) with higher scores indicating a greater extent to which individuals use their strengths. The scores could range from 14 to 98. The mean value in a group of college students that is used to compare to this study was 64.83 with a standard deviation of 14.09 (Govindji & Linley, 2007). An example item is: *“I am regularly able to do what I do best.”*. The items are based on a review of the positive psychology literature and showed very high internal consistency ($\alpha = .97$) and test-retest reliability ($r_{icc} = .85$) as well as good criterion validity (Wood et al., 2011). In the present sample the items showed high internal consistency ($\alpha = .86$).

Self-esteem was measured with the Rosenberg Self-Esteem Scale (RSES) developed by Rosenberg (1979), aiming to measure the self-worth of an individual. It consists of ten items that can be answered on a 4-point Likert scale (1 = “Strongly Agree” to 4 = “Strongly disagree”), with four reversed items. After reverse-scoring the negative worded items, the single item scores can be added, with higher scores indicating a higher level of self-esteem. Scores can range between ten and 40. Again this sample is compared to a group of college students who had a mean value of 20.52 and a standard deviation of 5.22 (Govindji & Linley, 2007). An example of an item is: *“On the whole, I am satisfied with myself.”*. The scale shows excellent internal consistency since it demonstrates a Guttman scale coefficient of reproducibility of .92 (Rosenberg, 1979). It has excellent test-retest reliability over a period of two weeks, revealing correlations of .85 and .88 (Rosenberg, 1979). Lastly, it correlates significantly with other measures of self-esteem, such as the Coopersmith Self-Esteem Inventory (Rosenberg, 1979). In the present sample the items showed high internal consistency ($\alpha = .87$).

Mental Health was measured with the Mental Health Continuum – Short Form (MHC – SF) developed by Keyes (2005). It consists of 14 items that can be answered on a 6-point Likert scale (0 = “Never” to 5 = “Every day”) with higher scores indicating a better mental health. Since the total score is divided by the number of items, scores can range between zero and five. The test measures the positive mental health of an individual during the past month

using the subscales emotional well-being, social well-being, and psychological well-being. The chosen norm group for this study consists of a population with an age range of 18-29 years, who had a mean value of 3.05 and a standard deviation of 0.78, and is therefore suitable to compare to the group of emerging adults (Lamers et al., 2011). An example question is: *“During the past months, how often did you feel happy?”*. The MHC-SF has good psychometric properties across the Dutch population with good reliability (.83) and with substantial evidence for convergent validity between the three constructs (Lamers et al., 2011). In the present sample the items showed high internal consistency ($\alpha = .86$).

Procedure

After the questionnaire has been constructed, the study was approved by the ethical committee of the Behavioural & Management Sciences faculty of the University of Twente (file number: 200393). After receiving ethical approval, data collection took place between the 24th of March and the 7th of April. An electronic link which led the participants to the website Qualtrics was used to distribute the questionnaire. The participants were collected by inviting them to participate via online platforms and messenger apps, such as LinkedIn and WhatsApp and through snowball sampling. When the participants used the link to open the questionnaire, the informed consent was displayed (see Appendix A). They were first welcomed and shortly informed about the topic of the study. Additionally, information about confidentiality and anonymity was presented. They were informed that their participation is voluntary, they could withdraw from the study without any consequences at any time and that their data would be treated anonymously. After this, they were asked to give their informed consent by selecting a button next to the statement “I consent, begin the study”. After the informed consent was given, participants had to answer questions regarding their biographical data, for instance age, gender and nationality. Afterwards, the actual survey began. If they forgot one answer, Qualtrics automatically reminded them to give an answer and the participants could not continue until an answer was given to every question. Before the participants completely finished and closed the questionnaire, they received a short “Thank you for your participation in this study” message. Most participants needed approximately five minutes to fill out the survey.

Data Analysis

In order to assess the collected data, various quantitative analyses were performed using IBM SPSS Statistics 24. The first step was to recode the reversed items of the Rosenberg Self-Esteem Scale, in order to avoid confusion in the data and calculate accurate

results. This applied to the negatively worded items 2, 5, 6, 8 and 9. As a consequence, it was possible to calculate the total-score based on the summation of answers for the different scales (Strengths Use Scale, Rosenberg Self-Esteem Scale, MHC-SF). Next, descriptive analyses were performed to determine means and standard deviations. Skewness and kurtosis were computed to determine the normality of the data, whereby +1 and -1 were set as cut off scores, since values close to zero indicate a normal distribution (Field, 2013). After that, Pearson correlation coefficients were calculated to assess the correlations between the three variables strengths use, self-esteem and mental health. If the data were not distributed normally, Spearman's Rho would have been used. The statistical significance was set at $p < 0.05$. The effect size cut-off scores were $r \pm .10$ for a weak correlation, $r \pm .30$ for a moderate correlation, $r \pm .50$ for a strong correlation (Field, 2013).

Afterwards, stepwise multiple regression analyses were computed in order to test for the conditions that need to be met to confirm mediation. These conditions are: (1) strengths use relates to mental health, (2) strengths use is related to self-esteem, (3) self-esteem relates to mental health, and (4) the direct effect between strengths use and mental health decreases during the mediation analysis.

Lastly, the PROCESS macro for SPSS (Hayes, 2012) was used for linear regression models to determine whether self-esteem was functioning as a mediator in the relationship between strengths use and mental health. PROCESS macro tests mediation by means of bootstrap confidence intervals. Bootstrapping sample size was set to 5000 and a 95%-confidence interval was used. A mediation was assumed to be statistical significant when the confidence interval does not include zero (Hayes, 2012).

Results

In the following results section, results of the analysis that answer the study hypotheses are presented. First, general descriptives are displayed. Second, the correlations of the three constructs strengths use, self-esteem and mental health are illustrated, followed by a regression analysis between these variables. Lastly, the results of the mediation analysis are presented.

Descriptive Statistics and Correlations

In Table 2 means, standard deviations and correlations for each scale are displayed. After the data was screened and participants were excluded, further analyses were performed. Participants had an average level of strengths use ($M = 71.52$, $SD = 9.51$), an average level of mental health ($M = 3.23$, $SD = .73$), and an above average level of self-esteem ($M = 28.94$, $SD = 4.80$) compared to the chosen norms displayed in 'Materials'. Since skewness and kurtosis were between -1 and 1 for all scales, the data can be interpreted as normally distributed. A Pearson correlation was conducted in order to assess correlations among the constructs strengths use, mental health, and self-esteem (see Table 2). The correlation between strengths use and mental health was found to be moderate and significantly positive, $r = .48$, $p \leq .001$. Participants who scored high on strengths use scored also high on mental health and vice versa. In addition, a moderate and significantly positive correlation was found between strengths use and self-esteem, $r = .42$, $p \leq .001$. Therefore, participants who experience high levels of strengths use tend to have high levels of self-esteem. Lastly, a moderate and significantly positive correlation was found between self-esteem and mental health, $r = .55$, $p \leq .001$. Consequently, people with high scores on self-esteem tend to experience a higher level of mental health.

Table 2

Means, Standard Deviations, and Correlations for Each Scale (N = 125).

Scales	<i>M</i>	<i>SD</i>	<i>SUS</i>	<i>RSES</i>	<i>MHC</i>
<i>SUS</i>	71.52	9.51	1	-	-
<i>RSES</i>	28.94	4.80	.42**	1	-
<i>MHC</i>	3.23	.73	.48**	.55**	1

Correlation is significant at the .05 level (2-tailed). * $p < .05$ ** $p < .01$

Regression and Mediation Analysis

In order to test whether self-esteem mediates the relationship between strengths use and mental health in emerging adults, the study hypotheses had to be tested. Table 3 and 4 (see Appendix F & G) display the results of the performed regression analyses between the variables, once with mental health and once with self-esteem as a dependent variable. First, the relationship between strengths use and mental health was investigated. The analysis revealed that strengths use significantly predicted mental health with a weak positive relationship found, $b = .04$, $t(123) = 6.01$, $p < .01$. Strengths use explained a significant proportion of variance in the scores of mental health, $R^2 = 0.23$, $F = 36.10$, $p < .001$. This demonstrated that 23% of a person's mental health can be explained by one's strengths use (see Appendix F).

Second, to test whether strengths use predicts self-esteem, multiple regression analyses were conducted with self-esteem as a dependent variable. Strengths use significantly predicted the level of self-esteem with a weak positive relationship found, $b = .21$, $t(123) = 5.15$, $p < .01$. Strengths use explained a significant proportion of variance in the scores of self-esteem, $R^2 = 0.18$, $F = 26.53$, $p < .001$. This showed that 18% of a person's self-esteem can be explained by one's strengths use (see Appendix G).

Third, the relationship between self-esteem and mental health was tested. Self-esteem significantly predicted mental health with a weak positive relationship, $b = .08$, $t(123) = 7.22$, $p < .01$. Self-esteem accounted for 30% of the variance in the scores of mental health, $R^2 = 0.30$, $F = 52.10$, $p < .001$ (see Appendix F).

In order to investigate the proposed mediation, PROCESS macro was used. The bootstrapping method was used generating a confidence interval which is revealing direct effect of strengths use on mental health, $b = .02$, $SE = .01$, 95% $CI = [.01; .04]$ and an indirect effect of self-esteem on mental health, $b = .01$, $SE = .01$, 95% $CI = [.01; .02]$ (see Figure 2). Since the confidence intervals do not include zero, the mediation effect can be confirmed.

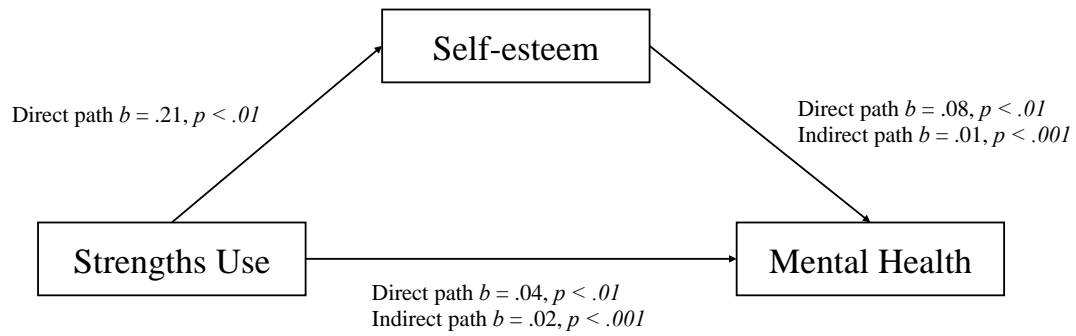


Figure 2. Mediation model displaying direct and indirect effect between variables.

In conclusion, the results can confirm all hypotheses. Since significant positive relationships between all variables were found, hypotheses 1 to 3 can be confirmed. Moreover, the hypothesis that self-esteem mediates the relationship between strengths use and mental health (H_4) can be confirmed. First, this is because the effect between strengths use and mental health decreases, which is a criterion for mediation. Second, the confidence interval does not include zero, which demonstrates significance of the mediation.

Discussion

In order to get a deeper understanding of the role of strengths use on the mental health of emerging adults, the aim of this study was to investigate whether self-esteem mediates the relationship between strengths use and mental health. Therefore, this study can provide a better understanding of the factors that play a role in the mental health of emerging adults.

First of all, the study demonstrates that using one's strengths predicts the mental health of emerging adults. The findings of the present study are in line with the study of Proctor et al. (2011) who confirmed the positive relationship between strengths use and mental health for undergraduate students, a sub-group of emerging adults. The study of Ghielen et al. (2017) might provide an explanation for the relationship between strengths use and mental health. They were able to link strengths use to motivation and confidence, important variables for the mental health of emerging adults who face study- and work-related stressors, for instance a high competition on the labour market. Since emerging adults are likely to experience several setbacks during their early career, such as being rejected in job interviews, motivation and confidence can have a positive influence on their mental health and might protect them from negative thoughts (da Motta Veiga et al., 2016). Often this results in a higher performance, as in job interviews or at university, that in turn leads to higher success and thereby increases their mental health (Nicholson & Putwain, 2013).

However, the weak relationship between strengths use and mental health indicates that several other factors are involved in explaining the mental health of emerging adults. While motivation and confidence might improve their performance, for instance during job interviews, or their perception of the challenges on the labour market, Balgiu (2017) found that the ability to cope with stressors is important for their mental health as well. Factors that were identified to contribute to emerging adults' resilience are self-trust and emotional balance, as the use of one's strengths might provide the individual with trust that one is competent enough to face difficult situations. Consequently, the results of this study in combination with previous research indicate that a higher motivation and confidence, as well as self-trust and emotional balance, due to the use of strengths, might protect emerging adults to some extent from the negative effects of stressors on their mental health or might even rule out the negative effect of certain factors that have a negative influence on mental health.

Moreover, this research indicates that self-esteem increases people's mental health to some extent. Again, this was expected based on previous studies of Balgiu (2017) and Olenik-Shemesh et al. (2018) who found a correlation between self-esteem and resilience, as well as between self-esteem and hopefulness and energy, which are known to positively influence mental health. Therefore, energy and hopefulness can, once again, be seen as additional factors that contribute to the explanation of the weak relationship between the self-esteem and mental health. The results imply that emerging adults who have a higher level of self-esteem are less likely to be strongly affected by life stressors because they have an energetic and hopeful attitude that positively influences their mental health, for example because they approach a difficult exam with an energetic and positive attitude. Furthermore, a higher level of self-esteem protects emerging adults from additional stressors that are known to contribute to a low well-being, for instance social comparison (Olenik-Shemesh et al., 2018). Since emerging adulthood is strongly influenced by identity exploration and imprinting changes, one interpretation of the present results is that self-esteem is a factor that determines how emerging adults perceive this life period. According to the results, a higher and stable level of self-esteem would let them perceive the changes as a chance for exploration, while lower or unstable levels of self-esteem would lead to a threatening perception of those changes, for instance when people have to move for their job. This is supported by a study of Reitz et al. (2019) who state that self-esteem often decreases during life transitions, however, if the level of self-esteem stays high it might support individuals to face these traditional phases without having a negative impact on their mental health.

Since high levels of self-esteem seem to have a beneficial effect on the mental health of emerging adults, this study also aimed to investigate the relationship between strengths use and self-esteem because strengths possession has already been found to increase self-esteem in emerging adults (Martínez-Martí & Ruch, 2017). The present study could confirm this finding for strengths use since it has been found that people who actively use their strengths on a regular basis experience higher levels of self-esteem. The present results are consistent with the results of Huber et al. (2017) who found that strengths use positively influences self-esteem and positive affect in university students. Consequently, the results of the present study can confirm their findings for the target group of emerging adults and demonstrate the importance of strengths use on self-esteem. One interpretation of this finding is that using one's strengths is related to one's level of success, for example in education or at work, and thereby increases self-esteem. An example of this might be when emerging adults use their

leadership skills to successfully complete a project with their team at work and experience appreciation of their results.

In case of emerging adults this can be a crucial factor for their identity formation since achievements, especially in the academic context, have been found to contribute to the formation of one's identity (Kaur & Singh, 2019). The awareness and use of strengths can lead to the feeling of being a person of worth with certain skills or positive traits that can help them to achieve their goals, instead of constantly doubting oneself. The findings of Huber et al. (2017) that strengths use relates to positive affect as well, supports this and might provide an explanation why some emerging adults interact with difficult life challenges in a positive way while others struggle with them and suffer from a decreased mental health. Therefore, it is also important to foster the use of strengths as early as possible (Thomas & Jose, 2018).

Furthermore, it has been found that the variables are not only related to each other separately but are all intertwined. Hence, emerging adults who use their strengths are more likely to experience higher levels of self-esteem and, consequently, an increased mental health. The present results can also be linked to the findings of Duan (2016) and Olenik-Shemesh et al. (2018) who suggested that using one's strengths is an important factor in the transition to adulthood because it serves as a buffer for stressors and helps individuals to withstand outside pressures, for instance social comparison. Therefore, the idea that might explain the present results is that the active and regular use of one's strengths let people experience awareness of their skills, self-confidence in their abilities and, consequently, a higher level of self-esteem that leads in turn to an increased mental health. Higher levels of self-esteem make them less prone to feelings of self-doubt and instability that often characterize emerging adulthood (Peer & McAuslan, 2016).

Lastly, this study contributes to the findings of Huber et al. (2017) who found a positive influence of strengths use on self-esteem. They raised the question whether strengths use and self-esteem might influence mental health and suspected a positive relationship between the constructs in emerging adults. Additionally, they raised the question whether it might be beneficial to include the implementation of strengths use in job-design guidelines to support emerging adults during this difficult life period. The results of the present study suggest that this might indeed positively influence their mental health. Hence, the results of this research provide supporting evidence for strengths use as a variable that protects the mental health of emerging adults who face many study- and work-related stressors.

Limitations, Strengths and Practical Implications for Further Research

Although the present study shows evidence for the examined hypothesis, it is appropriate to recognize several potential limitations. First, one potential shortcoming is the period of time in which the data was collected. Since the measures to contain the fast spread of the corona virus started approximately at the same time when the survey was published, many people experienced a lot of uncertainties and anxiety that were suspected to have an impact on their mental health and, therefore, could influence the results. While some emerging adults might have, next to their initial fear of the virus, suffered even more from work- or study-related stressors that were caused by Covid-19, such as the fear of losing their job, others might have experienced fewer factors that usually impact their mental health, for instance no conflicts with colleagues due to working from home. However, when calculating the mean of the MHC – SF in the present study, it became clear that it almost matches the mean of the norm group of Dutch people between 18 and 29 where this sample was compared to (Lamers et al., 2011). Moreover, the present sample mean is equivalent to the mean of a sample from a study performed by the researcher in 2019, where the relationship between perceived stress and mental health, with the moderating role of self-compassion in young professionals has been investigated. On the one hand, this finding might easily lead to the conclusion that the results of this study, or the sample of emerging adults, were not as much influenced by Covid-19 as suspected. On the other hand, it demonstrates that the reason for their mental health level is still unknown. There are two implications that arise from the findings. First, it is important to ensure that emerging adults focus on the struggles that characterize emerging adulthood while taking the survey. One solution might be to present them with a short case about an emerging adult and the struggles he or she experiences in this life period. This way, the participants would have been thinking more about the stressors that are typical during emerging adulthood. Second, one way to measure the impact of events such as Covid-19 would be to include questions about their perception of, in this case, the virus and how it influenced their studies or work, or a question to list everything that they perceived as stressful in the past weeks. This is important for interpreting the results because it enables explaining their mental health score, for instance by telling that some people experienced more stressors due to the fear of losing one's job, while others experienced fewer stressors due to the avoidance of personal conflicts with colleagues during home-office, and this caused a mental health score that is still average.

Second, participants might not be aware what their strengths are. That might have influenced the results since it is difficult to determine whether an individuals' level of

strengths use is displayed accurately by their score when the participants do not have a clear understanding of the concept. Even though a short explanation about the definition and an example of strengths was provided before the survey started (see Appendix A), some participants mentioned in a comment via E-Mail that they were insecure about the exact delineation of the concept. Consequently, some participants were rather surprised when they heard that also kindness or humour counts as a personal strength and is not considered as 'normal' or given. One way to improve this shortcoming in another study would be to provide a more extended explanation of strengths, or let participants take a short test before the actual start of the survey in order to determine their personal strengths. This could help them to imagine where they use their strengths, for instance at work or in their social environment, and create more accurate results.

Third, the research was conducted on a cross-sectional basis. A cross-sectional study design does not allow to make any statements about causality since it does not determine cause and effect. Moreover, it is only a snapshot of their levels of strengths use, self-esteem and mental health. However, most stressors that emerging adults typically experience last only temporarily or vary in strength, for instance job uncertainties or conflicts with colleagues. In order to determine causality, one possibility is to conduct an experiment where variables can be changed or manipulated separately. Moreover, it is advised to measure the variables over a longer time span in a longitudinal study since this might provide more meaningful data about the target group. Another way to improve this issue would be to include items that ask whether participants currently experience the named stressors in their life and analyse the data in this separate group then. Nevertheless, the information that is received from this research is still useful because it demonstrates that using one's strengths lets emerging adults experience higher levels of self-esteem and mental health.

Another implication for further research arises from the results. The interpretation of the present results might assume that strengths use influences the level of success for emerging adults, for instance in job interviews. The success could in turn be related to their level of self-esteem and their mental health. Therefore, it would be interesting to investigate whether emerging adults who score high on strengths use are actually more successful than their peers, or perceive themselves as more successful, or if strengths use does not influence success in emerging adults. This could be measured with interviews or the use of questionnaires, such as the Satisfaction with Life Scale or the Success and Happiness Attributes Questionnaire, which determine for example satisfaction with life, happiness, academic achievement and relationship success.

Additionally, a supplementary model, next to the present mediation model, treating strengths use as a moderator in the negative relationship between (work- or study-related) stress and mental health in emerging adults can be proposed for further investigation (see Figure 3). Strengths use might function as a buffer in the relationship between stress and mental health, whereby work related stress is especially relevant in the context of emerging adulthood (Newcomb-Anjo et al., 2016). The use of one's strengths could protect emerging adults from the impact of high levels of stress on their mental health because they know about their personal skills and abilities. Therefore, emerging adults feel like they are able to cope with stressors. It is suspected that strengths use greatly influences the relationship between stress and mental health, offering a possibility for emerging adults to cope with the various stressors they experience. It would be beneficial to investigate this model since it would contribute to the few studies in the field of positive stress regulation in emerging adults. Consequently, the investigation of this model might yield interesting results.

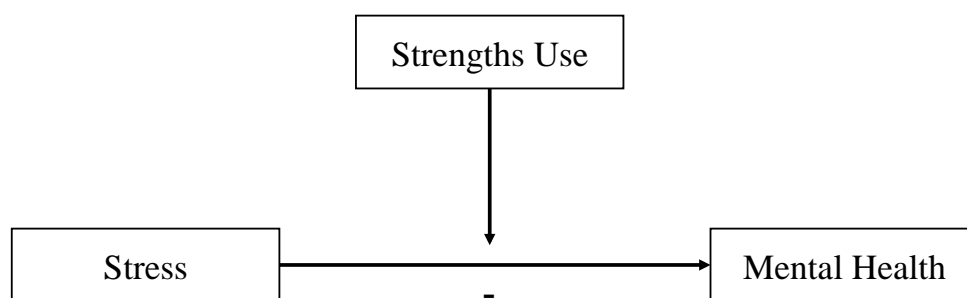


Figure 3. Proposed model of investigating strengths use as a moderator in the relationship between stress and mental health.

Even though the study has some potential limitations, it also possesses important strengths. A strength of the study is that it focuses on the use, instead of merely on the possession, of strengths. Previous research neglected the use of strengths (Wood et al., 2011). However, the use of strengths has been suspected to lead to energizing experiences and an increased well-being (Peterson & Seligman, 2004). Therefore, since the research on strengths use is still in its infancy, the results of this study should encourage further research on strengths use. Especially the conduction of qualitative research could be beneficial in order to get deeper insights into the mechanisms of strengths use and how it is perceived by emerging adults. Furthermore, the weak relationships between the constructs suggest that it might be valuable to consider other third variables that play a role in the relationship between strengths

use and mental health as well. For instance, resilience is an interesting construct to investigate because it has been linked to the mental health of emerging adults (Leipold et al., 2019). In addition, it would be interesting to investigate the same study in a different target group. The results could give an indication whether the use of strengths is especially valuable for emerging adults who are in a phase full of transitions and changes, or whether other groups might benefit from using their strengths as well. For instance, training high school students to determine and make use of their strengths might help them to form their identity, make accurate study choices that fit their personality and lead to a higher job satisfaction, perceive themselves as persons of worth, and finally, make a smoother transition to adulthood. Based on the results it could be decided to target the use of strengths in an intervention that helps individuals to get aware of their strengths and then supports them in finding opportunities to use them in their everyday lives, for instance at work.

Moreover, it is the first study that investigates the use of strengths and its implications on mental health in emerging adults. Therefore, it is one of the first studies that investigates positive stress regulation in emerging adults. Consequently, it provides the starting point for further research and the theoretical basis for the strengths-based intervention mentioned above, which might help adolescents or emerging adults to increase their self-esteem and mental health.

Conclusion

In conclusion, this study is the first that investigates the relationship between the use, and not merely possession or awareness, of strengths and mental health under consideration of a mediator. The data confirmed the suspected mediation effect of self-esteem on the relationship between strengths use and mental health in emerging adults. Therefore, strengths use and the mediator self-esteem could be identified as protective factors of emerging adults' mental health. Despite the limitations, the present study enhanced the understanding of the relationship between strengths use and mental health, revealed new starting points for further research and might build the basis for a strengths-based intervention since it helped to identify strengths use as an effective construct in protecting the mental health of emerging adults. Consequently, strengths use can be treated as a supportive factor for emerging adults to foster positive stress regulation when making difficult decisions and transitions, for instance the choice of one's study program or the transition to the labour market. Fostering strengths use

may help emerging adults to face the challenges of the 21st century and protect their mental health.

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Appendices

Appendix A

Informed consent

Welcome to this research study!

This study aims to investigate the use of strengths in emerging adults. Personal strengths are the characteristics of individuals that support them to perform well or at their individual best, for instance creativity or discipline. You will be presented with information relevant to the use of strengths and asked to answer some questions about it. Please be assured that your response will be kept completely confidential.

The study should take 5 minutes to complete. Please note that:

- your participation in this research is voluntary
- you have the right to withdraw at any point during this study, for any reason, and without any explanation
- your participation is completely anonymous

If you would like to contact the Principal investigator in the study to discuss this research, please e-mail r.berger@student.utwente.nl


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

By clicking the button below, you acknowledge that your participation in this study is voluntary and that you are aware that you may choose to terminate your participation in the study at any time and for any reason.

☐ I consent, begin this study

Appendix B

Biographical data



UNIVERSITY OF TWENTE

Biographical Questions

Gender

☐ Male

☐ Female

☐ Other

Age

Nationality

☐ Dutch

☐ German

☐ Other

Occupational Situation

☐ Student

☐ Employed

☐ Searching for Employment

Appendix C

Strengths Use Scale

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

Using my strengths comes naturally to me.

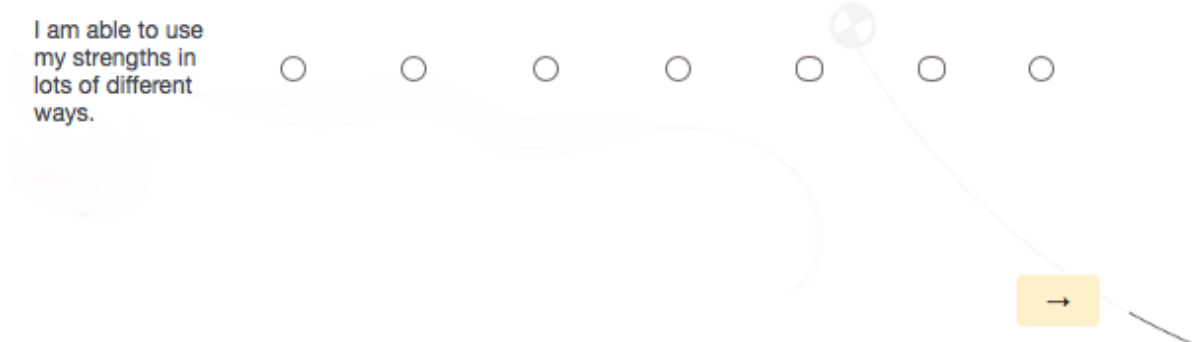
I find it easy to use my strengths in the things I do.

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

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

Using my strengths is something I am familiar with.

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



Appendix D

Rosenberg Self-esteem Scale



Click to write the question text

	Strongly disagree	Disagree	Agree	Strongly agree
On the whole, I am satisfied with myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
At times I think, I am not good at all.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel I have a number of good qualities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am able to do things as well as most other people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel I do not have much to be proud of.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I certainly feel useless at times.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that I am a person of worth.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I wish I could have more respect of myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
All in all, I am inclined to think that I am a failure.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I take a positive attitude toward myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

→

Appendix E

MHC – SF



Your answers have been recorded. Thank you for your participation!



Appendix F

Table 3

Regression Analyses with Mental Health as a Dependent Variable (N = 125).

Model	<i>Unstandardized Coefficients</i>		<i>Standardized Coefficients</i>	<i>t</i>	<i>Sig.</i>	<i>F</i>	<i>R</i>	<i>R</i> ²
	<i>B</i>	<i>SE</i>	<i>Beta</i>					
1 (constant)	.62	.44		1.41	.16	36.10	.48	.23
SUS	.04	.01	.48	6.01	.01			
2 (constant)	.83	.34		2.48	.02	52.10	.55	.30
RSES	.08	.01	.55	7.22	.01			

a. Dependent Variable: MHC

Appendix G

Table 4

Regression Analyses with Self-Esteem as a Dependent Variable.

Model	<i>Unstandardized Coefficients</i>		<i>Standardized Coefficients</i>	<i>t</i>	<i>Sig.</i>	<i>F</i>	<i>R</i>	<i>R</i> ²
	<i>B</i>	<i>SE</i>	<i>Beta</i>					
1 (constant)	13.72	2.98		4.60	.01	26.53	.42	.18
SUS	.21	.04	.42	5.15	.01			

a. Dependent Variable: Self-Esteem