The Mediation Effect of Character Strengths of the Heart on the Relationship between Attachment Style and Subjective Well-Being in Students

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Abstract

Background: Research has indicated that the relationship between attachment style and life satisfaction is mediated by character strengths. Currently, it is unknown whether character strengths also play a mediating role in the relationship between attachment style and positive and negative affect. This is important to understand as subjective well-being (SWB), a concept often used in psychological research, consists of life satisfaction, positive affect, and negative affect. Aim: This study investigated the mediation effect of character strengths of the heart (CSH) on the relationship between the two dimensions of attachment style (anxious and avoidant) and the three components of SWB (life satisfaction, positive affect, and negative affect). The two attachment style dimensions and the three components of SWB were tested separately leading to six different mediation analyses. Method: Through snowball and convenience sampling, 93 predominantly German and Dutch university students aged between 18 and 31 years were recruited and participated in this online, cross-sectional study. The 'Values In Action 120', 'Satisfaction With Life Scale', 'Positive and Negative Affect Schedule', and 'Experiences In Close Relationships Short Form' were used to measure CSH, life satisfaction, positive and negative affect, and avoidant and anxious attachment style, respectively. Results: Ordinary least squares regressions, applied through model 4 of the PROCESS macro for R, showed no mediation effect for any of the six analyses. Conclusion: In contrast to previous literature, CSH did not mediate the relationship between attachment style and SWB. This seems most likely due to the non-existent relationship between attachment style and CSH and the weak relationship between attachment style and SWB. Future research could investigate under which conditions the relationship between attachment style and character strengths and attachment style and SWB exists. In addition, it could investigate the relationship among these variables using individual character strengths instead of a composite measure.

Keywords: Character Strengths, Attachment Style, Subjective Well-Being, Affect, Life Satisfaction

A high level of SWB compared to a low level is associated with many positive physical (e.g., lower mortality risk) and mental (e.g., lower risks for depression) health outcomes (Lagnado et al., 2017; Martín-María et al., 2017; Oishi et al., 2021). One variable that is related to SWB is attachment style. Those with a secure attachment style as compared to those with an insecure attachment style often have higher levels of SWB (Çikrikçi & Gençdoğan, 2017; Deniz & Işik, 2010; Dugan et al., 2022; Temiz & Comert, 2018). The underlying mechanisms of this association, however, are less well understood. Given that global estimates suggest that almost half (43%) of the non-clinical and more than half (67%) of the clinical population have an insecure attachment style (Bakermans-Kranenburg & van IJzendoorn, 2009) it is of importance to better understand these underlying mechanisms. A candidate with much potential for explaining part of this relationship are character strengths. There is reason to suspect that the relationship between attachment styles and SWB is mediated by character strengths. Before detailing these reasons, attachment styles, character strengths, and SWB will first be defined and elaborated upon.

Attachment Style

Attachment style refers to a person's expectations of relationships and their patterns of emotions and behaviours in those relationships (Cassidy & Shaver, 2018; Mikulincer et al., 2003). Attachment styles are best conceptualized through two dimensions, attachment anxiety and attachment avoidance (Mikulincer et al., 2003). Attachment anxiety determines how much a person fears rejection or abandonment, needs approval of others, and is in distress when an attachment figure is not available (Wei et al., 2007). Attachment avoidance determines how much a person fears intimacy and dependency, needs self-reliance, and is reluctant to self-disclose (Wei et al., 2007). A high score on either or both of these dimensions indicates an insecure attachment style, while a low score on both dimensions indicates a secure attachment style (Wei et al., 2007).

Character Strength

Character strengths are defined as personality traits that express themselves through cognition, emotions, and behaviour. In other words, they are capacities for thinking, feeling, and

behaving (Niemiec & Pearce, 2021). For example, a person might have a great or small capacity to think creatively and fairly, to feel love and hope, or to behave courageously and zestfully (Niemiec, 2017). This means that character strengths are continuous personality traits rather than categorical ones; a person might have more er less of a certain character strength rather than 'having' or 'not having' a certain character strength (Niemiec & Pearce, 2021). Through cross-cultural and historical research, 24 character strengths (e.g., Love, Curiosity, Gratitude) have been identified (Gillham et al., 2011).

Subjective Well-Being

SWB is a measure of a person's overall state expressed in a cognitive and two emotional components (Eid & Larsen, 2008). The cognitive component refers to how satisfied people are with their life based on a cognitive evaluation of their life while positive and negative affect refers to how many pleasant and unpleasant feelings a person experiences (Eid & Larsen, 2008). While related, these three components are distinct constructs (Oishi et al., 2021). For example, how much positive affect one experiences says nothing about how much negative affect one experiences or how one evaluates their life satisfaction (Eid & Larsen, 2008). To fully understand subjective well-being, therefore, it is important to measure all three components (Eid & Larsen, 2008).

The Relationship Between Attachment Styles, Character Strengths, and Subjective Well-being

There is empirical evidence for associations between all three variables and there are also theoretical links to explain these associations. First, as mentioned before, those with a secure attachment style often have higher levels of SWB compared to those with an insecure attachment style (Çikrikçi & Gençdoğan, 2017; Deniz & Işik, 2010; Dugan et al., 2022; Temiz & Comert, 2018). Being securely attached means that one is comfortable getting close to others and that one experiences less stress when others (temporarily) move away (Cassidy & Shaver, 2018). This does not only benefit one's momentary experiences by experiencing less negative affect but also has lasting effects on the amount and quality of relationships people have (Wong et al., 2019). Relationships and relationship quality have in turn been identified as a predictor of SWB (Eid &

Larsen, 2008). In addition, a secure attachment provides more opportunities in childhood to learn self-regulation skills from caregivers (Cooke et al., 2019; Pallini et al., 2018). Having good self-regulation skills compared to less well-developed self-regulation skills is also related to higher levels of SWB (Eid & Larsen, 2008; Moradi Siahafshadi et al., 2018).

While the evidence is not as abundant as that of the relationship between attachment style and SWB, there is emerging evidence suggesting that attachment styles are also associated with character strengths (Kerns et al., 2022; Liu & Wang, 2021). Those with a secure attachment style compared to an insecure attachment style score higher on individual character strengths or on a global measure of character strengths (Kerns et al., 2022; Liu & Wang, 2021). For example, when looking at character strengths individually, secure attached individuals score higher on the character strength fairness than those with insecure attachment (Kerns et al., 2022). It seems that secure attachment provides an internal and external environment that provides more opportunities for a person to develop character strengths compared to insecure attachment (Liu & Wang, 2021). For example, secure attachment is thought to help the child internalize the values of their parents (Kochanska, 2019; Waters 1990) and hence may aid the development of character strengths such as Kindness and Fairness. In addition, securely attached children are believed to have more opportunities to learn skills such as emotional regulation from their caregivers which are related to character strengths such as self-regulation (Cooke et al., 2019; Pallini et al., 2018). Lastly, a secure attachment style is related to relationship quality and positive social interactions (Wong et al., 2019), which in turn aids the development of interpersonal character strengths such as social intelligence (McKown et al., 2009).

The last association to address and explain is the relationship between character strengths and SWB. There is good evidence that those who score higher on individual character strengths, such as Love or on a global composite measure of all 24 character strengths, have higher levels of SWB (Bruna et al., 2019; Buschor et al., 2013; Gillham et al., 2011; Hausler et al., 2017). There are various ways through which character strengths may be associated with SWB. It may be that other-

directed character strengths, such as Kindness, increase social connection and positive social interaction which in turn might increase SWB levels (Gillham et al., 2011). Transcendence character strengths, such as Gratitude, might increase people's SWB by giving their life more purpose (Eckstein, 2000 as cited in Gillham, 2011). Lastly, temperance character strengths, such as Self-Regulation, may help people to either avoid negative experiences such as addiction or help them persist and thrive in the face of challenges (Gillham et al. 2011). In sum, for all three variables there seems to be both empirical and theoretical evidence for the relationships with to each other.

Only one study, however, has investigated how all three variables relate to each other. Lavy and Littman-Ovadia (2011) reported that the character strengths Curiosity, Perspective, and Hope mediate the relationship between anxious attachment and life satisfaction in anxious attached adolescents. In other words, if an anxious attached individual has a low level of SWB this is only in part because of their anxious attachment directly. The other part is that anxious attachment is associated with lower levels of Curiosity, Perspective, and Hope which in turn are associated with lower levels of life satisfaction. For avoidant attached adolescents, the character strengths Love, Gratitude, Hope, and Zest fully mediate the relationship between avoidant attachment and life satisfaction (Lavy & Littman-Ovadia, 2011). In other words, if an avoidant attachment is related to lower character strengths of Love, Gratitude, Hope, and Zest which in turn is associated with lower levels of life satisfaction.

As mentioned before, however, life satisfaction is only one of the three components of SWB. While these components are related, they are distinct constructs (Oishi et al., 2021). To fully understand a person's SWB, therefore, it is important to measure all three SWB components (Eid & Larsen, 2008). Furthermore, it is known that attachment styles are related to positive and negative affect, in addition to life satisfaction (Cassidy & Shaver, 2018). While the findings of Lavy and Littman-Ovadia (2011) are valuable, they are thus also incomplete with respect to SWB. Since SWB is

associated with many positive outcomes, it is of importance to know if the findings of Lavy and Littman-Ovadia (2011) extend to all components of SWB.

The present study included positive and negative affect in addition to life satisfaction to its measure of SWB. Furthermore, this study uses a composite measure of the character strengths instead of investigating the mediation role of the 24 character strengths separately. According to Peterson (2006), character strengths can either be a character strength of the heart (CSH) or a character strength of the head. CSH are defined as character strengths related to expressing emotion and are believed to connect people while character strengths of the head are more related to performance (Boyle, 2019). Since emotions and other people are central to attachment styles, it is to be expected that CSH are stronger related to attachment than character strengths of the head. There also seem empirical evidence for this. For example, five of the six character strengths that had significant mediation relationships between attachment style and life satisfaction in the study of Lavy and Littman-Ovadia (2011) are CSH. Kerns (2022) found that intellectual character strengths (i.e., character strengths of the head) were not linked to attachment styles. If character strengths play a mediation role CSH seem to a greater potential for this than character strengths of the head. Lastly, as gender is related to attachment style (Li & Fung, 2014) and age to attachment styles (van IJzendoorn & Bakermans-Kranenburg, 2010) and character strengths (Brown, 2020; Cheng et al., 2022, p. 2019; Heintz et al., 2019; Heintz & Ruch, 2022, p. 20; Ruch et al., 2014), they are controlled for in each analysis.

The present study investigates if CSH is a mediating variable in the relationship between attachment style and SWB. The two dimensions of attachment style and the three components of SWB result in six hypotheses. Because a composite measure is used in this study there are no differences expected in the mediation role of CSH in the relationship between the different attachment dimensions and SWB components even though the mediation role of individual character strengths might be different for the different types of attachment dimension (Lavy & Littman-Ovadia, 2011) or different components of SWB. The six hypotheses are: (1) CSH partially

mediate the relationship between avoidant attachment and life satisfaction, (2) CSH partially mediate the relationship between anxious attachment and life satisfaction, (3) CSH partially mediate the relationship between avoidant attachment and positive affect, (4) CSH partially mediate the relationship between anxious attachment and positive affect, (5) CSH partially mediate the relationship between avoidant attachment and negative affect, (6) CSH partially mediate the relationship between anxious attachment and negative affect.

To specify, the relationship between both dimensions of attachment and both life satisfaction and positive affect is expected to be an inverse relationship. This inverse relationship is expected to be partially mediated by CSH. For example, the relationship between a high level of avoidant attachment and a low level of life satisfaction is expected to be partially mediated by a low score on CSH. The relationship between both dimensions of attachment and negative affect is expected to be a positive relationship. This positive relationship is expected to be partially mediated by CSH. For example, the relationship between a high level of avoidant attachment and a high level of negative affect is expected to be partially mediated by a low score on CSH.

Methods

Design

Ethical approval for this study was obtained (requestion nr. 221217) from the Ethics

Committee of the Faculty of Behavioural, Management and Social Sciences of the University of

Twente before starting data collection and participant recruitment. This study was part of a larger

cross-sectional research project about character strengths. For the present study, the relevant

variables included CSH, life satisfaction, positive and negative affect, and avoidant and anxious

attachment. Data were collected from the 21st until the 28th of November 2022 using a Qualtrics

(https://www.qualtrics.com) online survey.

Participants

Participants were students of the University of Twente between 18 and 31 years of age (M = 21.5, SD = 2.5). Most were from German (65%) and Dutch (17%) nationality with 67% identifying as

female. Participants were approached through snowball and convenience sampling. The majority of the participants accessed the survey through the 'SONA' Test Subject Pool System of the University of Twente. In total, 93 participants gave their informed consent and completed the survey. However, one participant did not identify as either male or female and was excluded from the data as gender was used as a covariate in the mediation analyses. The participants did not get any monetary payment, but those that participated through the SONA program were provided with SONA credits necessary for their Bachelor's degree.

Materials and Measures

The questionnaire (Appendix A) included demographic questions (gender, age, and nationality), as well as questions to measure 1) CSH, 2) life satisfaction, 3) positive and negative affect, and 4) anxious and avoidant attachment style.

The Values In Action 120

The Values In Action 120 is a self-report questionnaire and was used to measure participants' CSH. The original scale include 120 statements that measure the 24 character strengths. Using the heart-head character strengths classification of Peterson (2006) the 13 CSH and their corresponding 65 statements (e.g., "I really enjoy doing small favors for friends.") have been extracted from the survey. The participants are asked to describe what they are like by responding to each statement using a 5-point Likert scale with answers ranging from "Very Much Unlike Me" to "Very Much Like Me". Cronbach's alpha in the present study was .87 for the CSH subscale of the VIA-120 which is similar to other studies (Littman-Ovadia, 2015).

The Satisfaction With Life Scale

The Satisfaction With Life Scale (SWLS) was used to capture participants' satisfaction with life. This scale is a self-report questionnaire that consists of five statements (e.g., "In most ways my life is close to my ideal.") that participants respond to using a 7-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree". Cronbach's alpha in the present study was .97 which is higher than in other studies (e.g., see Pavot & Diener, 2008, 2009; Steger et al., 2006).

The Positive And Negative Affect Schedule

The Positive And Negative Affect Schedule is a self-report questionnaire that was used to capture participants' positive and negative affect during the past week. This scale consists of 20 one-word items (e.g., "Interested", "Guilty", "Scared") from which 10 items measure positive affect and 10 items measure negative affect. The participants respond to each item using a 5-point Likert scale ranging from "Very slightly or not at all" to "Extremely", indicating how much they have felt this way during the past week. In the present study Cronbach's alpha was .85 for the positive affect subscale and .80 for the negative affect subscale which is similar to other studies (Crawford & Henry, 2004; DePaoli & Sweeney, 2000).

The Experiences in Close Relationship Scale-Short Form

The Experiences in Close Relationship Scale-Short Form (ECR-SF) was used to measure participants' attachment styles. The ECR-SF is a self-report questionnaire which asks participants to report "how you feel in romantic relationships" by responding to 12 statements (e.g., "I want to get close to my partner, but I keep pulling back."). Six of the statements measure attachment anxiety and six of them measure attachment avoidance. The participants rate to what extent a statement describes them using a 7-Point Likert scale ranging from "Strongly Disagree" to "Strongly Agree". Cronbach's alpha in the present study was .78 for both the avoidant and the anxious subscales which is similar to other studies (Wei et al., 2007).

Procedure

The questionnaire was uploaded to the SONA Test Subject Pool System of the University of Twente. In addition, the link to the questionnaire was distributed among friends and acquaintances of the researchers according to convenience and snowball sampling. To take part in the study, participants clicked the link to the survey which led them to the Qualtrics webpage environment. After giving active informed consent, participants were led to the main part of the questionnaire. The questionnaire was filled in between 20 and 35 minutes. Participants were then thanked and

given contact details of the researchers and ethics committee. Those who accessed the questionnaire through SONA received 0.25 SONA credits.

Data Analyses

Data were exported from Qualtrics into Excel (Microsoft Corp., Redmond, WA) and analyzed using R and R studio (version 2022.07.2 for macOS Mozilla/5.0). The raw dataset was first cleaned and prepared for descriptive and mediation analyses. To obtain the CSH score, the score of all character strengths statements were summed, with a higher score indicating a greater endorsement of CSH. The range of possible CSH scores ranges from 65 to 325. To measure participants' attachment style, questions 1, 5, 8, and 9 of the ECR-SF were first reversed scored. The six statements for each attachment dimension, avoidant and anxious, were then summed. The lowest score for each dimension is 7 indicating the least amount of attachment avoidance or anxiety and the highest is 42 indicating the greatest amount of attachment avoidance or anxiety. To measure the life satisfaction component of SWB, the scores of all statements of the SWLS questionnaire were summed together. The possible scores range from 5 to 35, with higher scores indicating more life satisfaction. For positive and negative affect, the 10 one-word items for each dimension were summed to give a separate positive and negative affect score. The range of possible scores for both dimensions is between 10 and 50, where a higher score indicates more positive or negative affect.

For the descriptive statistical analysis, besides the base package of R, the *dplyr*, *psych*, and *ltm* packages were used. For each questionnaire, Cronbach's alpha was used as an internal reliability estimate and for each variable the mean and standard deviation were calculated. Lastly, a Pearson correlation matrix including all variables was made. Model 4 of the PROCESS Macro for R (Hayes, 2022) was used for the mediation analyses. The analyses used 5,000 bootstrapped samples, a custom seed number of 654321, the percentile method for constructing confidence intervals, and an alpha of 5%. This method has been chosen over the commonly used *causal steps* method of Baron and Kenny (1986) as the *causal steps* method has several suboptimal characteristics. For example, it does not directly use the indirect effect to test for mediation and requires multiple hypotheses to

infer the presence of a mediation effect, which the PROCESS method avoids (Hayes, 2022). Since there are two attachment dimensions (avoidant and anxious) and three components of SWB (life satisfaction, positive affect, and negative affect) six mediation models were tested.

Results

Descriptive Statistics

Table 1 shows the descriptive statistics of the demographic measures and study variables. It can be observed that there are not many significant correlations between the variables. In fact, neither of the attachment dimensions seems to be significantly correlated with any of the other variables. The mean scores of all scale variables fall well within the first- and third-quartile range of each respective scale. In other words, there seems to be no floor or ceiling effect and the participants did not seem to score extreme on any of the scales.

 Table 1

 Descriptive Statistics and Correlations of Demographic Measures and Study Variables.

Variable	М	SD	1	2	3	4	5	6	7	8
1. Age	21.5	2.5	-							
2. Gender ^a	0.67	-	26	-						
3. CSH	230.0	29.1	.15	.06	-					
4. Positive Affect	30.9	6.9	.36**	08	.59**	-				
5. Negative Affect	23.9	6.0	.27	.21	23	21	-			
6. Life Satisfaction	22.8	6.2	.07	.14	.57**	.39**	32*	-		
7. Avoidant Attachment	16.5	6.4	24	.06	16	25	.05	24	-	
8. Anxious Attachment	24.1	7.2	18	.11	09	.04	.29	15	.04	. <u>-</u>

 $^{^{}a}$ 0 = male, 1 = female.

Mediation

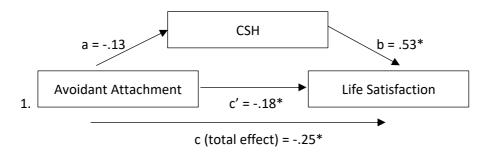
The first hypothesis stated that CSH partially mediates the relationship between avoidant attachment and life satisfaction. The result of the indirect effect shows that this hypothesis should

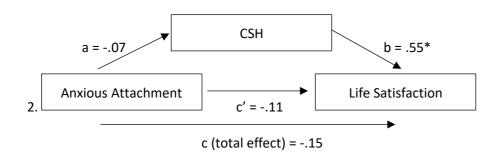
^{*}p < 0.05. **p < 0.01.

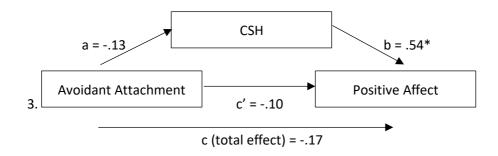
be rejected (β = -.07, 95% CI = [-.18, .03]). The second hypothesis stated that CSH partially mediates the relationship between anxious attachment and life satisfaction. The result of the indirect effect shows that this hypothesis should be rejected (β = -.04, 95% CI = [-.17, .07]). The third hypothesis stated that CSH partially mediates the relationship between avoidant attachment and positive affect. The result of the indirect effect shows that this hypothesis should be rejected (β = -.07, 95% CI = [-.18, .03]). The fourth hypothesis stated that CSH partially mediates the relationship between anxious attachment and positive affect. The result of the indirect effect shows that this hypothesis should be rejected (β = -.04, 95% CI = [-.16, .08]). The fifth hypothesis stated that CSH partially mediates the relationship between avoidant attachment and negative affect. The result of the indirect effect shows that this hypothesis should be rejected (β = .03, 95% CI = [-.01, .10]). The sixth hypothesis stated that CSH partially mediates the relationship between anxious attachment and negative affect. The result of the indirect effect shows that this hypothesis should be rejected (β = .01, 95% CI = [-.03, .09]).

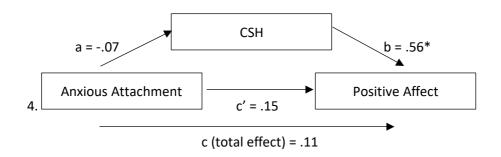
Looking beyond the hypotheses, there are a few other results to point out. As can be seen in figure 1, the direct relationship of CSH with all three components of SWB is significant in both the anxious and avoidant attachment models. In addition, avoidant attachment showed a significant relationship with life satisfaction and anxious attachment showed a significant relationship with negative affect. However, attachment style did not have any other significant relationship with the SWB components.

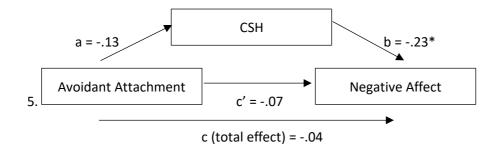
Figure 1Results of the six mediation analyses.

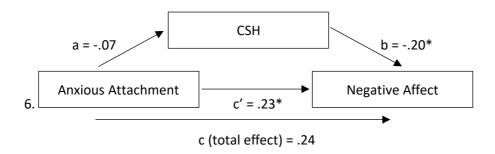












Note. *p < .05

Discussion

SWB is an important factor in physical (e.g., mortality risk) and mental (e.g., risks for depression) health outcomes (Lagnado et al., 2017; Martín-María et al., 2017; Oishi et al., 2021). This study investigated whether CSH mediate the relationship between either avoidant or anxious attachment and the three components of SWB, life satisfaction, positive affect, and negative affect. The results indicate that CSH do not play a mediating role in the relationship between either attachment style and any of the SWB components. In fact, neither attachment dimension was significantly associated with any of the three SWB components except for avoidant attachment with life satisfaction and anxious attachment with negative affect. In addition, neither of the attachment dimensions was associated with CSH. In contrast, CSH was significantly associated with all components of SWB. In sum, instead of the hypothesized mediation role of CSH, CSH seems to only have a direct relationship with SWB.

The non-significant mediation role of CSH is potentially due to the non-significant relation between attachment style and CSH. Whether one scores high or low on avoidant or anxious

attachment was not related to CSH. As discussed before, a secure attachment seems to be related to character strengths by providing more opportunities for individuals to develop their character strengths, for example, by fostering positive interpersonal interactions (Wong et al., 2019) which in turn benefits the development of most character strengths (McKown et al., 2009). However, it seems rather unquestionable that attachment style is not the only factor that determines how much opportunity a person has in developing their character strengths. Other factors such as socioeconomic status most likely also have an influence on this. For example, socioeconomic status influences how much leisure-time physical activities people participate in (Cerin & Leslie, 2008). Such activities might be conducive to the development of character strengths. In addition, such activities are often embedded in a social network which would promote the development of character strengths through increased social interaction. Such third variables might have moderated the relationship between attachment style and CSH considering that all participants were university students and thus of relatively high socioeconomic status.

The same might be the case for the relationship between attachment style and SWB. One way through which attachment style is associated with SWB is via social relationships. Four relationships between attachment styles and SWB (anxious-life satisfaction, avoidant-positive affect, anxious-positive affect, avoidant-negative affect) had non-significant results. In fact, in the correlational analysis, neither of the attachment dimensions had a significant relationship with any of the SWB components. As discussed before, those with a secure attachment style have better quality relationships and more social interactions (Wong et al., 2019) which are in turn related to SWB (Eid & Larsen, 2008). As those with a higher socioeconomic status participate more in leisure-time physical activities they might have more social connections regardless of their attachment style (Cerin & Leslie, 2008). As the sample consisted out of university students, this might have moderated the relationship between attachment style and SWB.

Alternatively, the non-significance mediation role of CSH might be due to unreliable or invalid attachment style data. The ECR-SF questionnaire, which measures attachment styles, asked

participants to report "how you feel in romantic relationships" by responding to the questionnaire statements. By mistake, the survey did not include a 'skip' option for participants who had never been in a relationship. It is unclear how many participants have filled in this question while never having been in a relationship and to what extent this has influenced the validity and reliability of the data. Cronbach's alphas, the means, and the standard deviations of the variables do not show any sign of concern such as internal instability, or floor or ceiling effects. Erring on the side of caution, however, it is wise to take into account the possibility that this questionnaire was filled in by some participants who either guessed how they would feel in a romantic relationship or randomly filled in their answers and hence influenced the reliability or validity of the data.

Looking beyond this study it can be observed that the results stand in contrast with those of Lavy and Littman-Ovadia (2011). Their study showed that Love, Zest, Gratitude, and Hope fully mediated the relationship between avoidant attachment and life satisfaction and that Hope, Curiosity, and Perspective partially mediated the relationship between anxious attachment and life satisfaction. This study and the study of Lavy and Littman-Ovadia (2011) have similar questionnaires, study design, and sample characteristics age and educational level. This means that the earlier proposed explanation of socioeconomic status is harder to apply to this discrepancy in results. The only other reported difference that can be found is the ethnicity of the samples. The majority of the present study's sample came from Germany and the Netherlands while the whole sample of Lavy and Littman-Ovadia (2011) came from Israel. Compared to the global average, Israeli children score higher on the avoidant attachment dimensions (Cassidy & Shaver, 2018). This does not mean that there is also a difference between these populations in the relationship between attachment styles, character strengths, and SWB. However, considering that there is evidence that the relationship between attachment style and SWB is moderated by ethnicity (Merz & Consedine, 2012) it is at least plausible. Reports of direct empirical evidence, however, have not been found and this remains, therefore, a speculation.

Regarding CSH and SWB, the relationships between them were all significant. This aligns with the literature linking character strengths, especially CSH, with SWB (Boyle, 2019; Bruna et al., 2019; Buschor et al., 2013; Gillham et al., 2011; Haridas et al., 2017; Hausler et al., 2017). If a person scores high on the CSH, they are more likely to experience higher levels of SWB. The results of this study seem to suggest, therefore, that CSH might in certain situations be stronger associated with SWB than attachment style is associated with SWB. This is relevant knowledge for clinicians since various effective character strengths interventions for well-being already exist (e.g., Chérif et al., 2021; Gradito Dubord et al., 2022; Wellenzohn et al., 2016) and these findings might encourage clinicians to explore and use them.

Lastly, the relationship between CSH and negative affect had a smaller effect size than the relationship between CSH and life satisfaction or positive affect. In addition, the correlational analysis showed that life satisfaction and positive affect but not negative affect was significantly associated with CSH. It seems then that CSH is stronger related to increases in the positive aspects of SWB (life satisfaction and positive affect) and less so with decreases in negative aspects of SWB (negative affect). This might indicate that while scoring high in CSH might increase your SWB in terms of adding positive experiences and a more satisfied life, scoring low on certain character strengths only removes a potential positive influence and does not necessarily add something negative and thus does not increase negative affect as much.

Strengths and Limitations

A strength of this study is that the measures used provided a strong foundation. The measures have been thoroughly tested for their validity and reliability (Arrindell et al., 1999; Crawford & Henry, 2004; DePaoli & Sweeney, 2000; Littman-Ovadia, 2015; Magnus et al., 1993; Wei et al., 2007). In addition, the internal consistencies of the measures in the current study were also good. Furthermore, the measures are used abundantly in other literature, making it easier to compare results across studies. Regarding the sample, while cross-sectional studies with more participants do exist, 93 is an adequate number of participants. In addition, the sample also seems

reasonably representative of a typical university population in terms of age. While the gender ratio was not 50/50, both males and females were substantially represented. However, beyond the university population, the sample characteristics age and culture pose limitations on the generalizability of this study.

Previous research has found that age affects attachment style (van IJzendoorn & Bakermans-Kranenburg, 2010) and character strengths (Brown, 2020; Cheng et al., 2022, p. 202; Heintz et al., 2019; Heintz & Ruch, 2022; Ruch et al., 2014). While there is not a big effect of age on life satisfaction (Hartung et al., 2021; Lysberg et al., 2017) some authors suggest that it is still preferable not to generalize life satisfaction findings from a student population to the general population. They argue that this might lead to a distorted picture of well-being across the lifespan (Joshanloo & Jovanović, 2018). That these variables are influenced by age does not directly mean that the relationship between these variables change with age and, therefore, whether a different mediation relationship can be expected with age. However, there is some evidence that the relationship between some of these variables do change with age, such as the relationship between attachment style and SWB (Li & Fung, 2014). Whether the results of this study generalize across age is, therefore, uncertain.

Across cultures, character strengths are mostly stable (Biswas-Diener, 2006; Heintz et al., 2019; McGrath, 2015). Attachment styles and SWB, however, differ across cultures, especially on the collectivist-individualist dimension (Fiori et al., 2009; Friedman et al., 2010; Owusu-Ansah, 2004; Pearson & Child, 2007; Rice & Steele, 2004, p. 201; Steel et al., 2018; Tov & Diener, 2009, p. 200). Not only do individual variables differ across cultures, but there is also some evidence that the relationship between them varies as well. The relationship between attachment style and SWB, for example, differs by ethnicity (Merz & Consedine, 2012). Since the present study's sample was primarily from Germany and the Netherlands and while there are differences between these cultures, they are generally both considered as more individualist cultures than collectivist cultures. It is, therefore, not clear whether the results generalize towards more collectivist countries or to

other ethnicities. In sum, the sample of this study seems to adequately represent the typical university student. However, as both age and culture might influence key relationships covered in this study, the results should be carefully translated to populations with other age ranges or cultures, perhaps they should not be at all.

Besides the generalizability limitations, the snowball and convenience sampling method used in this study introduce a few additional weaknesses. These sampling methods are non-probabilistic which does not allow to control for the representativeness of the population in the sample. In addition, convenience sampling might also lead to a self-selection bias (Bowden, 1986). Part of the participants voluntarily signed up for the study using the University of Twente SONA system. They self-selected whether they wanted to participate based on the study's title and brief description. This might have led people with certain characteristics to participate more than their counterparts.

Future Directions

Future research may study the CSH individually instead of as a composite measure. The six character strengths that showed significant mediation in the study of Lavy and Littman-Ovadia (2011) might be a good starting point. This might give further insight into whether the character strength found by Lavy and Littman-Ovadia (2011) also has a mediation role for positive and negative affect. To increase the generalizability of results, simple random sampling could be used. In addition, as it is undesirable to generalize results involving character strength from a student population (Joshanloo & Jovanović, 2018), a different or greater age range may be used.

Since the results of this study with respect to attachment style are in contrast to many other studies it can be of interest to explore the reason for this. As mentioned, it might be the case that third variables moderate the relationship between attachment style and CSH or attachment style and SWB. As the literature on the relationship between attachment style and character strengths is relatively little, it could be worth exploring to what extent socioeconomic factors influence this relationship.

Lastly, the present study used a retrospective questionnaire to measure positive and negative affect. Retrospective measures, however, are prone to cognitive biases (Csikszentmihalyi & Larson, 2014). For example, whether someone is stressed or not at the time of filling in the questionnaire may influence their memory retrieval abilities (Wilson et al., 2003). The experience sampling method may avoid this problem (Csikszentmihalyi & Larson, 2014). This method asks participants in real time what their experiences of positive and negative feelings are instead of having to answer this retrospectively. Using the experience sampling method could, therefore, lead to more reliable or valid data on positive and negative affect.

Conclusion

The present study did not find that CSH moderates the relationship between any of the attachment dimensions or SWB components. In fact, attachment style was not associated with CSH and very limited with SWB. These findings stand in contrast to the results of previous work on attachment style, CSH, and SWB (Kerns et al., 2022; Lavy & Littman-Ovadia, 2011; Liu & Wang, 2021). It might be that other variables, such as ethnicity or socioeconomic status, moderate the relationship between attachment style and CSH or attachment style and SWB. At the same time, CSH did show a significant relationship with SWB. The results of this study, seem in line with what the school of positive psychology often wants to emphasize; it is not always necessary or sufficient to look at what can go wrong in an individual's life (i.e., character strengths).

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Appendix A

Bachelor Thesis; Are Good People Happy People?

Start of Block: Informed Consent

Q3 The purpose of this research study is to investigate the effect of character strengths on well-being. For this reason, you will be asked to fill out the provided questionnaire. The questionnaire includes questions regarding your well-being and your character strengths such as spirituality, hope, perseverance, and hardiness. The questionnaire takes approximately 30 minutes to fill out. The data will be used for our report only and will not be shared for any other purpose. Your responses will be saved and stored to properly analyze your answers. However, after analyzing your answers all the data that has been collected will be deleted. The deletion of your data will be no later than the 27th of February 2023. Lastly, in the individual reports of this research, all data will be anonymized.

By giving consent you indicate that you:

- have read and understood the study information dated.
- voluntarily participate in this study.
- understand that you can refuse to answer questions and that you can withdraw from the study at any time, without having to give a reason.
- understand that taking part in the study involves answering questions related to the topic of character strengths and well-being.
- understand that the information you provide will be used for quantitative research in the context of a university project.
- understand that the data that is collected will be stored for the purpose of analysis.
- understand that the stored data is archived until no later than the 27th of February, 2023
- understand that the information you provide in this survey will not be shared beyond the study team and the study teams' supervisor.

Study contact details.

Names of Students: Cedric Middendorf, Chiara Stegemann, Gijs Smid, Jérôme Zablotny

Supervisor: M.J.M. Van Bergen MSc. MRes. Email address: j.zablotny@student.utwente.nl

Contact Information for Questions about Your Rights as a Research Participant.

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(s), please contact the Secretary of the Ethics Committee/domain Humanities Social Sciences of the Faculty of Behavioural, Management and Social Sciences at the University of Twente by ethicscommittee-hss@utwente.nl.

Q4 I agree and give my informed consent
○ Yes (1)
O No (2)
End of Block: Informed Consent
Start of Block: Demographics
General 3 What is your nationality?
O Dutch (1)
○ German (2)
Other: (3)
General 2 How would you describe your gender?
○ Male (1)
○ Female (2)
O Non-binary / third gender (3)
Other: (4)
O Prefer not to say (5)
*
General 1 What is your age?
End of Block: Demographics

Start of Block

PANAS 1/2 This scale consists of a number of words that describe different feelings and emotions

Read each item and indicate to what extent you have felt this way during the past week.

Read cach from	Very slightly or not at all (1)	A little (2)	Moderately (3)	Quite a bit (4)	Extremely (5)
Interested (1)	0	0	\circ	\circ	\circ
Distressed (2)	0	\circ	\circ	\circ	\circ
Excited (3)	0	\circ	\circ	\circ	\circ
Upset (4)	0	\circ	\circ	\circ	\circ
Strong (5)	0	\circ	\circ	\circ	\circ
Guilty (6)	0	\circ	\circ	\circ	\circ
Scared (7)	0	\circ	\circ	\circ	\circ
Hostile (8)	0	\circ	\circ	\circ	\circ
Enthusiastic (9)	0	\circ	\circ	\circ	\circ
Proud (10)	0	\circ	\circ	\circ	\circ

PANAS 2/2 This scale consists of a number of words that describe different feelings and emotions. Read each item and **indicate to what extent you have felt this way during the past week.**

	Very slightly or not at all (1)	A little (2)	Moderately (3)	Quite a bit (4)	Extremely (5)
Irritable (1)	0	\circ	\circ	0	0
Alert (2)	0	0	\circ	0	0
Ashamed (3)	0	0	\circ	\circ	\circ
Inspired (4)	0	\circ	\circ	\circ	\circ
Nervous (5)	0	\circ	\circ	\circ	\circ
Determined (6)	0	0	0	0	\circ
Attentive (7)	0	\circ	\circ	\circ	\circ
Jittery (8)	0	\circ	\circ	\circ	\circ
Active (9)	0	\circ	\circ	\circ	\circ
Afraid (10)	0	0	\circ	\circ	\circ

Page Break —

SWLS Below are five statements about how satisfied you are with your life that you may agree or disagree with. Using the 1 - 7 scale below, **indicate your agreement with each item** by placing the appropriate number on the line preceding that item. Please be open and honest in your responding.

	Strongly disagree (1)	Disagree (2)	Slightly disagree (3)	Neither agree nor disagree (4)	Slightly agree (5)	Agree (6)	Strongly agree (7)
In most ways my life is close to my ideal. (1)	0	0	0	0	0	0	0
The conditions of my life are excellent. (2)	0	\circ	0	0	0	0	0
I am satisfied with my life. (3)	0	\circ	\circ	\circ	\circ	\circ	\circ
So far I have gotten the important things I want in life. (4)	0	0	0	0	0	0	\circ
If I could live my life over, I would change almost nothing. (5)	0	0	0	0	0	0	0

Page Break

ECR-S The following statements concern **how you feel in romantic relationships.** Please respond to each statement by **indicating how much you agree or disagree.**

	Strongly Disagree (1)	Disagree (2)	Slightly Disagree (3)	Neutral (4)	Slightly Agree (5)	Agree (6)	Strongly Agree (7)
It helps to turn to my romantic partner in times of need. (1)	0	0	0	0	0	0	0
I need a lot of reassurance that I am loved by my partner. (2)	0	0	0	0	0	0	0
I want to get close to my partner, but I keep pulling back. (3)	0	0	0	0	0	0	0
I find that my partner doesn't want to get as close as I would like. (4)	0	0	0	0	0	0	0
I turn to my partner for many things, including comfort and reassurance. (5)	0	0	0	0	0	0	0
My desire to be very close sometimes scares people away. (6)	0	0	0	0	0	0	0
I try to avoid getting too close to my partner. (7)	0	\circ	\circ	\circ	\circ	\circ	\circ
I don't worry about being abandoned. (8)	0	\circ	\circ	\circ	\circ	0	\circ
I usually discuss my problems and concerns with my partner. (9)	0	0	0	0	0	0	0
I get frustrated if my romantic partner is not available when I need them. (10)	0	0	0	0	0	0	0
I am nervous when my partner gets too close to me. (11)	0	\circ	\circ	0	0	0	\circ

I worry that a romantic partner won't care about me as much as I care about them. (12)	0	0	0	0	0	0	0
Page Break —							

VIA-120 1/3 Please choose one option in response to each statement. Many of the questions reflect statements that many people would find desirable, but we want you to **answer only in terms of whether the statement describes what you are like.**

	Very Much Unlike Me (1)	Unlike Me (2)	Neutral (3)	Like Me (4)	Very Much Like Me (5)
I really enjoy doing small favors for friends. (1)	0	0	0	0	0
There are people in my life who care as much about my feelings and well-being as they do about their own. (2)	0	\circ	\circ	0	\circ
As a leader, I treat everyone equally well regardless of his or her experience. (3)	0	0	\circ	0	\circ
I rarely hold a grudge. (4)	0	\circ	\bigcirc	\circ	\circ
I go out of my way to cheer up people who appear down. (5)	0	\circ	\circ	\circ	\circ
One of my strengths is helping a group of people work well together even when they have their differences. (6)	0	\circ	0	0	0
At least once a day, I stop and count my blessings. (7)	0	\circ	\circ	\circ	\circ
I welcome the opportunity to brighten someone else's day with laughter. (8)	0	\circ	\circ	\circ	\circ
I never seek vengeance. (9)	0	\circ	\circ	\circ	\bigcirc
I love to make other people happy. (10)	0	\circ	\circ	\circ	0
I do not give up. (11)	0	\bigcirc	\bigcirc	\circ	\circ
I am the most important person in someone else's life. (12)	0	\circ	\bigcirc	\circ	\circ
I work at my very best when I am a group member. (13)	0	\circ	\bigcirc	\circ	\circ
I try to have fun in all kinds of situations. (14)	0	\circ	\circ	\circ	\circ
To be an effective leader, I treat everyone the same. (15)	0	\circ	\circ	\circ	\circ
I am an extremely grateful person. (16)	0	\circ	\circ	\circ	\circ

I try to add some humor to whatever I do. (17)	\circ	\circ	0	0	\circ
I believe it is best to forgive and forget. (18)	\circ	\circ	\circ	\circ	\circ
I always feel the presence of love in my life. (19)	\circ	\circ	\circ	\circ	\circ
Page Break					

VIA-120 2/3 Please choose one option in response to each statement. Many of the questions reflect statements that many people would find desirable, but we want you to **answer only in terms of whether the statement describes what you are like.**

	Very Much Unlike Me (1)	Unlike Me (2)	Neutral (3)	Like Me (4)	Very Much Like Me (5)
I am as excited about the good fortune of others as I am about my own. (1)	0	0	0	0	0
I can express love to someone else. (2)	0	\circ	\circ	\circ	\circ
Without exception, I support my teammates or fellow group members. (3)	0	\circ	\circ	0	0
My friends always tell me I am a strong but fair leader. (4)	0	\circ	\circ	\circ	\circ
I feel thankful for what I have received in life. (5)	0	\circ	\circ	\circ	\circ
I never quit a task before it is done. (6)	0	\circ	0	\circ	\circ
I have a great sense of humor. (7)	0	\circ	\circ	\circ	\circ
I rarely try to get even. (8)	0	0	\circ	\circ	\circ
I enjoy being kind to others. (9)	0	0	\circ	0	\circ
I can accept love from others. (10)	0	\circ	\circ	\circ	\circ
I always finish what I start. (11)	0	\circ	\circ	\circ	\circ
Even if I disagree with them, I always respect the leaders of my group. (12)	0	\circ	\circ	0	0
As a leader, I try to make all group members happy. (13)	0	\bigcirc	\circ	\circ	\circ
When I look at my life, I find many things to be grateful for. (14)	0	\circ	\circ	0	0
I am usually willing to give someone another chance. (15)	0	\circ	\circ	\circ	\circ
It is important to me to respect decisions made by my group. (16)	0	\circ	\circ	\circ	\circ

I feel a profound sense of appreciation every day. (17)	\circ	\circ	\circ	\circ	\circ
I gladly sacrifice my self-interest for the benefit of the group I am in. (18)	0	\circ	\circ	0	\circ
I am known for my good sense of humor. (19)	0	\circ	\circ	\circ	\circ
I finish things despite obstacles in the way. (20)	0	\circ	\circ	\circ	\circ
I stick with whatever I decide to do. (21)	0	\circ	\circ	\circ	\circ
Page Break					

VIA-120 3/3 Please choose one option in response to each statement. Many of the questions reflect statements that many people would find desirable, but we want you to **answer only in terms of whether the statement describes what you are like.**

	Very Much Unlike Me (1)	Unlike Me (2)	Neutral (3)	Like Me (4)	Very Much Like Me (5)
I always look on the bright side. (1)	0	0	0	0	0
I am a spiritual person. (22)	\circ	\circ	0	\circ	\circ
I know how to handle myself in different social situations. (2)	\circ	\circ	0	\circ	\circ
I practice my religion. (3)	\circ	\circ	\circ	\circ	\circ
I am always busy with something interesting. (4)	0	\circ	\circ	\circ	0
No matter what the situation, I am able to fit in. (5)	\circ	\bigcirc	\circ	\circ	\circ
I experience deep emotions when I see beautiful things. (6)	\circ	\circ	\circ	\circ	\circ
Despite challenges, I always remain hopeful about the future. (7)	\circ	\circ	\circ	\circ	\circ
My faith never deserts me during hard times. (8)	\circ	\circ	\circ	\circ	\circ
I have the ability to make other people feel interesting. (9)	\circ	\circ	0	\circ	\circ
I see beauty that other people pass by without noticing. (10)	\circ	\circ	0	\circ	\circ
I have a clear picture in my mind about what I want to happen in the future. (11)	0	\circ	0	0	0
I love what I do. (12)	\circ	\circ	\circ	\circ	\circ
I am excited by many different activities. (13)	\circ	\circ	\circ	\circ	\circ
I have often been left speechless by the beauty depicted in a movie. (14)	\circ	\circ	\circ	\circ	\circ
I look forward to each new day. (15)	\circ	0	0	0	\circ

I have many interests. (16)	0	\circ	\circ	\bigcirc	\circ
I am always aware of the natural beauty in the environment. (17)	0	\circ	\circ	\circ	\circ
My faith makes me who I am. (18)	0	\circ	\circ	\circ	\circ
I have lots of energy. (19)	0	\bigcirc	\circ	\bigcirc	\circ
I can find something of interest in any situation. (20)	0	\circ	\circ	\circ	\circ
I am good at sensing what other people are feeling. (21)	0	\circ	\circ	\circ	\circ
I know that I will succeed with the goals I set for myself. (23)	0	\circ	\circ	\circ	\circ
I am in awe of simple things in life that others might take for granted (24)	0	\circ	\circ	\circ	0
I think my life is extremely interesting. (25)	0	\circ	\circ	\circ	\circ
I always know what to say to make people feel good. (26)	0	\circ	\circ	\circ	\circ
If I feel down, I always think about what is good in my life. (27)	0	\circ	\circ	\circ	\circ
My beliefs make my life important. (28)	0	\bigcirc	\circ	\circ	\circ
I awaken with a sense of excitement about the day's possibilities. (29)	0	\circ	\circ	\circ	\circ
People describe me as full of zest. (30)		\circ	\circ	\circ	

End of Block: