

An abstract graphic on the left side of the cover page. It consists of numerous thin, black, curved lines that originate from the bottom left and fan out towards the top right. Interspersed among these lines are several blue circles of varying sizes. Some circles are solid blue, while others are smaller and appear as dots. The overall effect is a dynamic, organic, and somewhat chaotic pattern that suggests movement and interconnectedness.

BACHELOR THESIS

The Relation of Character Strengths, Engagement Coping and Life Satisfaction among Students

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Abstract

Background. In the field of positive psychology, character strengths have been related to effectively dealing with adversity, but little research on the relationship between strengths and coping behaviour has been conducted so far. This study sought to advance the understanding of how engagement coping relates to character strengths and life satisfaction among students. It was assumed that engagement coping shows an association with character strengths and that engagement coping mediates the relation of zest, hope, curiosity and love with life satisfaction.

Methods. A cross-sectional online survey was employed, whereby a convenience sample of 118 university students filled in the Values in Action Inventory of Strengths (VIA), the Coping Inventory Strategies Short Form (CSI-SF) and the Satisfaction with Life Scale (SWLS). Correlations of engagement coping with character strengths were computed on the level of higher-order strengths and on the level of the 24 character strengths. A series of regression analyses was carried out to test for a mediation effect of engagement coping on the relation of zest, hope, curiosity and love with life satisfaction.

Results. All higher-order strengths showed positive correlations with engagement coping. At the level of the 24 character strengths, six strengths showed a significant positive correlation with engagement coping, whereby love showed a substantially higher association than all other strengths. Regression analyses revealed that engagement coping partially mediates the relation of zest and life satisfaction, fully mediates the relation of curiosity and life satisfaction and shows no mediation effect for the strengths of hope and love.

Discussion. The results of the study are discussed in light of possible causal mechanisms, including Fredrickson's broaden-and-build theory. Some character strengths might elicit positive feelings that broaden one's cognition and attention, leading to enhanced personal resources and emotional wellbeing. Caution is advised in the interpretation of the results. The cross-sectional study design did not allow to make definite causal claims and the results might have been affected by methodological shortcomings and the far-reaching consequences of the COVID-19 pandemic. Implications of the results follow for student-focused strength-based interventions. Character strengths that are assumed to positively influence engagement coping should be emphasised in strength-based interventions.

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Introduction

In recent years, positive psychology gained more and more relevance and nowadays has been established as a branch of psychology that is concerned with what makes life most worth living. Hereby, it can be seen as a counterweight to the traditional psychopathological view, which often merely postulates restoring the normal functioning of a person (Seligman & Csikszentmihalyi, 2000) and focusing on the deficits of individuals (Weber, Wagner, & Ruch, 2016). One main area of interest in positive psychological concerns positive character strengths. According to Park, Peterson and Seligman (2004), some of the most influential researchers in the field of positive psychology, character strengths can be defined as positive and stable traits that are innate to a person and are reflected in their thoughts, feelings and behaviours.

To be able to classify and measure character strengths, Peterson and Seligman (2004) reviewed an extensive body of literature on good character across multiple disciplines such as philosophy, youth development and psychology. Based on this, they developed the “Values in Action” (VIA), a classification of six virtues comprising 24 strengths that is nowadays used as the gold standard for research in positive character strengths (see Appendix A for an overview). The categorisation of strengths into six higher virtues has been criticised, as this classification was done on a theoretical basis (Ruch et al., 2010). Factor analysis on a body of subsequent research has shown either a four or five factor solution, depending on factors such as sample, language and version of the VIA. In this paper, the five categories are used since those also have been replicated in various German-speaking samples (e.g. Ruch et al., 2010; Proyer & Ruch, 2011) and since the five factors are used in research on character strengths and coping behaviour by Harzer and Ruch (2015). These so called higher-order strengths were labelled as *emotional strengths*, *interpersonal strengths*, *strengths of restraint*, *intellectual strengths* and *theological strengths* (see Appendix A).

Peterson and Seligman (2004) postulated that habituating and exercising these character strengths leads to fulfilment and contribute to ‘the good life’ in general. Indeed, it is now well established from a plethora of studies that character strengths are related to many positive health outcomes. Character strengths showed a robust relationship across samples from various cultural backgrounds with indicators of subjective wellbeing such as life satisfaction and positive affect (e.g. Azañedo, Fernández-Abascal, & Barraca, 2014; Harzer, 2016; Littman-Ovadia & Lavy, 2012; Martínez-Martí & Ruch, 2014; Zhang & Chen, 2018). Hereby, some strengths consistently show a stronger relation with wellbeing than others. For example, hope, zest, love and curiosity are among the strengths that consistently yielded the highest correlations with life satisfaction in those studies. Moreover, strengths can be cultivated through various

factors such as good parenting, socialization, schooling and strength-based interventions (Park & Peterson, 2009). Many strength-based interventions have been successfully employed in the context of college or university and have been shown to yield several health benefits, such as increased wellbeing (Koydemir & Sun-Selişik, 2016), reduction of depression and anxiety and decreased stress levels (Duan & Bu, 2019). Furthermore, in many strengths-based interventions, topics like effective problem-solving and decision-making as well as other concepts closely linked to coping such as establishing positive relationships and seeking social support are taught. Hence, these interventions point toward an interesting link between character strengths and the concept of coping.

To investigate the relation of character strengths and coping further, coping must first be conceptualised, since a lack of consensus about the definition and operationalization of coping is evident in literature (Compas et al., 2017). One widely accepted definition is that coping refers to “conscious and volitional efforts to regulate emotion, cognition, behaviour, physiology, and the environment in response to stressful events or circumstances” (Compas et al., 2001, p.89). Carver, Weier and Weintraub (1989) developed a hierarchical framework that is among one of the most used frameworks for measuring different coping strategies (Kato, 2015). First, at the top level of the framework, engagement and disengagement as ways of coping are differentiated (Tobin, Holroyd, & Reynolds, 1984), whereby engagement coping can be considered to be adaptive and disengagement can be considered to be maladaptive (Cano García, Rodríguez Franco, & García Martínez, 2007). Note, that therefore the terms adaptive coping and engagement coping are used interchangeably in this paper. Engagement is described as an active effort to manage the stressor, and disengagement entails strategies that result in the disengagement from the stressor. Independently of the categorization of engagement or disengagement, coping strategies are further described as either being problem-focused, or emotion-focused. For example, wishful thinking is a coping strategy related to problem-focused disengagement, and seeking social support is a coping strategy related to emotion-focused engagement.

Like character strengths, engagement coping has been robustly related to life satisfaction in a multitude of populations and cultures. For example, problem-focused coping, active coping strategies and seeking social support were all found to predict life satisfaction (Chang et al., 2020; Deniz, 2006; Dubey & Agarwal, 2007; MacCann et al., 2012).

Besides the fact that both character strengths and engagement coping are associated with life satisfaction, Harzer and Ruch (2015) pointed out that an association between the concepts of positive character strengths and coping itself should exist as well, given that how people

cope with adversity is at least partly determined by their character strengths. This thought is underpinned by research showing that character strengths are associated with recovering from illness (Peterson, Park, & Seligman, 2006) and posttraumatic growth (Peterson, Park, Pole, D'Andrea, & Seligman, 2008). This research also showed that certain higher-order strengths are especially involved in coping with adversity. Individuals that had recovered from illness showed comparably high intellectual and emotional strengths (Peterson et al., 2006) and a higher number of traumatic experiences was related to higher levels of intellectual and interpersonal strengths (Peterson et al., 2008).

Subsequently, Harzer and Ruch (2015) investigated the relationship between positive character strengths and coping, and indeed found a systematic relationship. In their study, they used a framework of coping that distinguishes between positive coping strategies (e.g. problem-solving), which reduce stress in the long run, and negative coping strategies (e.g. rumination), which augment stress in the long run. They focused on coping with work-related stress in a sample of nurses and a mixed sample of various occupations and looked at higher-order strengths in relation to coping. Based on the previously mentioned research that established a link between coping with adversity (such as recovery from illness and trauma) and especially intellectual, emotional and interpersonal strengths (Peterson et al., 2008; Peterson et al., 2006), they hypothesised to also find a relationship between coping and those higher-order strengths. The results of the study showed that intellectual strengths were found to be associated the most with coping behaviour. They argued that intellectual strengths “foster the production of new and reasonable strategies for problem solving and the exploration of situational circumstances, what in turn assists in the selection of the most successful coping strategies (i.e. positive coping) and the avoidance of unsuccessful coping strategies (negative coping)” (Harzer & Ruch, 2015, p. 10). Interpersonal strengths, however, were positively related to positive coping strategies in the nursing sample only. The researchers concluded that in different occupations some strengths might play a bigger role for coping behaviour. They assumed that nurses interact a lot with patients and doctors and consequently use their interpersonal strengths more than individuals from the sample with mixed occupations. Moreover, emotional strengths were associated with positive coping strategies and less with negative coping. This was assumed to be the case because they “foster an effective analysis of the situation and problem solving” (Harzer & Ruch, 2015, p.10) and thus are associated with positive coping.

In general, it has to be noted though, that those assumed mechanisms by Harzer and Ruch (2015) were only formulated based on theoretical reasoning, and the cross-sectional design of their study did not allow to support those claims. Also, due to the focus on higher-order

strengths it does not become particularly clear which strengths specifically are at play in regard to coping and why certain higher-order strengths show no significant correlation with coping at all. Hence, it might be fruitful to look for relations with coping on the level of the 24 strengths itself, rather than focusing on the higher-order strengths only. Furthermore, because the area of character strengths in relation to coping has barely been studied, it could be of interest to validate the findings of Harzer and Ruch (2015) by examining whether there is a relationship between intellectual, emotional and interpersonal strengths with engagement coping.

A particular line of research that should also be considered when investigating the relation between engagement coping and character strengths is the broaden-and-build theory from Fredrickson (2001), a prominent theory that has been widely established within the field of positive psychology. It posits that positive emotions “broaden people’s momentary thought-action repertoires which serves to build their enduring personal resources” (Fredrickson, 2001, p. 1). Emotions such as joy, contentment, pride, interest and love first broaden one’s scope of attention and cognition, and consequently build physical, intellectual, social and psychological resources which leads to enhanced coping skills, and in turn to heightened levels of wellbeing (Fredrickson, 2001). Interestingly, a study by Güsewell and Ruch (2012) found that the disposition to experience those positive emotions is directly reflected in the character strengths of zest, love, curiosity and hope. Looking at the conceptualizations of those character strength and positive emotions, this seems intuitive: The experience of joy and contentment is reflected by the character strengths of zest and hope, the experience of love is reflected by the character strength of love (Güsewell & Ruch, 2012) and the experience of interest can be linked to the character strength of curiosity (taking an interest in all of ongoing experience). As those constructs seem to be closely linked, the broaden-and-build-theory might thus be applicable to the relation of character strengths with engagement coping and life satisfaction. Accordingly, it is assumed that high levels of zest, love, curiosity and hope involve the experience of positive emotions, which broaden one’s scope of cognition and attention. In turn, this supposedly builds one’s personal resources, which leads to more engagement coping. Finally, this is assumed to result in higher levels of life satisfaction, as one is better able to deal with adversity.

Hence, in light of the broaden-and-build theory and the assumed relation between engagement coping and character strengths and the already established relationship of these two concepts with life satisfaction, engagement coping strategies are assumed to partially mediate the relationship between strengths and life satisfaction, especially for those strengths

that are robustly associated with life satisfaction (i.e. zest, love, curiosity and hope). An example of such a mediation for the character strength of zest can be seen in Figure 1.

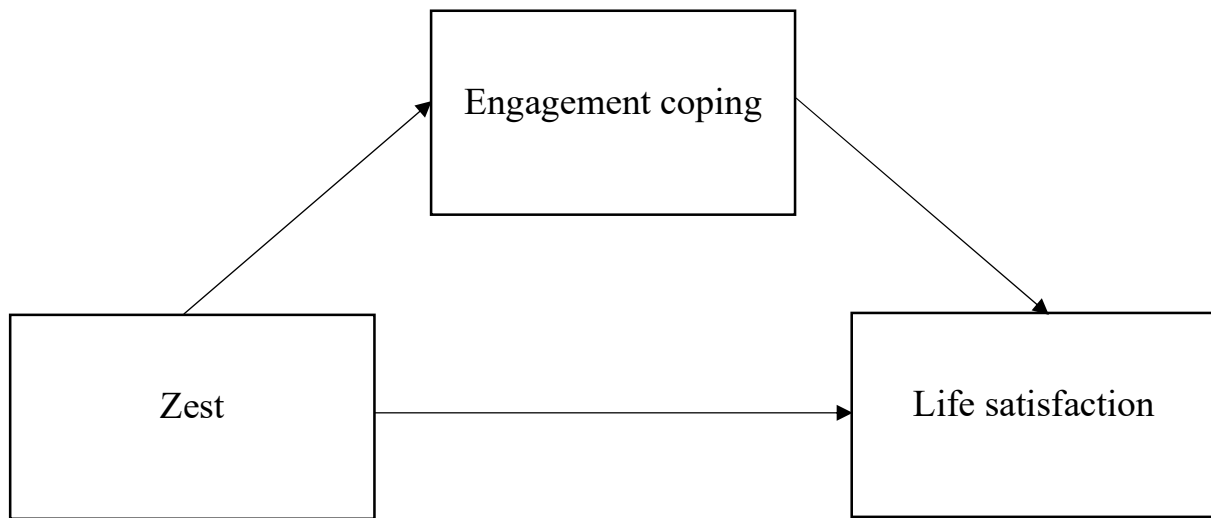


Figure 1. Assumed relationship between the character strength of zest, life satisfaction and engagement coping, whereby engagement coping mediates the relationship between zest and life satisfaction.

Little research on the relationship between strengths and coping has been conducted so far, but considering coping strategies might be something that could be useful for strength-based interventions, which are often successfully employed in academic settings to enhance student's wellbeing, academic engagement and achievement (Quinlan, Swain, Cameron &, Vella-Brodrick, 2015). For such interventions it can be of interest to see how certain strengths relate to certain coping mechanisms, in order to tailor interventions in a way so that students learn how to use their strengths to deal with adversity in a more effective manner. Additionally, students were chosen as a target group for reasons of convenience, as this research was carried out in the context of university, which made it easy to acquire undergraduates. Hence, this study sought to advance the understanding of character strengths and their relationship with coping strategies among students.

In order to do so, this research was split up into the following three research questions.

1. To what extent is there a relationship between intellectual, emotional and interpersonal strengths with engagement coping?
2. To what extent are the 24 character strengths associated with engagement coping?
3. To what extent mediates engagement coping the relationship between the strengths love, zest, hope, and curiosity with life satisfaction?

Methods

Design

A nonexperimental, quantitative cross-sectional survey design was employed.

Participants

The study comprised a convenience sample of 118 university students, 78 being females (66%) and 40 being male (34%). Participants were recruited in two ways. Either based on their acquaintance with the researchers, or through SONA, a recruitment system for students of the behavioural sciences at the University of Twente. The sample consisted of young adults with an average of 22 years ($M = 21.85$, $SD = 2.05$), ranging from 18 to 30 years. Most participants were German (81%), a few were Dutch (6%) and 13% participants had other nationalities. The study was approved by the Ethics Committee of the Faculty of Behavioural Sciences at the University of Twente (request nr. 200228).

Materials

Character strengths. The 72-item version of the Values in Action Inventory (VIA-72; Peterson & Seligman, 2004) was used to measure character strengths (see Appendix B). It was created by using the most internally stable items from the original 240-item VIA instrument. The questionnaire entails three items for each strength respectively, and responses are anchored on a 5-point Likert scale ranging from 1 (“very much unlike me”) to 5 (“very much like me”). An example for measuring the character strength of modesty is “I never brag about my accomplishments”. Higher-order strength scores were computed by summing up the subscales of the associated strengths and calculating the mean. The VIA-72 shows an internal consistency reliability of $\alpha = 0.75$ on average and initial validity coefficients between .36 and .48 (VIA, 2020a). In the current sample, the 24 subscales showed sufficient internal reliability ranging from low to good internal consistency ($\alpha = 0.58$ -0.83).

Coping. The Coping Strategies Inventory Short Form (CSI-SF; Addison et al., 2007) was used to assess the participants’ style of coping (see Appendix C). Originally, the CSI comprised 72 Items, of which 16 items were chosen for the short form, to satisfy the minimum psychometric requirements. Participants are asked to rate the general frequency of their preferred coping strategy on a 5-point Likert scale (1 = “Never”, 2 = “Seldom”, 3 = “Sometimes”, 4 = “Often”, 5 = “Almost Always”). The CSI-SF consists of four subscales, namely problem-focused engagement, problem-focused disengagement, emotion-focused engagement and emotion-focused disengagement. An example of a statement linked to problem-focused engagement coping is “I make a plan of action and follow it”. A reliability

and validity study conducted by Speyer et al. (2016) assessed the Cronbach's Alpha of the CSI-SF in 13 different countries. The outcome of the study showed that the questionnaire persists with internal consistency ranging from low to good Cronbach alpha levels ($\alpha = 0.56\text{--}0.80$). Furthermore, both exploratory and confirmatory factor analysis supported the structure of the four dimensions included in the CSI-SF. The engagement subscale, consisting of the problem-focused engagement and the emotion-focused engagement scale showed questionable consistency in this study ($\alpha = 0.64$).

Life satisfaction. The Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) was employed to measure life satisfaction (see Appendix D). The questionnaire entails 5 items (e.g. "The conditions of my life are excellent.") that can be answered on a 7-point Likert scale, ranging from 1 ("strongly disagree") to 7 ("strongly agree"). The scale is the most widely used measure for life satisfaction and shows good internal consistency ($\alpha = 0.84$; Pavot & Diener, 2009). Similarly, good internal consistency was evident in the current study ($\alpha = 0.86$).

Procedure

The study was uploaded on Qualtrics and published on SONA. Participants that took part in the study via SONA were awarded 0.25 course credits for participation. In order to begin, the participants were first informed about the purpose and duration of the study and then asked to read and accept an informed consent (see Appendix E). Subsequently, the participants were asked to fill out four questionnaires in total, which took approximately 15 minutes to complete.

Data analysis

The data was analysed using IBM SPSS Statistics version 25.0. The dataset was screened for missing values and data from participants that did not finish the questionnaire or showed unserious answer patterns were removed. An overall life satisfaction score was computed by summing all the responses to the SWLS, resulting in a possible score ranging from 5 (low satisfaction) to 35 (high satisfaction). Internal consistency was computed for the 24 VIA subscales, for the SWLS and for the engagement coping scale of the CSI-SF by computing Cronbach's alpha. The internal consistency was interpreted in the following way: A Cronbach's alpha value of $>.9$ was considered excellent, $>.8$ high, $>.7$ acceptable, $>.6$ questionable, $>.5$ low and $<.5$ unacceptable (Blanz, 2015). Next up, in order to get a general overview of the data, descriptive statistics (i.e. range of values, mean and standard deviation) were computed for the higher-order strength scales of the VIA, for the 24 individual strengths scales, for the engagement coping scale of the CSI and for the SWLS. Subsequently, the data was inspected

for normality. For that, the frequency distributions of the respective scales were screened visually, and the rule-of-thumb was applied that normality can be assumed if skewness and kurtosis are within the ± 2 range (Garson, 2012).

To answer the first research question, to what extent there is a relationship between intellectual, emotional and interpersonal strengths with engagement coping, Pearson's r test was employed to compute correlations between the higher-order strength scales and the scale of engagement coping, if normality was given. Hereby, Bonferroni adjusted alpha levels of 0.01 (0.05/5) were employed. For the correlation analysis, an r of less than 0.20 was considered very weak, 0.20 to 0.39 weak, 0.40 to 0.59 moderate, 0.60 to 0.79 strong and 0.80 or greater a very strong correlation (Evans, 1996).

Next, for the second research question, to what extent the 24 character strengths are associated with engagement coping, if normality was given, Pearson's r test was employed to compute correlations between the 24 character strength scales of the VIA and the scale of engagement coping, using Bonferroni adjusted alpha levels of 0.002 (0.05/24). Regarding both the first and the second research question, if a distribution did not follow normality, Spearman's ρ was employed to compute correlations.

To answer the third research question, to what extent engagement coping mediates the relationship between the strengths love, zest, hope, and curiosity with life satisfaction, mediation analysis was employed using the PROCESS macro from Hayes (2018). The character strengths of zest, love, curiosity and hope served as the independent variable, with engagement coping as a mediator and life satisfaction as a dependent variable (see Figure 1 above for an example). Hereby, the statistical significance of the mediation effect was tested using bootstrapping. A mediation effect was inferred based on four requirements. First, the total effect of the independent variable (love, zest, hope and curiosity respectively) on the dependent variable (life satisfaction) had to be significant. Next, the effect of the respective strength on engagement coping had to be significant. Then, the effect of engagement coping on life satisfaction had to be significant. After that, the indirect effect of the respective strength on life satisfaction had to be significant, while controlling for engagement coping as a mediator. Lastly, for a partial mediation, the direct effect of the strength on life satisfaction had to be significant, and for a full mediation, the direct effect had to be non-significant.

Results

From the 118 participants that contributed to the study, three cases were excluded for further analysis since unserious answer patterns of the respective participants were evident. Table 1 shows the mean scores, standard deviations, and the minimum and maximum scores for the five higher-order strengths. On average, participants scored highest on interpersonal strengths ($M = 3.83$) and lowest on theological strengths ($M = 3.39$). Scores for intellectual strengths varied the most ($SD = .51$) and scores for strengths of restraint showed considerably lower variation ($SD = .17$) in comparison to the other higher-order strengths.

Table 1

Descriptive Statistics of the Five Higher-Order VIA-72 Scales (N = 115)

Character strengths	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	<i>Skewness</i>	<i>Kurtosis</i>
Emotional strengths	3.63	.41	2.33	4.80	-.01	.66
Interpersonal strengths	3.83	.43	2.33	4.87	-.01	.91
Strengths of restraint	3.60	.17	1.96	4.54	-.49	1.34
Intellectual strengths	3.42	.51	2.22	4.67	.23	-.25
Theological strengths	3.39	.53	2.22	4.67	.29	-.39

Appendix F shows the mean scores, standard deviations, and the minimum and maximum scores for the 24 strength scales of the VIA-72 questionnaire. On average, participants scored highest and varied the least for honesty ($M = 4.20$, $SD = .51$). They scored lowest and varied the most for religiousness ($M = 2.40$, $SD = .89$). As indicated in Table 2, scores on the engagement coping scale of the CSI-SF ranged from 2.00 to 4.63, with a mean of 3.43 and a standard deviation of .54. Life satisfaction scores ranged from 8 to 35, with a mean of 25.10 and a standard deviation of 5.89.

Table 2

Descriptive Statistics of Engagement Coping Scale and the SWLS (N=115)

Scale	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	<i>Skewness</i>	<i>Kurtosis</i>
Engagement coping	3.43	.54	2.00	4.63	.05	-.49
Life satisfaction	25.10	.53	8.00	35.00	-.82	-.03

As indicated in Table 3, regarding the first research question to what extent there is a relationship between intellectual, emotional and interpersonal strengths with engagement coping, a Pearson's r test showed a weak statistically significant positive correlation between emotional strengths and engagement coping ($r = 0.35$, $N = 115$; $p < 0.01$) and between intellectual strengths engagement coping ($r = 0.31$, $N = 115$; $p < 0.01$), and a moderate positive correlation between interpersonal strengths and engagement coping ($r = 0.43$, $N = 115$; $p < 0.01$). A positive significant correlation with engagement coping was also evident for the strengths of restraint ($r = 0.32$, $N = 115$; $p < 0.01$) and the theological strengths ($r = 0.44$, $N = 115$; $p < 0.01$). Thus, all higher-order strengths showed a positive relation with engagement coping, and hereby theological strengths showed the highest and intellectual strengths the lowest positive correlation.

Table 3

Correlations of the Five Higher-Order VIA-72 Scales with Engagement Coping ($N = 115$)

Character strengths	r
Emotional strengths	.35**
Interpersonal strengths	.43**
Strengths of restraint	.32**
Intellectual strengths	.31**
Theological strengths	.44**

Note. ** $p < 0.01$.

Regarding the second research question, to what extent the 24 character strengths are associated with engagement coping, Table 4 shows the correlations of the 24 VIA-72 scales with engagement coping. Applying the Bonferroni adjusted alpha levels of 0.002, six character strengths showed a significant positive relation with engagement coping: Appreciation of beauty & excellence ($r = 0.34$, $N = 115$; $p < 0.002$), love ($r = 0.59$, $N = 115$; $p < 0.002$), fairness ($r = 0.33$, $N = 115$; $p < 0.002$), gratitude ($r = 0.36$, $N = 115$; $p < 0.002$), kindness ($r = 0.36$, $N = 115$; $p < 0.002$) and zest ($r = 0.29$, $N = 115$; $p < 0.002$). Hereby, love was the only strength that showed a moderate positive association, with all the other strengths only showing a weak positive association with engagement coping. Two strengths showed a weak positive correlation with engagement coping at alpha levels of 0.01, but they did not meet the requirement of the adjusted alpha levels of 0.002. This was the case for curiosity ($r = 0.27$, $N = 115$; $p < 0.01$), and religiousness ($r = 0.22$, $N = 115$; $p < 0.01$).

Table 4*Correlations of the 24 VIA-72 Scales with Engagement Coping (N=115)*

Character strengths	<i>r</i>
Appreciation of Beauty & Excellence	.34***
Bravery	.20*
Love	.59***
Prudence	.22*
Teamwork	.19*
Creativity	.19*
Curiosity	.27**
Fairness	.33***
Forgiveness	.20*
Gratitude	.36***
Honesty	.17
Hope	.21*
Humor	-.05
Persistence	.22*
Open-Mindedness	.19*
Kindness	.36***
Leadership	.21*
Love of learning	.18
Modesty	.01
Perspective	.16*
Self-Regulation	.09*
Social Intelligence	.20*
Religiousness	.22**
Zest	.29***

Note. * $p < 0.5$, ** $p < 0.01$ *** $p < 0.002$

To answer the third research question to what extent engagement coping mediates the relationship between the strengths love, zest, hope, and curiosity with life satisfaction, a series of regression analyses were carried out. The results can be seen in Figure 2. For the strength of love, the analysis revealed that it significantly predicted life satisfaction. However, the analysis of the indirect effect showed that this relationship was not significantly mediated by engagement coping. For the strengths of zest, the analysis revealed that it significantly predicted life satisfaction as well. The analysis of the indirect effect showed that this relationship is significantly mediated by engagement coping. Zest positively affected engagement coping and engagement coping in turn positively affected life satisfaction. After accounting for the mediating role of engagement coping, zest still had a positive impact on life satisfaction. For the strength of hope, the analysis revealed that it significantly predicted life satisfaction as well. However, the analysis of the indirect effect showed that this relationship is not significantly mediated by engagement coping. For the strength of curiosity, the analysis revealed that its relationship with life satisfaction is significantly mediated by engagement coping. Curiosity positively affected engagement coping and engagement coping in turn positively affected life satisfaction. After accounting for the mediating role of engagement coping, however, curiosity did not have a positive impact on life satisfaction anymore. Summarising, for zest, a partial mediation was evident, for curiosity a full mediation was evident, and for the other two strengths engagement coping did not serve as a mediating variable.

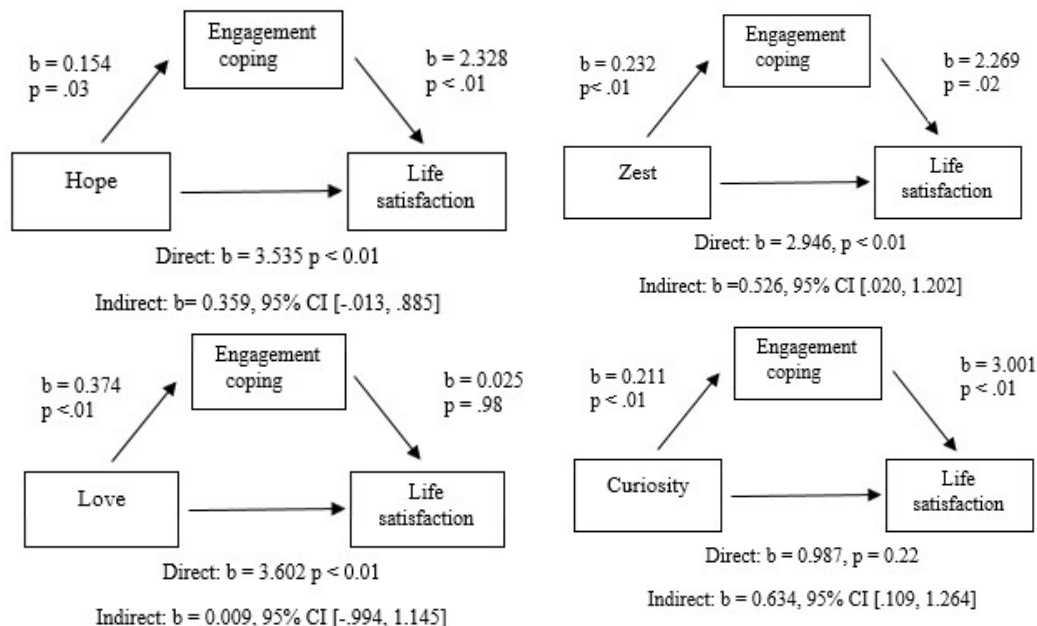


Figure 2. Model of the mediating effect of engagement coping for the effect of character strengths on life satisfaction using a bootstrapped CI based on 5000 samples.

Discussion

The purpose of this study was to investigate the relation of character strengths and coping, based on the premise that character strengths play a role in how one copes with adversity (Peterson & Seligman, 2004). The first aim of this study was to investigate the relationship between the higher-order strengths and engagement coping, particularly for the intellectual, emotional, and interpersonal strength scales. It was found that a positive relationship between all higher-order strengths and engagement coping exists, not only for intellectual, emotional and interpersonal strengths. Theological and interpersonal strengths showed the strongest association with engagement coping, followed by emotional strengths. Strengths of restraint and intellectual strengths showed the weakest association. The second aim of this study was to take a closer look at the character strengths and their relationship with engagement coping on the level of the 24 character strengths. Only six of them showed a significant positive relationship with engagement coping, namely appreciation of beauty & excellence, love, fairness, gratitude, kindness and zest. Love showed a substantially higher association than other strengths.

The third aim of this study was to investigate whether the relation of certain strengths (i.e. love, zest, hope, curiosity) with life satisfaction is mediated by engagement coping. The regression analyses revealed a partial mediation for zest, a full mediation for curiosity, and no mediation effect of engagement coping for the strengths of love and hope.

Regarding the first research question, in line with previous research (e.g. Harzer & Ruch, 2015; Peterson et al., 2006; Peterson & Seligman, 2004), the overall supposition that character strengths are positively linked to engagement coping are supported by the results of this study. This makes sense intuitively, given that character strengths are what constitutes a good character (Peterson & Seligman, 2004) and that one would expect a good character to be associated with effectively dealing with problems and distress. In the current study, all higher-order strengths showed positive associations with engagement coping, whereby theological and interpersonal strengths showed the strongest association.

The category of interpersonal strengths entails strengths that relate to one's sociability, feelings of being part of a community and having positive relationships with others (Shoshani & Slone, 2013). Engagement coping strategies entail emotion-focused strategies such as seeking social support, and openly communicating one's feelings to others (Tobin, Holroyd, & Reynolds, 1984). Thus, someone with positive reciprocal relationships might be better able to deal with stressors more effectively by seeking help from others and by talking to others about the stressor.

Theological strengths showed the strongest association with engagement coping in this sample. Since this category only entails three strengths (spirituality, appreciation of beauty & excellence and gratitude) the association of those strengths with engagement coping will be discussed in detail in the following section, where the focus lies on the strengths individually. Generally, it is striking that this higher-order strength was not particularly associated with coping in previous research. In Harzer and Ruch's (2015) study, which represents the only previous research that systematically investigated the relationship between those concepts, the authors put forward that theological strengths are not particularly associated with coping.

Emotional strengths are those strengths that give a positive outlook on life (i.e. hope and zest) and involve sticking to and reaching one's goals, even in the face of opposition (Peterson et al., 2006). Hence, the association with engagement coping might stem from the fact that individuals with high levels of emotional strengths are better able to maintain a positive attitude on the one hand and are able to persistently engage in an effort to deal with the stressor effectively on the other hand. This is in line with previous research postulating that hope, for example, portrays an essential part in coping with serious psychological stress for a prolonged time (Folkman, 2010).

Intellectual strengths showed the weakest association with engagement coping. This might give the impression that the findings of the current study stand in contrast to the findings of Harzer and Ruch (2015), who found intellectual strengths to be most strongly correlated with positive coping in comparison to the other higher-order strengths. However, it has to be noted that the correlation of intellectual strengths with coping is not substantially lower in this sample. Rather, the difference stems from the fact that in this study all other higher-order strengths showed a stronger association with engagement coping. Hence, it can still be fruitful to think about possible explanations of the association of intellectual strengths and engagement coping. Intellectual strengths might be related specifically to problem-focused engagement coping, since creativity, curiosity and love of learning can all be considered cognitive strengths that deal with acquiring and using knowledge. In turn, this acquisition and use of knowledge leads to the production of novel and adaptive problem-solving strategies (Peterson & Seligman, 2004).

The category of strengths of restraint showed an association with engagement coping along similar lines as intellectual strengths. For this category of strengths it is difficult to provide an overall explanation for the association, because it entails more character strengths than the other higher-order strengths and was also considered to be of little importance for coping, according to Harzer and Ruch (2015). What can be said though, is that this higher-order strength can be

most closely linked to self-control (Gustems-Carnicer & Calderón, 2016), and self-control skills have been directly associated with cognitive-behavioural coping skills (Mezo, 2009). Similarly, the concepts of emotional self-regulation and coping have often been closely linked (Compas et al., 2017).

Regarding the second research question, only six character strengths showed a significant association with engagement coping, namely appreciation of beauty & excellence, love, fairness, gratitude, kindness and zest. The interpretation of these results will be limited to the significant strengths, as the discussion of possible explanations for non-significant strengths would go beyond the scope of this paper. Love and kindness are part of the interpersonal strengths and appreciation of beauty & excellence and gratitude are part of the theological strengths. Thus, looking at the level of the strengths itself, this reveals the reason why those two higher-order strengths exhibited stronger correlations with engagement coping than the other higher-order strengths. In the following, possible mechanisms are formulated on where the associations between the six character strengths with engagement coping might come from.

Love showed a substantially higher association with engagement coping than all other strengths. A high score on the strength of love indicates having someone to trust and rely upon and someone that helps and supports you (Peterson & Seligman, 2004). Accordingly, an association of love especially with emotion-focussed engagement coping seems almost self-evident, since part of emotion-focussed engagement coping is for example to ask a close friend or relative for advice or to talk about the problem with them (Tobin, Holroyd, & Reynolds, 1984). Having positive and supportive relationships makes it easier to share problems or receive support, hence coping strategies such as seeking social support seem to coincide directly with the definition of the character strength of love. Adding to this, within the framework of the broaden-and-build theory, Fredrickson (2001) postulated that love in close relationships broadens people's perspective because it creates the longing for people to "play with, explore, and savour experiences with loved ones" (Fredrickson, 2001, p. 4) and through this process, habitual modes of thinking or acting are broadened.

A similar picture emerges for the strengths of gratitude. Gratitude entails a deep sense of appreciation and a sense of goodwill toward other persons (Peterson & Seligman, 2004) and thus also seems to relate to emotion-focused engagement coping. This is underpinned by research which shows that grateful individuals employ emotion-focused coping more habitually and therefore tend to experience less emotional distress (Lau & Cheng, 2017).

Next up, regarding zest, this strengths entails being enthusiastic and "approaching life with excitement and energy" (Peterson & Seligman, 2004, p. 29). A possible explanation for the

association with engagement coping lies in the association of zest and positive affect, that has been consistently shown in many studies (*e.g.* Azañedo, Fernández-Abascal, & Barraca, 2014; Harzer, 2016; Littman-Ovadia & Lavy, 2012; Martínez-Martí & Ruch, 2014; Zhang & Chen, 2018). Being zestful means to frequently experience positive emotions, and according to the broaden-and-build theory, experiencing those positive emotions “broadens people’s momentary thought-action repertoires which serves to build their enduring personal resources” (Fredrickson, 2001, p. 1). Consequently, being zestful probably means one builds increased resources of thoughts and behaviour in order to effectively cope with stressors.

The broaden-and-build theory might also be applicable to the connection of appreciation of beauty & excellence with engagement coping. A person scoring high on this strengths experiences more joy in daily life (Peterson & Seligman, 2004), which in turn could result in a broadened repertoire of one’s coping strategies. Furthermore, it is presumed that people with a high sense of appreciation of beauty & excellence exhibit more ways to deeply connect with others (Peterson & Seligman, 2004), which could subsequently lead to improved emotion-focussed coping.

Regarding fairness, this strength can be considered “the product of moral judgement – the process by which people determine what is morally right” (Peterson & Seligman, 2004, p. 392). This act of moral deliberation requires certain moral psychological competencies, including certain emotional, cognitive and behavioural skills (Peterson & Seligman, 2004). Thus, it could be speculated that those skills that are employed for moral deliberation are also advantageous when it comes to deliberation on how to effectively deal with adversity, which might explain the association of fairness and engagement coping.

Regarding the third research question, the results indicate that for some strengths, the association with life satisfaction can be explained by the positive impact the strengths has on adaptively coping with stressors, which in turn leads to higher life satisfaction. This raises the question why this seems not to be the case for all the examined strengths.

As expected, a partial mediation of engagement coping was evident for zest. This is in line with the raised assumption about zest and its positive relation with life satisfaction and engagement coping as indicated by the previously mentioned broaden-and-build theory. Accordingly, being zestful probably results in broad cognitive and attentional capacities and creates increased resources of coping which in turn positively influences one’s life satisfaction. It also makes sense that the direct effect of zest on life satisfaction persists, as this association can virtually be considered a tautology, according to Park, Peterson and Seligman (2004).

For curiosity it was not expected that the direct association of curiosity and life satisfaction would diminish when introducing engagement coping as a mediator. A full mediation was unexpected since curiosity, as mentioned earlier, has been one of the strengths that has been consistently associated with life satisfaction. On the other side, curiosity has been the only strength that was explicitly linked to the production of novel and adaptive problem-solving strategies in the first book about the classification of character strengths from Peterson and Seligman (2004). Similarly, curiosity can be linked to the positive emotion of interest, which creates the need to explore and to seek out novel information and experience, thereby expands one's coping resources and finally leads to enhanced wellbeing (Fredrickson, 2001). Thus, it might be possible that this pathway could fully explain the association between curiosity and life satisfaction.

For love and hope, the relationship with life satisfaction was not mediated by engagement coping. Love showed the strongest association with engagement coping among all strengths and can conceptually be directly linked to receiving social support and being able to share problems. This way of coping with adversity has also been positively linked to life satisfaction (Deniz, 2006), so it is difficult to understand why a mediation effect did not occur here.

Hope showed a direct association with life satisfaction, but unexpectedly, the indirect effect of engagement coping as a mediator did not occur. Research showed that students with high levels of hope have better problem-solving skills and score higher on general wellbeing (Chang, 1998). Moreover, hope is essential in coping with serious psychological stress (Folkman, 2010). On the other hand, despite its association with problem-solving and life satisfaction, high levels of hope are not necessarily associated with emotion-focused engagement coping (Chang, 1998). Hope also did not yield a strong correlation with engagement coping in the correlational analysis of this study. This might be the reason why a mediation did not occur for hope.

Generally, the findings of this study should be considered with caution since several methodological limitations apply. The relation of character strengths, engagement coping and life satisfaction has scarcely been researched and due to the cross-sectional study design, conclusions about possible causal relationships cannot be drawn, and thus possible explanations for the discovered associations were mainly formulated on the basis of theoretical deliberations. Gustems-Carnicer and Calderón (2016) for example thought that theoretically, a bidirectional relation of character strengths and coping would be imaginable as well. Similarly, Chang (1998) assumed an effect of hope on life satisfaction but he noted that life satisfaction might as well promote greater hope.

Furthermore, to reduce the burden of participants, a short form of the VIA strength questionnaire with 72 items was used. On their website, the VIA Institute on Character presents a psychometric comparison between the original VIA-IS with 240 items and the VIA-72. For the subscales of the VIA-72, it is shown that Cronbach's alpha levels are partially questionable, ranging from $\alpha = 0.60 - 0.87$ (VIA, 2020a), whereas the subscales of the VIA-IS shows higher internal consistency ($\alpha = 0.77 - 0.89$; VIA, 2020b). Using the original VIA-IS questionnaire with 240 items would have likely led to stronger internal consistency of the strength scales. Similarly, the Coping Strategy Inventory Short-Form (CSI-SF) has been used, which has been less validated, contains only 8 items concerning engagement coping, and originally showed a Cronbach's alpha of $\alpha = 0.7$ (Addison et al., 2007). The more established Coping Strategies Inventory (CSI) contains 36 items concerning engagement coping and shows higher internal consistency ($\alpha = 0.9$; Tobin, Holroyd, & Reynolds, 1984). Thus, the more extensive questionnaires would probably have produced more meaningful results, but the burden would then have been substantially higher, which would have likely made more participants quit the study prematurely. Moreover, the study relied on self-reported data, which can be a potential source of various biases, such as a selective memory and desirability biases (Gustems-Carnicer & Calderón, 2016).

Lastly, it is noteworthy that the data collection of this study took place during the outbreak of the coronavirus disease 2019 (COVID-19) pandemic. Worldwide, pervasive measures to prevent the spread of the disease such as social distancing have been ordered, which drastically influenced the daily life of many people. A study that evaluated the mental state of college students during the pandemic in China found that many college students were faced with extraordinary circumstances and subsequently experienced anxiety and psychological distress (Cao et al., 2020). Another study detected a decrease in life satisfaction after the outbreak of COVID-19 (Li, Wang, Xue, Zhao, & Zhu, 2020). Hence, the wide reaching psychological, social physical and socioeconomic impact of the pandemic (Holmes et al., 2020) likely affected the responses of participants regarding their coping behaviour, perceived level of strengths and life satisfaction.

Despite these limitations, this study adds to the presently small body of literature that is concerned with how character strengths can contribute to coping with adversity. Additionally, this study established a novel link to Fredrickson's broaden-and-build theory and subsequently points towards a possible mechanism for the influence of character strength onto coping. Furthermore, practical implications follow from the results of this study. This research emphasises the importance of cultivating character strengths and the need to employ character

strength-based interventions in the educational context, as this could help students to better deal with the many challenges they have to face during their studies. Hereby, a special emphasis should be placed on the strengths that are most strongly related to engagement coping.

As literature on the relation of coping and character strengths is quite scarce, in future studies it might be fruitful to validate the findings of this study in different populations, in order to enable generalisability of the results. A meta-review revealed that student samples are on average more homogenous than non-student samples, as they tend to have high socioeconomic status for example (Peterson, 2001). Hence, a sample including individuals with more diverse socioeconomic backgrounds might be more representative of the general public and could strengthen claims about the association of character strengths with coping. In turn, this would be informative for strength-based interventions that do not solely focus on student populations.

Additionally, it might be interesting to validate the findings with different instruments for measuring coping, as there is no “gold standard” for the measurement of coping strategies. This could further validate the current findings and give a more nuanced view on the relation of strengths with a broad range of specific coping strategies.

Finally, in this study, certain strengths were assumed to be linked to specific coping mechanisms; for example love was assumed to be more linked to emotion-focused coping. Hence it could be beneficial to investigate the relation of strengths and engagement coping on a more specific level of coping strategies, since this would give a clearer picture which strengths are relevant for which types of coping strategies. Finally, interventional studies could be employed in order to establish a causal relationship between character strengths and engagement coping and to be able to directly look into how strengths-promoting interventions affect an individual’s coping skills.

In conclusion, this research contributes to the synthesis of character strengths and coping strategies; two concepts that taken together constitute a promising line of research in the application of positive psychology.

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Appendix

Appendix A

VIA Classification of Strengths

Emotional Strengths

1. **bravery**: not shrinking from threat, challenge, difficulty, or pain
2. **hope**: expecting the best and working to achieve it
3. **zest**: approaching life with excitement and energy
4. **perspective**: being able to provide wise counsel to others
5. **social intelligence**: being aware of the motives and feelings of self and others

Interpersonal Strengths

6. **leadership**: organizing group activities and seeing that they happen
7. **teamwork**: working well as member of a group or team
8. **kindness**: doing favours and good deeds for others
9. **love**: valuing close relations with others
10. **humour**: liking to laugh and joke; bringing smiles to other people

Strengths of Restraint

11. **fairness**: treating all people the same according to notions of fairness and justice
12. **forgiveness**: forgiving those who have done wrong
13. **modesty**: letting one's accomplishments speak for themselves
14. **prudence**: being careful about one's choices; not saying or doing things that might later be regretted
15. **honesty**: speaking the truth and presenting oneself in a genuine way
16. **persistence**: finishing what one starts
17. **open-mindedness**: thinking things through and examining them from all sides
18. **self-regulation**: regulating what one feels and does

Intellectual Strengths

19. **creativity**: thinking of novel and productive ways to do things
20. **curiosity**: taking an interest in all of ongoing experience
21. **love of learning**: mastering new skills, topics, and bodies of knowledge

theological strengths

22. **gratitude**: being aware of and thankful for the good things that happen
23. **religiousness**: having coherent beliefs about the higher purpose and meaning of life
24. **appreciation of beauty & excellence**: noticing and appreciating beauty, excellence, and/or skilled performance in all domains of life

Appendix B

The Values in Action Inventory (VIA-72) Questionnaire



The following questionnaire concerns your personal character strengths. 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. Please be honest and accurate.



	Very much unlike me	Unlike me	Neutral	Like me	Very much like me
I have taken frequent stands in the face of strong opposition.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I never quit a task before it is done.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I always keep my promises.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I always look on the bright side.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am a spiritual person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know how to handle myself in different social situations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I always finish what I start.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



	Very much unlike me	Unlike me	Neutral	Like me	Very much like me
I really enjoy doing small favors for friends.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
As a leader, I treat everyone equally well regardless of his or her experience.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Even when candy or cookies are under my nose, I never overeat.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I practice my religion.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I rarely hold a grudge.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am always busy with something interesting.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No matter what the situation, I am able to fit in.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Very much unlike me	Unlike me	Neutral	Like me	Very much like me
I go out of my way to cheer up people who appear down.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
One of my strengths is helping a group of people work well together even when they have their differences.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am a highly disciplined person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I experience deep emotions when I see beautiful things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Despite challenges, I always remain hopeful about the future.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I must stand up for what I believe even if there are negative results.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I finish things despite obstacles in the way.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>



	Very much unlike me	Unlike me	Neutral	Like me	Very much like me
Everyone's rights are equally important to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I see beauty that other people pass by without noticing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I never brag about my accomplishments.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am excited by many different activities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am a true life-long learner.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am always coming up with new ways to do things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People describe me as "wise beyond my years."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



	Very much unlike me	Unlike me	Neutral	Like me	Very much like me
My promises can be trusted.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
I give everyone a chance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To be an effective leader, I treat everyone the same.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am an extremely grateful person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Very much unlike me	Unlike me	Neutral	Like me	Very much like me
I try to add some humor to whatever I do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I look forward to each new day.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe it is best to forgive and forget.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My friends say that I have lots of new and different ideas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I always stand up for my beliefs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am true to my own values.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I always feel the presence of love in my life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can always stay on a diet.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



	Very much unlike me	Unlike me	Neutral	Like me	Very much like me
I think through the consequences every time before I act.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am always aware of the natural beauty in the environment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My faith makes me who I am.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have lots of energy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can find something of interest in any situation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I read all of the time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Thinking things through is part of who I am.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am an original thinker.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Very much unlike me	Unlike me	Neutral	Like me	Very much like me
I have a mature view on life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can express love to someone else.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Without exception, I support my teammates or fellow group members.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel thankful for what I have received in life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know that I will succeed with the goals I set for myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I rarely call attention to myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a great sense of humor.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I always weigh the pro's and con's.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Very much unlike me	Unlike me	Neutral	Like me	Very much like me
I enjoy being kind to others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can accept love from others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Even if I disagree with them, I always respect the leaders of my group.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am a very careful person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have been told that modesty is one of my most notable characteristics.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am usually willing to give someone another chance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I read a huge variety of books.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I try to have good reasons for my important decisions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Very much unlike me	Unlike me	Neutral	Like me	Very much like me
I always know what to say to make people feel good.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is important to me to respect decisions made by my group.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I always make careful choices.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel a profound sense of appreciation every day.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I awaken with a sense of excitement about the day's possibilities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Others consider me to be a wise person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe that it is worth listening to everyone's opinions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am known for my good sense of humor.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Appendix C

The Coping Strategies Inventory Short Form (CSI-SF)

Take a few moments and think about an event or situation that has been very stressful for you during the last month because it made you feel bad or because it took effort to deal with it.

Considering this event, how do you usually deal with these kind of situations?

	Never	Rarely	Sometimes	Often	Almost always
I make a plan of action and follow it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I look for the silver lining or try to look on the bright side of things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I try to spend time alone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I hope the problem will take care of itself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I try to let my emotions out	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I try to talk about it with a friend or family	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Sometimes	Often	Almost always
I try to put the problem out of my mind	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tackle the problem head-on	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I step back from the situation and try to put things into perspective	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tend to blame myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I let my feelings out to reduce the stress	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I hope for a miracle	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Sometimes	Often	Almost always
I ask a close friend or relative that I respect for help or advice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I try not to think about the problem	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tend to criticize myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I keep my thoughts and feelings to myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix D

The Satisfaction with Life Scale (SWLS)



Below are five statements 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.

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
In most ways my life is close to my ideal.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The conditions of my life are excellent.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am satisfied with my life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
So far I have gotten the important things I want in life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I could live my life over, I would change almost nothing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Appendix E

Informed Consent



Dear participant,

thanks for participating in our online survey!

This research aims at finding out more about the relation between personal character strengths, stress, coping and life satisfaction. Please answer the questions as honestly as possible. There is no right or wrong answer. The survey will take a maximum of 15 minutes.

Your participation in this study is entirely voluntary and you can withdraw at any time. Your answers in this study will remain confidential. We will minimize any risks by only making the data obtained available to the researcher and for research purposes only. The participants will be anonymised and no personal data will be used.

If you have any questions, feel free to send an email to I.n.wiepking@student.utwente.nl.
Thank you for your contribution to our bachelor thesis! :)



I read and understood all the above mentioned and agreed to participate in the study. Further, I partake out of my own free will and I am informed that I can withdraw from the study at any time without providing a reason.

- ☐ Yes
☐ No



Appendix F

Descriptive Statistics of the 24 VIA-72 Scales (N=115)

Character strengths	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	<i>Skewness</i>	<i>Kurtosis</i>
Appreciation of Beauty & Excellence	3.96	.83	1.00	5.00	-.77	.63
Bravery	3.71	.63	2.00	5.00	-.23	-.01
Love	3.78	.85	1.00	5.00	-.55	.28
Prudence	3.62	.86	1.00	5.00	-.70	.35
Teamwork	3.68	.61	1.67	5.00	-.46	1.01
Creativity	3.52	.69	2.00	5.00	-.18	-.50
Curiosity	3.61	.68	1.67	5.00	-.53	.26
Fairness	4.01	.71	1.00	5.00	-1.30	.36
Forgiveness	3.59	.72	1.67	5.00	-.25	-.34
Gratitude	3.87	.61	2.33	5.00	-.09	-.53
Honesty	4.20	.51	2.33	5.00	-.79	1.19
Hope	3.77	.74	1.67	5.00	-.33	-.36
Humor	3.83	.80	1.00	5.00	-.68	.55
Persistence	3.42	.79	1.67	5.00	-.26	-.41
Open-Mindedness	3.94	.69	3.00	5.00	-.54	.16
Kindness	4.12	.58	2.67	5.00	-.58	-.10
Leadership	3.73	.70	1.67	5.00	-.30	.11
Love of Learning	3.13	.86	1.33	5.00	.08	-.70
Modesty	3.12	.74	1.33	5.00	.17	-.10
Perspective	3.55	.68	1.67	5.00	-.23	-.01
Self-Regulation	2.86	.87	1.00	5.00	.44	-.27
Social Intelligence	3.72	.71	1.00	5.00	-.84	1.28
Religiousness	2.40	.89	1.00	4.67	.23	-.57
Zest	3.43	.68	1.67	5.00	-.28	.10