

UNIVERSITY OF TWENTE.

Bachelor Thesis

Character strengths and coping styles in regard to perceived stress in a
University student sample

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Abstract

University is a period where adolescents experience physical, mental and emotional growth. However, an increase in expected demands of Universities causes mental health issues to become more prevalent when talking about students and campus life (Wahed & Hassan, 2017). The question arises why some students seem to struggle with challenges of campus life while others seem to flourish. This study approached this question from the perspective of positive psychology, analyzing the relation between character strengths, coping strategies and stress. Additionally it was checked if coping strategies work as a mediator in this interplay. In total 57 participants filled in an online questionnaire provided via the platform QUALTRICS. The questionnaire consisted of demographic questions, the USSS to assess experienced stress, the brief COPE to analyse coping strategies and the VIA-IS to assess character strengths and virtues. The results showed that stress correlates significantly weak with the virtue temperance ($r = .232$) and moderately with maladaptive coping strategies ($r = .424$). Adaptive coping strategies showed significant moderate correlations with the virtue of humanity ($r = .303$), transcendence ($r = .511$) and the mean level of virtues in general ($r = .314$). Additionally, no mediating effect of coping strategies on the virtue stress relationship could be shown. The regression analysis showed no statistical significant impact of virtues and stress. However, it could be observed that temperance has a significant relation with stress if adding maladaptive coping strategies as a second independent variable. Due to limitations such as the sample size or mostly female german participants, it can be said that the results of this study are hardly generalizable to all students at the university of twente, nor students in general.

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Introduction

University is a period where adolescents experience physical, mental and emotional growth. However, an increase in expected demands of Universities causes mental health issues to become more prevalent when talking about students and campus life (Wahed & Hassan, 2017). Freshmen are especially challenged due to many changes that occur during the transition in their first year, but also advanced students experience stress on a daily basis (Ribeiro et al., 2018). Previous research established a causal relation between a subjective experience of intense acute or chronic stress during this crucial period of life and severe long-term and oftentimes irreversible effects on behavior, emotion, metabolism, growth, immune and cardiovascular function (Pervanidou & Chrousos, 2007). The question arises why some students seem to struggle with challenges of campus life while others seem to flourish. Positive psychology explains individual differences in perceived level of stress from the perspective of character strengths and coping styles.

Positive Psychology

In former times psychologists focused on psychological disorders, pathology and their corresponding treatments (Ruch et al., 2010). Over the last decade that has changed since in the 1990s the field of positive psychology arose, aiming at increasing individual well-being (Peterson & Seligmann, 2012). Positive psychology has the goal to stimulate individuals to become their best possible self, empowering flourishing and optimal functioning (Ruch et al., 2010). According to Peterson (2006) there are three underlying core ideas in positive psychology forming a (1) positive subjective experience (e.g., happiness or comfort), (2) positive individual

traits (e.g., character strengths or capabilities), and (3) positive institutions (e.g., family or Universities). The field of positive psychology at an individual level aims mainly towards valued subjective experiences and is about capability to love, courage, interpersonal skill, spirituality, wisdom and many other individual traits. At a group level, positive psychology aims at civic virtues and organizations that stimulate individuals to develop responsibility, nurturance, altruism tolerance and other qualities that are related to being a good citizen (Seligman & Csikszentmihalyi, 2014). One of the most significant findings in positive psychology literature is on the value of helping the client identify and use their signature character strengths, which are the most pronounced strengths with the highest scores in an individual's strengths assessment (Niemiec, 2013).

Character strengths and virtues

Peterson and Seligman (2012) classified character strengths in the Values in Action-Inventory of Strengths (VIA-IS), containing 24 distinct character strengths categorized in six virtues: wisdom, courage, humanity, justice, temperance and transcendence.

Character strengths have been defined as „positive traits reflected in thoughts, feelings and behavior” (Leontopoulou & Triliva, 2012) and can be described as ones behavioral and cognitive processes and mechanisms that lead to virtues (Ruch et al., 2010). Virtues are culturally independent core characteristics that have an evolutionary value. They are described as inner determinants for a successful, fulfilled and happy life, supplementary to external factors such as financial security, acceptable education and a reliable social environment (Weber, Wagner & Ruch, 2016). Virtues and their corresponding character strengths stimulate flourishing and enable individuals to pursue their goals. A previous study linked the engagement in one's signature character strengths to an improved goal progress, psychological need fulfillment and enhanced well-being (Linley, Nielsen, Gillett & Biswas-Diener, 2010). Additionally, psychological needs such as competence autonomy and relatedness are positively affected using one's signature strengths (Park & Peterson, 2008). Proctor et al. (2007) analyzed character strengths in regard to satisfaction and success in educational settings and found a significant relation between character strengths and students satisfaction in academic settings. It was shown that some character

strengths positively correlate with educational satisfaction (e.g. zest, love of learning, gratitude) and with academic self-efficacy (eg. hope, love of learning, perseverance) (Weber & Ruch, 2012; Weber, Wagner & Ruch, 2016). Moreover, being diligent and cooperative were proven to be character strengths that have a significant positive relation with success in educational settings like University, as they mediate classroom and interpersonal behavior (Weber, Wagner & Ruch, 2016).

Students

University offers students opportunities to develop on a variety of dimensions, such as values, attitudes, competences, knowledge, beliefs, identity, self-concept and personality traits. Its impact on adolescents was proven to be beneficial as students develop a more positive self-concept, individual autonomy and general psychological maturity (Lounsbury, Fisher, Levy & Welsh, 2009). However, students that enter University find themselves in a critical transitory period, facing major life changes that need rapid adjustment. Shifting from adolescence to adulthood is probably one of the most stressful times in life (Duan & Bu, 2019). In their first year, students experience distress causing factors such as separation from parents, living independently, adjusting to an unfamiliar environment, balancing academic achievements and interpersonal relationships and dealing with money problems (Jackson, 2016; Duan & Bu, 2019). Due to these risk factors students are prone to experience stress.

Stress

Stress describes anything that can be challenging or threatening to an individual's well being (Wahed & Hassan, 2017). It occurs in the presence of a personally meaningful stressor that exceeds an individual's resources and knowledge to cope effectively with that present stressor (Mohiyeddini, Bauer and Semple, 2015). Stressors are environmental, social or cognitive stimuli that are perceived as threatening and difficult to handle (Brouwer, van Schaik, Korteling, van Erp & Toet, 2014). According to Richlin-Klonsky & Ruan (2003), stress causes psychological (e.g. emotional or behavioral) and physiological (cardiovascular or hormonal) responses to the demands of one's life, especially to changes. In the presence of a stressor the body releases

hormones, for instance adrenaline (Natelson, 2004), causing physical symptoms such as increased heart rate, lump in the throat or palpitations and psychological symptoms such as alertness and heightened arousal (Marten, 2017). If a stressor occurs within a normal range and does not exceed the limits of an individual, a heightened arousal was found to prepare individuals to effectively cope with the stressor. However, if the stressor can not be handled efficiently and places enduring pressure on an individual's mental and physiological state, severe consequences can arise, that can be responsible for the onset and maintenance of many physiological and psychological health impairments (Wahed & Hassan, 2017). Experiencing stress can be responsible for displaying physical symptoms such as headaches, muscle tension, fatigue or nausea (Rice, 2011). Moreover, stress can cause feelings of anger, irritability and restlessness (Lardier, Lee, Rodas, Garcia-Reid, & Reid, 2020) and can negatively impact one's level of motivation (Rice, 2011). Furthermore, it was found that in stressful situations racing thoughts and feeling overwhelmed can reduce one's concentration and focus (Wahed & Hassan, 2017). Besides, stress was correlated to a low sleep quality (Samaranayake, Arroll, & Fernando, 2014), heavy drinking behaviour (Sebena, El Ansari, Stock, Orosova, & Mikolajczyk, 2012) and unhealthy rapid weight changes (Duan & Bu, 2019). On top stress was found to increase the likelihood of developing severe psychological health problems such as depression or anxiety disorder (Keech, Cole, Hagger, & Hamilton, 2020).

Coping Strategies

Since the last decade, psychologists consider coping as increasingly relevant for experiencing and treating emotional and physical distress in our daily lives, as well as in academic settings (Proctor et al., 2011). Coping describes a process of changing cognitive and behavioral efforts to deal with external and or internal demands that tax or exceed the resources of a person (Mohanaraj et al., 2015). Successfully adapting to stress in University requires students to engage in coping strategies, such as thinking constructively, managing emotions, regulating and directing behaviour, controlling individual arousal and engaging with their environment to decrease present sources of stress (Gustems-Cancier & Calderon, 2016). Engaging in effective coping strategies was found to counteract stressors and reduce the possibility of impaired mental

health consequences (Mohanraj et al., 2015). Previous research identified approximately 400 different coping responses (Skinner et al., 2003), that can be more generally classified as problem-focused, emotion-focused, socially-supported and avoidant coping strategies (Rodriguez-Perez, Abreu-Sanchez, Rojas-Ocaña & del-Pino-Casado, 2017). However, recent literature introduced a rather dichotomous view of coping in terms of being adaptive or rather maladaptive (Norphun, Pitanupong & Jiraphan, 2020).

Adaptive coping strategies help to deal with stressors in a rather healthy way, whereas maladaptive coping strategies can be responsible for the onset of some severe psychological consequences (Enns et al., 2018). Maladaptive coping responses are for instance behaviours like turning to alcohol or drugs (Maykrantz & Houghton, 2020). Problem-focused coping (e.g. planning, looking for additional information) implicates actively trying to resolve the stressful situation and is overly considered as an adaptive coping strategy, linked to a positive adjustment after a stressful event. Emotion focused coping strategies aim at reducing the distress causing effect of a present stressor through active strategies (e.g. looking for social support, focusing on the bright side of a situation) and avoidant strategies (e.g. denial, substance abuse) (Rice, 2011; Gonzales, Tein, Sandals & Friedman, 2001). Research has shown that problem-focused coping strategies are frequently associated with better psychological outcomes, whereas emotion-focused coping strategies have been associated with poor mental health outcomes. However, these relations are not always present and it was proven that distraction (emotion-focused coping), although not oriented towards solving the problem, can be an adaptive strategy in a variety of situations (Gonzales et al., 2001).

In contrast to problem-focused coping, that is generally classified as an adaptive strategy, emotion focused coping strategies can be both adaptive (active emotion focused coping) and maladaptive (avoidant emotion focused coping). In a previous study maladaptive coping strategies, such as, blaming, substance use or denial have been linked to higher levels of experienced stress, whereas adaptive coping strategies were linked to a lower level of perceived stress (Enns et al., 2018).

Character virtues and coping styles regarding stress experience

Applying the idea of positive psychology to experienced stress of students on campuses, both virtues and character strengths have been given considerable attention in academic literature, as they are directly related to happiness, well-being and proactive strategies (Park & Peterson, 2008). Individual characteristics play a crucial role in explaining differences in experienced stress, as they were found to determine a student's vulnerability. Each individual has its own set of signature character strengths, the strengths that are most essential to who we are and are most dominant in our behaviour, even though they are not fixed over time and can change, for example, through experience (Karlsen & Berg, 2020). Character strengths and the broader conceptualization in terms of virtues can be linked to the subjective experiences of stress. Using their character strengths was found to be a protective factor to shield students from perceived stress (Duan & Bu, 2019). Individual differences in response to stressful life events and situations can therefore partially be explained from the perspective of character strengths. Taking a look at the interplay of character strengths and stress, traits such as hardiness, self-efficacy and sense of coherence were proven to be protective factors from stressful experiences (Kardum & Krapic, 2001). Gustems-Carnicer & Calderón (2016) found significant high and positive correlations of some virtues, such as wisdom, courage and transcendence, with a positive wellbeing, linking it to less experienced stress or a more healthy way to cope with stress. Thinking about possible explanations for the protective effect of wisdom on students' well-being in the presence of a stressor, it comes to the forefront that wisdom is defined as cognitive strength leading to the acquisition and use of knowledge. Scoring high on this dimension was found to be positive for your overall knowledge, helping you to handle different situations more effectively and in a less stress causing way (Peterson & Seligman, 2012; Gustems-Carnicer & Calderon, 2016). Additionally, scoring high on the virtue of wisdom helps to understand and reconstruct a certain problem, linking it to adaptive coping strategies. Love of learning and curiosity, two character strengths that are related to wisdom, are directly linked to academic achievement (Peterson & Seligmann, 2012), and are assumed to protect students from academic related stress (Kabat-Zinn & Hanh, 2009). The virtue of courage describes one's emotional strengths that are used to achieve goals and practice will power in the face of internal or external obstacles. Scoring high on this virtue was found to be a protective factor for stress as it helps to

achieve the goals one desires and sets oneself. Courage is derived from character strengths such as perseverance and zest, that have been related with engagement and commitment to resolve a stressful situation (Peterson & Seligman, 2012). Scoring high on this virtue is assumed to be linked to problem-focused coping strategies, that are an adaptive way to deal with stress (Kabat-Zinn & Hanh). Moreover, transcendence, the ability of drawing connections to a larger universe, providing meaning to it (Ruch et al., 2010) and acknowledging the bigger picture, is important for a positive well-being as it helps to deal with negative experiences and enables a positive reconstructing of threatening situations. Facing stressful situations this virtue can be linked to adaptive coping strategies due to positively reconstructing a present stressor.

As above described, character strengths were found to determine an individual's coping strategies and were found to influence the level of experienced stress. Besides, coping strategies were found to have a relation with experienced stress (Shin, Jang & Hyun, 2015). As all the three constructs were somehow related in previous studies, it can be questioned whether coping strategies mediate the relation between character virtues and experienced stress.

Aim of the study

Summing up, students entering university are in a quite stressful transitory period, which showed to impair one's physical and mental health (Kang & Choi, 2015). As some students manage to handle the increased amount of stress, others seem to struggle. Individual differences, more specifically character strengths were assumed to have a relation with the amount of experienced stress. Additionally, character strengths can be related to coping strategies, which also affect one's experienced level of stress (Harzer & Ruch, 2015). To increase knowledge in this novel field of relating character strengths to stress and coping strategies, this study attempts to answer the following research question:

What is the relation between Character strengths, coping strategies and stress in a University student sample?

The Objectives of this study are: (1) to describe the most present character strengths, coping strategies and overall stress score in a University student sample; (2) to analyze the correlation between virtues (character strengths), coping strategies and stress; (3) look for possible mediating effects of coping strategies in the virtue stress relationship.

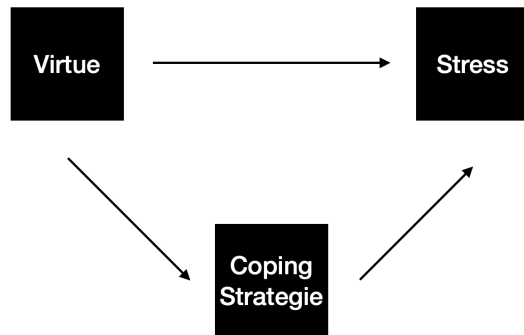


Figure 1. *Visual representation of “virtue - coping strategies - stress” relationship.*

Method

Design

This study is set up as a descriptive, cross-sectional within-subject survey study. The focus is thereby on the relation between character strengths, coping styles and experienced stress in a University student sample. Further, the Ethics Committee of the Faculty of Behavioural, Management and Social Science approved the study, case number: 200484.

Participants

This survey was conducted in May 2020 and compromised a convenience sample of 57 participants (24 male, 33 female), who were all students at the University of Twente. The mean age of the participants was 21.54 years with a standard deviation of 1.8. Participants were approached via the SONA system of the University of Twente. Therefore, this study chose for a purposive sampling method, only including students from the University of Twente. In total, 11

participants reported missing values and were excluded from the data set. Most of the participants were female, German bachelor students (57.9%).

Materials

All participants filled in an self-reported online questionnaire either through a Qualtrics link or via the online research system SONA. The questionnaire could be displayed on the participants mobile devices, computers or laptops with a working internet connection. Demographic information was gathered by including independent variables such as age, gender, nationality and years of education. Participants were asked to answer these background questions and to fill in the University Student Stress scale (USSS), the COPE and the VIA-72.

University Students Stress Scale

The USSS measures the amount of stress a university student is exposed to in different dimensions of his/her life (Ibrahim & Bohari, 2012). These dimensions are: academic, time/balance, intrapersonal/self, family and relationships/interpersonal. Each dimension is measured by a subscale containing four to eight items. In total 28 items are administered that are all beginning with “How much stress do you experience as a result of ...?”, followed by a possible stressor. For example: “... handling the academic workload” (Academic), “... managing all my different responsibilities” (Time/Balance), “... fear of failing” (Intrapersonal/Self), “... fear of disappointing my family” (Family) or “... making new friends” (Relationship/ interpersonal). Each item is scored on a five point Likert scale, with a one meaning “no stress at all” and a five meaning “extremely high stress”. After completion of the questionnaire the mean can be calculated for each of the subscales (Ibrahim & Bohari, 2012). The subscales can be summed up in one general stress score, measuring the overall level of experienced stress. The mean stress score showed a Cronbach’s alpha of ($\alpha = .717$).

Brief COPE

The second measurement refers to the Brief COPE, measuring ways people have been coping with stress (Bose, Bjorling, Elftom, Persson & Saboonchi, 2015). The Brief COPE is a 28 item long questionnaire with the purpose to discover how people, in this case university students, have been dealing with stressful life events in their daily lives. It consists of 14 subscales of two items each. Different coping behaviours can be assessed on a four point Likert scale with a one meaning “ I haven’t been doing this at all” and a four meaning “I’ve been doing this a lot” asking participants to indicate their personal tendencies on these 14 dimensions. Data concerning the reliability and validity of the Brief COPE were assessed in a previous study by Carver (1997), who proved that all reliabilities meet or exceed the threshold of .05 that is regarded as a minimal threshold. The 14 dimensions can be divided in being adaptive coping strategies ($\alpha = .794$) and maladaptive coping strategies ($\alpha = .642$).

The Values in Action Inventory of Strengths (VIA-IS)

Character strengths and virtues were measured with the 24 Character Strength Alpha Values in Action (VIA) Survey-72 (Peterson & Seligman, 2012). The VIA-72 is a 72-item self-report questionnaire and an adapted version of the VIA Inventory of Strengths (VIA-IS), that was adjusted by extracting the three most internally consistent items from each subscale. That resulted in a survey containing 72 items, instead of former 240 items, used to assess the 24 unique character strengths of *Appreciation of Beauty and Excellence, Bravery, Creativity, Curiosity, Fairness, Forgiveness, Gratitude, Honesty, Hope, Humility, Humor, Judgement, Kindness, Leadership, Love, Love of Learning, Perseverance, Perspective, Prudence, Self-Regulation, Social Intelligence, Spirituality, Teamwork and Zest*. The VIA-72 displays acceptable internal consistency and test-retest reliability (Peterson & Seligman, 2012). All scales showed a satisfactory Cronbach’s alpha ($>.70$) and test-retest correlations for the 24 scales over a four-month period were proven to be substantial ($>.70$). The adapted VIA-72 was accepted by the VIA Institute and viewed as a good alternative to the original long version of the VIA-IS. The chosen VIA-72 asked participants to indicate how much a certain statement applies to them. Each of the 72 items contains a statement with answer options rated on a five-point Likert scale, ranging from a one meaning “very much unlike me” to a five meaning “very much like me”. In

order to calculate the subscale scores for each of the 24 strengths, those scores were divided by three (the amount of questions). This means that a subscale score can range from one to five, where higher scores express higher levels of endorsement of a certain strength. The VIA shows a strong cross-cultural consistency (Park, Peterson & Seligmann, 2006) and offers a comprehensive classification of positive characteristics (Toner, Haslam, Robinson & Williams, 2012).

Procedure

Participants were approached through the online research system SONA from the University of Twente or via a Qualtrics link and asked to fill in one long self-reported questionnaire. In the beginning participants had to agree to the informed consent (see *Appendix 1*), informing them about their right to stop the study at any time and that all data will be kept confidential to minimize social desirability bias. Also, if they chose to continue with the survey they were asked to respond honestly and do not overthink their answers.

As different tests were administered, the answer options changed through the questionnaire. This change was introduced in the beginning of every section, explaining the answer options. At first the participants were asked some demographic questions regarding age and gender. Next the USSS was administered, followed by the brief COPE and the VIA. After filling in the questionnaire, the participants were thanked for their participation and received contact details in case of further questions. The overall procedure took approximately 15 to 20 minutes and participants received 0.5 SONA credits as compensation for their time.

Data Analysis

Although recent literature criticizes online data for possible sample biases, there has been substantial evidence that data obtained online can be compared to data collected in conventional settings (Martinez-Marti & Ruch, 2017). At first, the dataset was screened for valid cases and missing responses were excluded. Afterwards the subscales were created by grouping corresponding items. These 14 sub scales of the brief COPE were be grouped into adaptive coping strategies (active coping, planning, positive reframing, acceptance, humor, religion, use

of emotional support, use of instrumental support) and maladaptive coping strategies (self-distraction, denial, venting, substance use, behavioral disengagement, and self-blame). In the following step, the stress score was constructed by adding the mean scores of the five subscales of the USSS and dividing them by five to get one overall score of experienced stress.

Next, Cronbach's Alpha reliability analysis was executed for the brief COPE and the USSS.

Then, the mean scores and standard deviations of the virtues, character strengths and coping styles were calculated. Subsequently, the data was checked for normality using psychometric properties like skewness and kurtosis. If the values ranged between -1 and 1, normal distribution was assumed and Pearson correlation was used, if not, spearman correlation was also tested (Cain, Zhang & Yuan, 2017). Afterwards bivariate correlations between the virtues (transcendence, temperance, justice, humanity, courage and wisdom) and the coping strategies (adaptive, maladaptive) were calculated using Pearson correlation. It was assumed that a correlation coefficient from .00 to .29 is weak, a coefficient from .30 to .59 is moderate and a coefficient from .60 to 1 indicates a strong correlation (Schober, Boer & Schwarte, 2018). If the p-value was below the threshold of 0.05 the correlation was considered as significant (Bera & John, 1983). This was also done between experienced stress (academic, time/balance, intrapersonal/self, family and interpersonal/relationships) and the virtues, as well as between coping styles and experienced stress. Following, it was analyzed whether coping styles have a mediating effect on the relation between virtues and academic related stress. This was done using linear regression analysis, with experienced stress as dependent variable and character virtues and coping strategies as independent variables. The interplay of the three constructs was measured in order to determine if mediating effects of coping strategies would appear (see *figure 1*).

Results

Descriptive analysis

Taking a look at the descriptives of virtues and character strengths, displayed in table 1, the three virtues with the highest overall score were Justice, Humanity and Courage. The four strengths with the highest overall scores were Kindness, Humor, Fairness and Honesty.

Table 1

Means and standard deviations of six virtues in an University students		
<u>Virtue</u>	<u>Mean</u>	<u>SD</u>
Mean_Virtues	2.89	.23
Wisdom	2.86	.33
Courage	2.89	.38
Humanity	3.13	.44
Justice	3.05	.46
Temperance	2.6	.35
Transcendence	2.78	.27

For the coping strategies the adaptive dimension displayed a greater mean compared to the dimension of maladaptive coping strategies. Additionally, the mean level of experienced stress was calculated (see table 2).

Table 2

Means and standard deviations for coping strategies and experienced stress in University students	
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	<i>mean</i>	<i>sd</i>
Adaptive coping	3.62	.65
Maladaptive coping	2.08	.45
Experienced stress	2.52	.50

Correlations between virtue scales, coping strategies and experienced stress

The sample displayed a normal distribution, therefore Pearson correlation was used in order to examine the relationship between virtues, coping strategies and stress. The overall level of virtues students displayed showed a moderate positive significant correlation with adaptive coping strategies ($r = .314$, $p = .009$), but no significant correlation with maladaptive coping strategies ($r = -.022$, $p = .434$). Further, the virtue temperance displayed a significant and weak ($r < .3$) positive correlation with experienced stress ($r = .232$, $p = .041$), but no other significant correlations were found between other virtues and experienced stress. Moreover, using adaptive coping strategies was found to correlate significantly positively moderate with the virtue of humanity ($r = .303$, $p = .011$) and moderate to strong with transcendence ($r = .511$, $p = .000$). No statistically significant correlations were found between other virtues and using adaptive coping strategies. No significant correlations were found between one of the six specific virtues and maladaptive coping strategies. Additionally, it could be observed that maladaptive coping strategies displayed a moderate positive and significant correlation with experienced stress ($r = .424$, $p = .001$), but adaptive coping strategies displayed no statistically significant correlation with experienced stress ($r = -.097$, $p = .266$) (see table 3).

Table 3

Bivariate correlations between virtues (VIA-IS) and coping strategies (COPE)

Virtues	Coping strategies		Stress
	Maladaptive coping	Adaptive coping	
Mean_Virtues	-.051	.314*	-.046

Wisdom	.105	-.014	-.220
Courage	-.077	.210	-.088
Humanity	-.019	.303*	-.127
Justice	-.041	.144	-.005
Temperance	-.051	.048	.232*
Transcendence	-.111	.511**	-.169
Maladaptive coping	-	-	.424**
Adaptive coping	-	-	-.091

*Correlation is significant at the 0.05 level

**Correlation is significant at the 0.01 level

Mediation analysis regarding coping strategies

Additionally the data set was analyzed regarding possible mediating effects of adaptive and maladaptive coping strategies on the relationship between character virtues and experienced stress. It was predicted that the relations between virtues and experienced stress are mediated by students' individual differences of engaging in adaptive or rather maladaptive coping strategies. Therefore, multiple regression analyses were conducted, with focus on the impact of coping strategies on the significance of the relation between character virtues and the experienced stress. Temperance was the only virtue, displaying a significant positive correlation with experienced stress, even though this correlation was weak ($r < .3$). Using linear regression, the relationship between the virtue temperance and experienced stress was found to be not significant ($r = .329$, $p = .083$). However, after adding maladaptive coping as a second independent variable, it was observable that the temperance stress relation changed into moderate significant correlation ($r = .361$, $p = .037$). The relation between maladaptive coping and stress also increased for .65 ($r = .489$, $p = .001$) after running the regression analysis with two independent variables (see table 4). However, no significant relationship was found between temperance and maladaptive coping strategies (see *figure 2*).

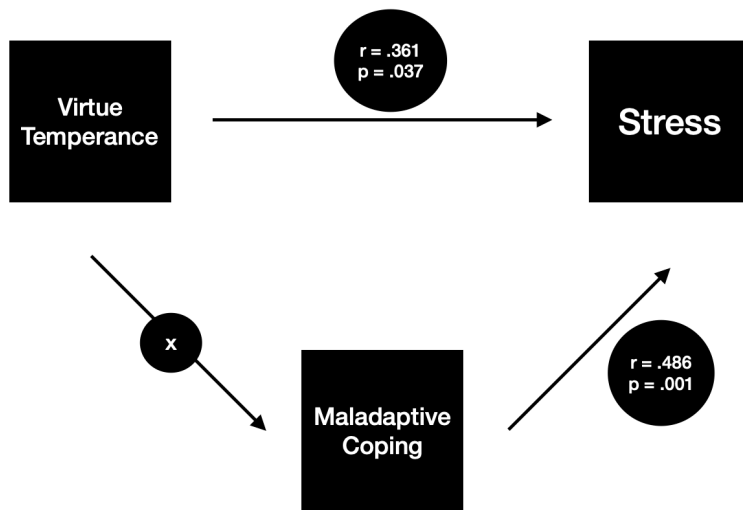


Figure 2. Visual representation of how stress is affected by temperance and maladaptive coping strategies

Therefore, it was observable that the relationship between temperance and stress is not mediated by maladaptive coping strategies. However, both independent variables displayed increased relations with significant p-values ($p < .05$) after relating them together to the experienced level of stress. This could point towards possible moderation effects of coping on the temperance stress relationship, exceeding the scope of this study.

Table 4

		Unstandardized Coefficients			
Model		B	Std. Error	t	Sig.
1	(Constant)	1.671	.490	3.408	.001
	Temperance	.329	.168	1.766	.083
2	(Constant)	.576	.533	1.08	.285
	Temperance	.361	.168	2.14	.037
	Maladaptive_coping	.486	.132	3.68	.001

Dependent variable: total_experienced_stress

Discussion

This study contributed to the emerging field of research in character strengths, coping strategies and stress in a student sample. The sample was found to be mostly German psychology students that experience mean levels of stress and can therefore be described as rather relaxed students. Additionally, the mean level of character virtues was found to be quite high, with a small standard deviation, concluding that the sample possessed a lot of character strengths. Further, it was visible the sample was rather homogenous, meaning that most of the students possessed strengths in all of the six virtues. The three most dominant virtues in this sample were courage, humanity and justice. Courage is linked to emotional strength necessary to achieve goals in the presence of external or internal disposition. Justice is related to the civic strength that is required to ensure a healthy community life, and humanity is related to interpersonal strengths aiming at making connections with others (McGovern and Miller, 2008). Linking these findings to the mean level of experienced stress, it can give a possible reason why this sample was rather relaxed, experiencing mean levels of stress.

In the introduction it was argued that character strengths have a relationship with the individual amount of experienced stress. This relationship was drawn, because character strengths appeared to be a protective factor, shielding students from stress (Duan & Bu, 2019). Scoring high on virtues such as wisdom, courage and transcendence was associated with individual flourishing and a more positive wellbeing, protecting individuals in stressful situations (Kabat-Zinn & Hanh, 2009). However, these relationships were not found in this sample. Temperance was the only virtue that displayed a significant positive correlation with experiencing stress and the other virtues showed no significant relation with stress.

Previous research linked temperance to protective and stress preventing strengths such as forgiveness, humanity, prudence and self-regulation (Niemic, 2013). This study can confirm that temperance is linked to stress. However, this study shows that students scoring high on the virtue temperance are more likely to experience stress, if they also score high on maladaptive

coping strategies. Other effects of the virtue temperance on stress were statistically not significant. This interplay of temperance and maladaptive coping strategies regarding stress confirms a previous study by Shin, Jang & Hyun (2015). They suggested coping strategies to be mediating the relation temperance has with adjusting to college life. One big part of adjusting to college life is dealing with stressful situations, as this period is especially challenging for students (Duan & Bu, 2019).

Wisdom displayed no significant relationship with stress in this sample, what is contradictory to previous studies, which linked wisdom to possessing psychological resources from which can be drawn in challenging and stressful situations (Avey, Luthans, Hannah, Sweetman & Peterson, 2012).

Further, courage was linked to academic performance (Staats, Hupp, & Hagley, 2008), and to behaviours such as, reminding oneself not to fear or be worried (Niemic, 2013). Therefore, it was expected that courage might lessen the experience of stress. However, the lessen impact of courage on experienced stress is not visible in this sample. Moreover, Humanity, the interpersonal strengths of love, kindness and social intelligence, was predicted to reduce the experienced level of stress (Niemic, 2013). Additionally, in the introduction it was mentioned that transcendence has a relationship with reduced experiences of stress (Gustems-Carnicer & Calderon, 2015). This study cannot directly confirm these findings but can link transcendence to a more healthy way to deal with stressful situations, because students scoring high on this dimension are more likely to engage in adaptive coping strategies.

Moreover, taking a look at the students coping strategies, one can see that this sample scored higher on the dimension of adaptive coping strategies compared to maladaptive coping strategies. This could explain why the sample was rather relaxed, because adaptive coping strategies are associated with a more healthy way to handle challenging and stressful situations. (Higuchi, 2020). Additionally, it was found that the mean level of virtues has a statistically significant and positive relationship with an adaptive coping style. This shows that the sample possessed generally a lot of character strengths that can be linked to adaptive coping strategies. This study cannot confirm that there is a relation between adaptive coping strategies and level of experienced stress, but showed a link between adaptive coping strategies and some of the virtues.

For example, it was observable that the virtues humanity and transcendence were significantly correlated to adaptive coping strategies. Humanity strengths have their focus on cultivating love towards oneself and towards others (Niemiec, 2013). This was shown to be beneficial for mindfulness in general, reducing the experience of stress (Naliboff, et al., 2020). Transcendence virtues are spiritual strengths that value beauty and cultivate gratitude, humor and hope (Niemiec, 2013). Previous studies showed that scoring high on the virtue of transcendence combined with an adaptive coping approach leads to greater optimism and wellbeing (Seligman & Peterson, 2012). Optimism in turn was related to dealing in a more healthy way with stressful situations (Segerstrom, Taylor, Kemeny & Fahey, 1998). Moreover, taking a look at maladaptive coping strategies, this study showed that they increased the experiencing of stress in University students. This is in line with previous research linking maladaptive coping strategies to an unhealthy way of dealing with stressors (Hampel & Petermann, 2006).

Taking a look at the interplay of virtues, coping strategies and experienced stress, it was predicted that coping mediates this relationship. This study's findings could not confirm this relationship even though previous studies suggested that the relationship between some character strengths and stress is partially mediated by coping strategies (Shin, Jang & Hyun, 2015). As this study had several limitations which will be discussed later, the results indicating that no mediating effects could be proved should be viewed with caution.

Limitations

Thinking about possible limitations of this study, the first thing that comes to mind is the small sample size (N=57). Due to special circumstances and environmental conditions, such as the corona pandemic, it was difficult to approach a sufficient number of participants leading to a sample size that is rather low in order to make valid statements. Second, the sample consisted of mostly German bachelor students that are studying outside of Germany, in the Netherlands, why the results are hardly generalizable. This group might have to overcome extra challenging obstacles due to studying outside of their country, for example, language and cultural barriers are risk factors to develop stress (Ding & Hargreaves, 2009). Third, the sample displayed more

female participants than male, causing possible gender biases in the stress, coping and character virtues assessment. Fourth, the measurement tools were self-reported questionnaires, causing potential sources of biases as they cannot be independently verified. Thinking about self-reported data, it should be noted that biases such as exaggeration of data, and consequences of selective participant memory might cause the results to be imprecise. Fifth, the participants of this study were approached in a period in which they also received other, alike questionnaires causing possible attention and motivational issues in responding attentively and truly to the questions.

Furthermore, the findings of this study are compared to other studies rather weak and non-significant. Only on virtue showed a significant relationship with stress, whereas in previous studies character virtues were somehow related to stress (Duan, Ho, Siu, Li & Zhang, 2015). One possible reason for the absence of significant relation between the other virtues and stress could be that the participants were not fully aware of their character strength as they were not explained to them prior to the questionnaire. The survey was used to stimulate students to think about their character strengths, but as the human perception is subjective, memory biases could have influenced the perception of one's character strengths and coping strategies. Moreover, this study measured character strengths and coping strategies at a one point in time, instead of assessing them over a certain period. However, using their character strength and engaging in certain coping strategies increases awareness of them. Therefore, it is advisable to assess character strengths and coping strategies not at one point in time but with a rather continuous measurement to overcome possible biases in the participants responses.

Recommendations

First of all, a larger sample size should be drawn in order to make sufficient and evidence based statements. This would cause the findings to be more representative for the University student sample. Second, the conditions should be more controlled with special focus on the participants level of concentration. Providing the questionnaire in a laboratory with the presence of a researcher could increase the participants level of attention, but could also cause for other biases due to possible conventionality in answers. Providing a single person room for the participants in which they can make the questionnaire would be beneficial for their concentration and attention

and minimize other biases. Furthermore, measuring character strengths and coping strategies not at one point in time but at different dates would increase the validity of the results. Besides, future research could investigate whether gender or age are possibly influencing the impact of character strength or coping strategies on experienced stress. Additionally, research could be done with special focus on nationality and whether a student is studying in his home country, speaking mother language or studies abroad. Furthermore, it could be investigated whether coping strategies are possible moderators in the character virtue and stress relationship.

Conclusion

All in all, this study analyzed what character virtues and coping strategies are most present in a University student sample and how these two constructs are related to stress. This study's results can be valuable to compare them to other student populations regarding virtues coping and stress. After analyzing and discussing the results it can be concluded that scoring high on the dimensions of temperance and a maladaptive coping strategies is positively related to experiencing stress. In this sample no mediating effects were shown. This study showed that scoring high in the dimensions of humanity and transcendence is associated with possessing adaptive coping strategies. Further, it was shown that engaging in maladaptive coping strategies is related to experiencing stress in University students. Although this study has not found any relationship between the other character virtues (wisdom, courage, humanity, justice, transcendence) and experiencing stress, it adds valuable information to the existing data pool regarding character strengths and stress in University students.

References

- Avey, J. B., Luthans, F., Hannah, S. T., Sweetman, D., & Peterson, C. (2012). Impact of employees' character strengths of wisdom on stress and creative performance. *Human Resource Management Journal*, 22(2), 165-181.
- Bera, A., & John, S. (1983). Tests for multivariate normality with Pearson alternatives. *Communications in Statistics-Theory and Methods*, 12(1), 103-117.
- Bose, C. N., Bjorling, G., Elfstrom, M. L., Persson, H., & Saboonchi, F. (2015). Assessment of coping strategies and their associations with health related quality of life in patients with chronic heart failure: The Brief COPE restructured. *Cardiology Research*, 6(2), 239.
- Brouwer, A. M., Van Schaik, M. G., Korteling, J. E., van Erp, J. B., & Toet, A. (2014). Neuroticism, extraversion, conscientiousness and stress: Physiological correlates. *IEEE transactions on affective computing*, 6(2), 109-117.
- Cain, M. K., Zhang, Z., & Yuan, K. H. (2017). Univariate and multivariate skewness and kurtosis for measuring nonnormality: Prevalence, influence and estimation. *Behavior research methods*, 49(5), 1716-1735.
- Carver, C. S. (1997). You want to measure coping but your protocol's too long: Consider the brief cope. *International journal of behavioral medicine*, 4(1), 92.
- Duan, W., & Bu, H. (2019). Randomized trial investigating of a single-session character-strength-based cognitive intervention on freshman's adaptability. *Research on Social Work Practice*, 29(1), 82-92.
- Duan, W., Ho, S. M., Siu, B. P., Li, T., & Zhang, Y. (2015). Role of virtues and perceived life stress in affecting psychological symptoms among Chinese college students. *Journal of American College Health*, 63(1), 32-39.

- Enns, A., Eldridge, G. D., Montgomery, C., & Gonzalez, V. M. (2018). Perceived stress, coping strategies, and emotional intelligence: a cross-sectional study of university students in helping disciplines. *Nurse education today*, 68, 226-231.
- Gonzales, N. A., Tein, J. Y., Sandler, I. N., & Friedman, R. J. (2001). On the limits of coping: Interaction between stress and coping for inner-city adolescents. *Journal of Adolescent Research*, 16(4), 372-395.
- Gustems-Carnicer, J., & Calderón, C. (2016). Virtues and character strengths related to approach coping strategies of college students. *Social Psychology of Education*, 19(1), 77-95.
- Hampel, P., & Petermann, F. (2006). Perceived stress, coping, and adjustment in adolescents. *Journal of adolescent health*, 38(4), 409-415.
- Harzer, C., & Ruch, W. (2015). The relationships of character strengths with coping, work-related stress, and job satisfaction. *Frontiers in psychology*, 6, 165.
- Higuchi, D. (2020). Adaptive and maladaptive coping strategies in older adults with chronic pain after lumbar surgery. *International Journal of Rehabilitation Research*, 43(2), 116-122.
- Ibrahim, N. F. & Bonari, A. N. (2012). An Empirical Study of Stressors among Multimedia University Students: A Case of MMU Malacca Campus. *IBIMA business review*, 2012. doi: 10.5171/2012.580042
- Jackson, J. (2016). The language use, attitudes, and motivation of Chinese students prior to a semester-long sojourn in an English-speaking environment. *Study Abroad Research in Second Language Acquisition and International Education*, 1(1), 4-33.
- Kabat-Zinn, J., & Hanh, T. N. (2009). *Full catastrophe living: Using the wisdom of your body and mind to face stress, pain, and illness*. Delta.
- Kang, H. Y., & Choi, E. Y. (2015). Stress, stress coping methods, and college adjustment according to behavioral styles in freshman nursing students. *The Journal of Korean Academic Society of Nursing Education*, 21(3), 289-297.
- Kardum, I., & Krapić, N. (2001). Personality traits, stressful life events, and coping styles in early adolescence. *Personality and individual differences*, 30(3), 503-515.

Karlsen, J. T., & Berg, M. E. (2020). A study of the influence of project managers' signature strengths on project team resilience. *Team Performance Management: An International Journal*.

Keech, J. J., Cole, K. L., Hagger, M. S., & Hamilton, K. (2020). The association between stress mindset and physical and psychological wellbeing: testing a stress beliefs model in police officers. *Psychology & Health*, 1-20.

Lardier Jr, D. T., Lee, C. Y. S., Rodas, J. M., Garcia-Reid, P., & Reid, R. J. (2020). The effect of perceived college-related stress on depression, life satisfaction, and school satisfaction: The coping strategies of Hispanic college students from a Hispanic serving institution. *Education and Urban Society*, 0013124519896845.

Leontopoulou, S., & Triliva, S. (2012). Explorations of subjective wellbeing and character strengths among a Greek University student sample. *International Journal of Wellbeing*, 2(3).

Linley, P. A., Nielsen, K. M., Gillett, R., & Biswas-Diener, R. (2010). Using signature strengths in pursuit of goals: Effects on goal progress, need satisfaction, and well-being, and implications for coaching psychologists. *International Coaching Psychology Review*, 5(1), 6-15.

Lounsbury, J. W., Fisher, L. A., Levy, J. J., & Welsh, D. P. (2009). An investigation of character strengths in relation to the academic success of college students. *Individual Differences Research*, 7(1).

Marten, F. (2017). *The Mediating Effect of Eustress and Distress on the Relation between the Mindset towards Stress and Health* (Bachelor's thesis, University of Twente).

Martínez-Martí, M. L., & Ruch, W. (2017). Character strengths predict resilience over and above positive affect, self-efficacy, optimism, social support, self-esteem, and life satisfaction. *The Journal of Positive Psychology*, 12(2), 110-119.

Maykrantz, S. A., & Houghton, J. D. (2020). Self-leadership and stress among college students: Examining the moderating role of coping skills. *Journal of American College Health*, 68(1), 89-96.

McGovern, T. V., & Miller, S. L. (2008). Integrating teacher behaviors with character strengths and virtues for faculty development. *Teaching of Psychology*, 35(4), 278-285.

Mohanraj, R., Jeyaseelan, V., Kumar, S., Mani, T., Rao, D., Murray, K. R., & Manhart, L. E. (2015). Cultural adaptation of the Brief COPE for persons living with HIV/AIDS in Southern India. *AIDS and Behavior*, 19(2), 341-351.

Mohiyeddini, C., Bauer, S., & Semple, S. (2015). Neuroticism and stress: The role of displacement behavior. *Anxiety, Stress, & Coping*, 28(4), 391-407.

Naliboff, B. D., Smith, S. R., Serpa, J. G., Laird, K. T., Stains, J., Connolly, L. S., ... & Tillisch, K. (2020). Mindfulness-based stress reduction improves irritable bowel syndrome (IBS) symptoms via specific aspects of mindfulness. *Neurogastroenterology & Motility*, e13828.

Natelson, B. H. (2004). Stress, hormones and disease. *Physiology & behavior*, 82(1), 139-143.
doi:<https://doi.org/10.1016/j.physbeh.2004.04.038>

Niemiec, R. M. (2013). VIA character strengths: Research and practice (The first 10 years). In *Well-being and cultures* (pp. 11-29). Springer, Dordrecht.

Norphun, N., Pitanupong, J., & Jiraphan, A. (2020). Stress and Coping Strategies among Thai Medical Students in a Southern Medical School. *Siriraj Medical Journal*, 72.

Park, N., & Peterson, C. (2008). Positive psychology and character strengths: Application to strengths-based school counseling. *Professional School Counseling*, 12(2), 2156759X0801200214.

Park, N., Peterson, C., & Seligman, M. E. (2006). Character strengths in fifty-four nations and the fifty US states. *The journal of positive psychology*, 1(3), 118-129.

Pervanidou, P., & Chrousos, G. P. (2012). Metabolic consequences of stress during childhood and adolescence. *Metabolism*, 61(5), 611-619.

Peterson, C. (2006). *A primer in positive psychology*. Oxford university press.

Peterson, C., & Seligman, M. E. (2012). Character Strengths and Virtues: A Handbook and Classification (New York: American Psychological Association & Oxford University Press, 2004). *Reflective Practice: Formation and Supervision in Ministry*, 32.

- Proctor, C., Tsukayama, E., Wood, A. M., Maltby, J., Eades, J. F., & Linley, P. A. (2011). Strengths gym: The impact of a character strengths-based intervention on the life satisfaction and well-being of adolescents. *The Journal of Positive Psychology*, 6(5), 377-388.
- Rice, V. H. (Ed.). (2011). *Handbook of stress, coping, and health: Implications for nursing research, theory, and practice*. Sage Publications.
- Ribeiro, I. J., Pereira, R., Freire, I. V., de Oliveira, B. G., Casotti, C. A., & Boery, E. N. (2018). Stress and quality of life among university students: A systematic literature review. *Health Professions Education*, 4(2), 70-77.
- Richlin-Klonsky, J., & Hoe, R. (2003). Sources and levels of stress among UCLA students. *Student Affairs Briefing*, 2, 1-13.
- Rodríguez-Pérez, M., Abreu-Sánchez, A., Rojas-Ocaña, M. J., & del-Pino-Casado, R. (2017). Coping strategies and quality of life in caregivers of dependent elderly relatives. *Health and quality of life outcomes*, 15(1), 71.
- Ruch, W., Proyer, R. T., Harzer, C., Park, N., Peterson, C., & Seligman, M. E. (2010). Values in action inventory of strengths (VIA-IS): adaptation and validation of the German version and the development of a peer-rating form. *Journal of individual differences*, 31(3), 138.
- Samaranayake, C. B., Arroll, B., & Fernando 3rd, A. T. (2014). Sleep disorders, depression, anxiety and satisfaction with life among young adults: a survey of university students in Auckland, New Zealand. *The New Zealand Medical Journal (Online)*, 127(1399).
- Schober, P., Boer, C., & Schwarte, L. A. (2018). Correlation coefficients: appropriate use and interpretation. *Anesthesia & Analgesia*, 126(5), 1763-1768.
- Sebena, R., El Ansari, W., Stock, C., Orosova, O., & Mikolajczyk, R. (2012). Are perceived stress, depressive symptoms and religiosity associated with alcohol consumption. *A survey of freshmen university students across five European countries*, 21-21.
- Segerstrom, S. C., Taylor, S. E., Kemeny, M. E., & Fahey, J. L. (1998). Optimism is associated with mood, coping, and immune change in response to stress. *Journal of personality and social psychology*, 74(6), 1646.

- Seligman, M. E., & Csikszentmihalyi, M. (2014). Positive psychology: An introduction. In *Flow and the foundations of positive psychology* (pp. 279-298). Springer, Dordrecht.
- Shin, J., Jang, H., & Hyun, M. (2015). Stress coping and emotional regulation mediate between character strengths and adjustment. *Korean Journal of Stress Research*, 23(3), 109-118.
- Skinner, E. A., Edge, K., Altman, J., & Sherwood, H. (2003). Searching for the structure of coping: a review and critique of category systems for classifying ways of coping. *Psychological bulletin*, 129(2), 216.
- Staats, S., Hupp, J. M., & Hagley, A. M. (2008). Honesty and heroes: A positive psychology view of heroism and academic honesty. *The Journal of psychology*, 142(4), 357-372.
- Toner, E., Haslam, N., Robinson, J., & Williams, P. (2012). Character strengths and wellbeing in adolescence: Structure and correlates of the Values in Action Inventory of Strengths for Children. *Personality and Individual Differences*, 52(5), 637-642.
- Wahed, W. Y. A., & Hassan, S. K. (2017). Prevalence and associated factors of stress, anxiety and depression among medical Fayoum University students. *Alexandria Journal of medicine*, 53(1), 77-84.
- Weber, M., & Ruch, W. (2012). The role of a good character in 12-year-old school children: Do character strengths matter in the classroom?. *Child Indicators Research*, 5(2), 317-334.
- Weber, M., Wagner, L., & Ruch, W. (2016). Positive feelings at school: On the relationships between students' character strengths, school-related affect, and school functioning. *Journal of Happiness Studies*, 17(1), 341-355.

Appendix 1 (questionnaire)

Start of Block: Informed Consent

Q1.1 Dear participant,

Thanks for participating in this online survey!

This study aims at finding out more about the relation between personal character strengths, coping styles and stress. Please answer the questions with honesty and keep in mind that there are no right or wrong answers. The survey will take a maximum of 15 minutes.

Your participation in this study is entirely voluntary and you can withdrawal 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 anonymized and no personal data will be used.

If you have any questions, feel free to send an emails to
(j.s.a.schaper@student.utwente.nl)

Thank you for your contribution to my bachelor thesis

I read and understood all the above mentioned and agreed to participate in the study. Further, I take part 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 (1)
- No (2)

Demographics

Q1.2 How old are you

Q1.3 What is your gender?

- Male (1)
- Female (2)
- Diverse (3)

Q1.4 What is your nationality ?

- German (1)
- Dutch (2)
- Other (3) _____

Q1.5 Are you doing your bachelor or master ?

- bachelor (1)
- master (2)

Q1.6 What year are you in ?

- 1st year (1)
- 2nd year (2)
- 3rd year (3)

End of Block: Demographics & Consent

Start of Block: USSS

Q2.1

The following questions are about the possible stress you may experience through your studies. Please report how much stress do you experience as a result of ...?

Q2.2 How much stress do you experience as a result of...

Handling the academic workload?

- 1 (No Stress at all) (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (Extremely high stress) (5)

Q2.3 How much stress do you experience as a result of...

Studying for tests and exams

- 1 (No Stress at all) (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (Extremely high stress) (5)

Q2.4 How much stress do you experience as a result of...

Sitting tests and exams

- 1 (No Stress at all) (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (Extremely high stress) (5)

Q2.5

How much stress do you experience as a result of...

Doing oral presentations

- 1 (No Stress at all) (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (Extremely high stress) (5)

Q2.6 How much stress do you experience as a result of...
Meeting deadlines for academic assessment

- 1 (No Stress at all) (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (Extremely high stress) (5)

Q2.7 How much stress do you experience as a result of...
attending classes

- 1 (No Stress at all) (1)
- 2 (2)
- 3 (3)
- 4 (4)

- 5 (Extremely high stress) (5)

Q2.8 How much stress do you experience as a result of...
getting good enough grades for graduate study

- 1 (No Stress at all) (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (Extremely high stress) (5)

Q2.9 How much stress do you experience as a result of...
Not being able to manage my time effectively

- 1 (No Stress at all) (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (Extremely high stress) (5)

Q2.10 How much stress do you experience as a result of...

Managing all my different responsibilities

- 1 (No Stress at all) (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (Extremely high stress) (5)

Q2.11 How much stress do you experience as a result of...

being too tired to study properly

- 1 (No Stress at all) (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (Extremely high stress) (5)

Q2.12 How much stress do you experience as a result of...

lack of time for my family

- 1 (No Stress at all) (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (Extremely high stress) (5)

Q2.13 How much stress do you experience as a result of...#

Fear of failing

- 1 (No Stress at all) (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (Extremely high stress) (5)

Q2.14 How much stress do you experience as a result of...

my lack of motivation

- 1 (No Stress at all) (1)
- 2 (2)

- 3 (3)
- 4 (4)
- 5 (Extremely high stress) (5)

Q2.15 How much stress do you experience as a result of...
dealing with my personal issues

- 1 (No Stress at all) (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (Extremely high stress) (5)

Q2.16 How much stress do you experience as a result of...
not being able to think clearly

- 1 (No Stress at all) (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (Extremely high stress) (5)

Q2.17 How much stress do you experience as a result of...
feeling like I'm not intelligent enough

- 1 (No Stress at all) (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (Extremely high stress) (5)

Q2.18 How much stress do you experience as a result of...
lack of self-discipline

- 1 (No Stress at all) (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (Extremely high stress) (5)

Q2.19 How much stress do you experience as a result of...
loneliness

- 1 (No Stress at all) (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (Extremely high stress) (5)

Q2.20

How much stress do you experience as a result of...
physical health

- 1 (No Stress at all) (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (Extremely high stress) (5)

Q2.21 How much stress do you experience as a result of...
Fear of disappointing my family

- 1 (No Stress at all) (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (Extremely high stress) (5)

Q2.22 How much stress do you experience as a result of...
dealing with my family responsibilities

- 1 (No Stress at all) (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (Extremely high stress) (5)

Q2.23

How much stress do you experience as a result of...
lack of support from my family

- 1 (No Stress at all) (1)
- 2 (2)
- 3 (3)

- 4 (4)
- 5 (Extremely high stress) (5)

Q2.24 How much stress do you experience as a result of...
dealing with family conflict

- 1 (No Stress at all) (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (Extremely high stress) (5)

Q2.25 How much stress do you experience as a result of...
Getting along with fellow students at university

- 1 (No Stress at all) (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (Extremely high stress) (5)

Q2.26 How much stress do you experience as a result of...
personal relationship problems

- 1 (No Stress at all) (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (Extremely high stress) (5)

Q2.27 How much stress do you experience as a result of...
competing with other students

- 1 (No Stress at all) (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (Extremely high stress) (5)

Q2.28 How much stress do you experience as a result of...
making new friends

- 1 (No Stress at all) (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (Extremely high stress) (5)

Q2.29 How much stress do you experience as a result of...
getting along with others in my household

- 1 (No Stress at all) (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (Extremely high stress) (5)

End of Block: USSS

Start of Block: COPE

Q3.1 Take a few moments and think about a situation or an event that has been very stressful for you during the last month, because it had 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?

Q3.2 I've been turning to work or other activities to take my mind off things

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

Q3.3 I've been concentrating my efforts on doing something about the situation I'm in

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

Q3.4 I've been saying to myself "this isn't real."

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

Q3.5 I've been using alcohol or other drugs to make myself feel better

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

Q3.6 I've been getting emotional support from others

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

Q3.7 I've been giving up trying to deal with it

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

Q3.8 I've been taking action to try to make the situation better

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

Q3.9 I've been refusing to believe that it has happened

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

Q3.10 I've been saying things to let my unpleasant feelings escape

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

Q3.11 I've been getting help and advice from other people

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)

- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

Q3.12 I've been using alcohol or other drugs to help me get through it

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

Q3.13 I've been trying to see it in a different light, to make it seem more positive

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

Q3.14 I've been criticizing myself

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

Q3.15 I've been trying to come up with a strategy about what to do

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

Q3.16 I've been getting comfort and understanding from someone

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

Q3.17 I've been giving up the attempt to cope

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

Q3.18 I've been looking for something good in what is happening

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

Q3.19 I've been making jokes about it

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

Q3.20 I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

Q3.21 I've been accepting the reality of the fact that it has happened

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

Q3.22 I've been expressing my negative feelings

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

Q3.23 I've been trying to find comfort in my religion or spiritual beliefs

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

Q3.24 I've been trying to get advice or help from other people about what to do

- I haven't been doing this at all (1)

- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

Q3.25 I've been learning to live with it

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

Q3.26 I've been thinking hard about what steps to take

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

Q3.27 I've been blaming myself for things that happened

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)

- I've been doing this a lot (4)

Q3.28 I've been praying or meditating

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

Q3.29 I've been making fun of the situation

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

End of Block: COPE

Start of Block: VIA-CharacterStrengths

Q4.1 The following questions are about your personal character strengths. Please choose one option in response to each statement. Many of the questions reflect statements that many people view as desirable, but we want you to answer only in terms of whether the statement describes what you are like. Please be honest and accurate.

Q4.2 I experience deep emotions when I see beautiful things

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.3 I see beauty that other people pass by without noticing

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.4 I am always aware of the natural beauty in the environment

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.5 I have taken frequent stands in the face of strong opposition

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.6 I must stand up for what I believe in

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.7

I always stand up for my beliefs.

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.8 I am always coming up with new ways to do things

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.9 My friends say that I have lots of new and different ideas

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.10 I am an original thinker

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.11 I am always busy with something interesting

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.12

I am excited by many different activities.

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.13

I can find something of interest in any situation

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.14

Everyone's rights are equally important to me

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.15

I give everyone a chance

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.16

I believe that it is worth listening to everyone's opinions

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.17

I rarely hold a grudge

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.18

I believe it is best to forgive and forget

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.19

I am usually willing to give someone another chance

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.20

I am an extremely grateful person

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.21

I feel a profound sense of appreciation every day

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.22

I feel thankful for what I have received in life

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.23

I always keep my promises

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.24

My promises can be trusted

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.25 I am true to my own values

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.26 I always look on the bright side

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.27 Despite challenges, I always remain hopeful about the future

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.28 I know that I will succeed with the goals I set for myself

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.29 I never brag about my accomplishments

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.30 I rarely call attention to myself

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.31 I have been told that modesty is one of my most notable characteristics

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.32 I try to add some humour to whatever I do

- Very Much Unlike Me (1)
- Unlike Me (2)

- Like Me (3)
- Exactly Like Me (4)

Q4.33 I am known for my good sense of humour

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.34 I have a great sense of humour

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.35 I really enjoy doing small favours for friends.

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.36 I go out of my way to cheer up people who appear down

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.37 I enjoy being kind to others

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.38 Thinking things through is part of who I am

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.39 I try to have good reasons for my important decisions

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.40 I always weigh the pro's and con's

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.41 As a leader, I treat everyone equally well regardless of his or her experience

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.42 One of my strengths is helping a group of people work well together even when they have their differences

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.43 To be an effective leader, I treat everyone the same

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.44 I always feel the presence of love in my life.

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.45 I can express love to someone else

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.46 I can accept love from others

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.47 I am a true life-long learner

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.48 I read all of the time

- Very Much Unlike Me (1)
- Unlike Me (2)

- Like Me (3)
- Exactly Like Me (4)

Q4.49 I read a huge variety of books

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.50 People describe me as "wise beyond my years."

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.51 Others consider me to be a wise person

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Q4.52 I have a mature view on life

- Very Much Unlike Me (1)
- Unlike Me (2)
- Like Me (3)
- Exactly Like Me (4)

Appendix 2 (descriptives)

Table 1a

Means and standard deviations for 24 character strengths and the corresponding virtues of University students

<u>Virtue</u>	<u>Character Strength</u>	<u>Mean</u>	<u>SD</u>
Mean_ Virtues		2.89	.23
Wisdom		2.86	.33
	Creativity (thinking of novel and productive ways to do things)	2.83	.58

	Curiosity (taking an interest in all of ongoing experience)	2.83	.56
	Perspective (understanding world, wise counsel to others)	2.80	.55
	Judgment (weighing all evidence fairly)	3.05	.55
	Love of Learning (mastering new skills and knowledge)	2.75	.69
Courage		2.89	.38
	Perseverance (completing tasks one starts)	2.66	.63
	Bravery (not shrinking from threat or difficulty)	3.06	.60
	Honesty (presenting oneself in a genuine way)	3.17	.58
	Zest(approaching life with excitement and energy)	2.67	.61
Humanity		3.13	.44
	Social Intelligence (understanding social world)	2.93	.61
	Kindness (helping and taking care of others)	3.40	.49
	Love (valuing close relations with others)	3.04	.78
Justice		3.05	.46
	Leadership (organizing group activity)	3.02	.57
	Fairness (treating everyone fairly and justly)	3.26	.59
	Teamwork (being a good team member)	2.88	.55
Temperance		2.6	.35
	Forgiveness (forgiving those who have done wrong)	2.90	.64
	Self-regulation (regulating feelings and actions)	2.34	.67
	Prudence (being careful about one's choice)	2.60	.68

	Humility (not overvaluing oneself)	2.58	.47
Transcendence		2.78	.27
	Spirituality (beliefs about purpose and meaning)	1.66	.74
	Appreciation of beauty (awareness and excellence)	2.95	.58
	Hope (expecting the best in the future and working to achieve it)	2.97	.61
	Humor (seeing light side of life, thinking to laugh)	3.26	.56

VIA-IS labels and descriptions were originally derived from Peterson and Seligman (2012)

Table 2a

		Unstandardized Coefficients			
Model		B	Std. Error	t	Sig.
1	(Constant)	3.09	.541	5.71	.000
	Humanity	-.121	.160	-.756	.453
	Adaptive_coping	-.067	.146	-.460	.648

Dependent variable: total_experienced_stress

Table 2b

		Unstandardized Coefficients			
Model		B	Std. Error	t	Sig.
1	(Constant)	1.95	.601	3.25	.002

Temperance	.337	.187	1.79	.078
Adaptive_coping	-.112	.136	-.83	.412

Dependent variable: total_experienced_stress

Table 2c

		Unstandardized Coefficients			
Model		B	Std. Error	t	Sig.
1	(Constant)	3.41	.697	4.88	.000
	Temperance	-.300	.290	-1.03	.306
	Adaptive_coping	-.015	.161	-.096	.924

Dependent variable: total_experienced_stress