Academic Procrastination and its effects on Perceived Stress and Mental Well-Being

Are Compensatory Health Beliefs and Self-Compassion Mediators or Moderators of the relation between Academic Procrastination on Perceived Stress or Mental Well-being?

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Abstract

Background: Procrastination is a behavior where people are doing something else and not the most urgent thing that needs to be done. In previous research procrastination was found to be positively related to perceived stress and negatively to mental well-being. Compensatory Health Beliefs (CHBs) describe the beliefs of individuals that unhealthy behavior can be compensated through healthy behavior for example: "Relaxing on the weekend can make up for the stress during the week". CHBs describe characteristics of procrastination such as cognitive dissonance or the time delay of doing the most urgent thing. Self-compassion describes how positive an attitude towards oneself can be and how it can protect someone against negative effects of self-judgment. Previous studies found that self-compassion is negatively related to academic procrastination. Self-compassion was also found to be a mediator between academic procrastination and perceived stress.

Aim: The aim of this study was to emphasize the importance of investigating academic procrastination and its negative health outcomes as well as explaining the relation between academic procrastination and perceived stress and mental well-being by conducting moderation and mediation analyses with CHBs and Self-compassion as moderators and mediators.

Methods: Participants of this study were students who were sampled through social media. In total 96 respondents completed an online survey with a majority of female participants, mostly psychology students.

Results: A prevalence of 45.8 % of students reported more than average level of academic procrastination. Academic procrastination and perceived stress were significantly positively related ($r = .42$, $p < 0.01$), a moderate negative relation was found between academic procrastination and mental well-being ($r = -.33$, $p < 0.01$). The relation between self-compassion and perceived stress was significantly negative ($r = -.69$, $p < .001$) and the relation between self-compassion and mental well-being was significantly positive ($r = .65$, $p < 0.01$). The moderation and mediation models were not significant.

Conclusion: This study delivers a foundation to understand the relations between academic procrastination, perceived stress and mental well-being. The study confirms correlations between academic procrastination, perceived stress and mental well-being as well as the correlations between self-compassion, perceived stress and mental well-being. Hence, academic procrastination and self-compassion are important factors in relation to health and should be investigated in future studies.

Keywords: Academic Procrastination, CHBs, Self-Compassion, Perceived Stress; Mental Well - Being

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1. Introduction

1.1 Procrastination and the effects of Procrastination on Quality of Life (QoL)

Understanding why people are putting off important tasks (i.e procrastinate) is a difficult challenge. There are several studies defining procrastination. Procrastination is the practice ***or habit*** of completing low priority or unimportant tasks instead of high priority, important tasks or doing pleasurable things in place of less pleasurable ones and doing priority tasks last minute (Salem, 2016). In the definition of a study by Steel (2007) procrastination is a prevalent and pernicious form of self-regulatory failure that is not entirely understood. Furthermore, procrastination is defined as a pathological issue and a clinically relevant failure of self-control that is well known especially in counseling and psychotherapy institutions at universities (Höcker, Engberding, Haferkamp & Rist, 2012). Another definition of procrastination is the delaying of a task which was originally planned despite expecting to be worse off for the delay (van Eerde, 2003).

Studies examining the prevalence of procrastination among students differ in their results. A study from Schouwenburg (1992) on academic procrastination among 278 Dutch undergraduate college students shows that the prevalence of academic procrastination is not uncommon and reports that 70% of college students procrastinate. Another studies from Solomon & Rothblum (1984) reports 46%, Day, Mensik & O'Sullivan (2000) reports 50%, Özer, Demir & Ferrari (2009) found a prevalence of 52%, Ellis and Knaus (1977) found that 80 to 95% and Steel (2007) found that 80 to 90% of students reported to procrastinate. According to Steel (2007) 95% of individuals who are procrastinating wish to overcome procrastination. Although different studies show greater variation in prevalence of academic procrastination it can be concluded that it is common problem for students.

The causes for procrastination are investigated by several studies which revealed a wide range of factors causing procrastination. Procrastination is particularly common for students who are working on their thesis, who have some difficulties finishing the thesis within a given period of time caused by internal and external factors like the fear of failure, self regulatory failure and low self-efficacy (Thakkar, 2009). The findings of Thakkar (2009) were also found in a meta-analysis of procrastinations possible causes and effects based on 691 correlations, that neuroticism, rebelliousness, and sensation seeking are showing show a weak connection, whereas strong and consistent predictors of procrastination were task aversiveness, task delay, self-efficacy, and impulsiveness, as well as conscientiousness and its facets of self-control, distractibility, organization and achievement motivation (Steel, 2007). According to a study by Flett, Blankstein, & Martin (1995) procrastination is linked and caused by mood and personality disorders or anxiety and depression..

In relation to health procrastination might be a serious problem for individuals - Indeed it can be especially a serious issue for students - studies investigating the consequences of procrastination in student populations found several links and associations with increased levels of stress, anxiety, depression or reduced satisfaction across life domains such as work and income (Solomon et al., 1984; Beutel, Klein & Wölfling, 2016). Furthermore it is associated with poor academic performance and a range of stress-related acute health problems such as headaches, digestive issues, colds and flus, and insomnia (Sirois, Melia-Gordon & Pychyl, 2003; Sirois, 2007). In addition procrastination leads in consequence to lower grades and a variety of evidence suggests that procrastination is linked to negative mental health outcomes in the long term (Tice & Baumeister, 1997). Procrastination and stress are both associated with poorer mental health, in general low well-being and academic procrastination are interrelated, students who are procrastinating frequently have a low well-being status (Stead, Shanahan & Neufeld , 2010 ; Steel et al., 2007; Mortazavi, 2016).

Possible benefits of procrastination are rare, procrastinators may suffer from more stress than others at the last minute but less than nonprocrastinators who are doing their important tasks and work frequently and earlier within a given period of time and it could be that procrastinators suffer even less by compressing the stress into a short period (Tice & Baumeister,1997). Distinguishing between the causes and consequences of procrastination is challenging, the findings mentioned above (e.g depression and anxiety) may be both causes or consequences, too. Dejection and procrastination were frequently found to be linked - a study by Lay (1995) showed that dejection is an outcome of procrastination rather than a cause. However distinguishing between causes and consequences can be challenging, this study tries to investigate and focus on the consequences of academic procrastination in relation to perceived stress and mental well-being, aswell as on the explanation why academic procrastination and perceived stress or mental well-being are interrelated.

Summed up procrastination has several causes and a variety of evidence suggest that it may have a negative effect on health, mental health outcomes and on the quality of life of individuals. Thus, it is important to determine which factors are related to procrastination, finding ways to intervene effectively to reduce procrastination and its negative effects on health.

1.2 Compensatory Health Beliefs and Procrastination

This study focuses on one possible factor which is not examined in relation to academic procrastination which may be a potential risk factor associated with academic

procrastination and its negative consequences.

Compensatory Health Beliefs CHBs are defined as beliefs that certain volitional, unhealthy (but pleasurable) behaviors can be compensated for by engaging in healthy behaviors (Rabiau, Knauper, Nguyen, Sufrategui & Polychronakos, 2009). CHBs may be one possible factor for hindering people in adopting a healthier lifestyle (Berli, Loretini, Radtke, Hornung, &Scholz, 2014). When people perform CHBs they are being faced with different kind of temptations such as a piece of a cake, a cigarette or a drink and a person who is torn between the pleasure that the temptation would fullfill the desire and the knowledge that it will be bad for the own health (Rabiau, Knäuper, Miquelon, 2006).

The consequences of holding strong CHBs are bad for people's health. People who have more CHBs suffer from more symptoms of disease, performing more health risk behaviors and are less efficient in their daily lives than people with less CHBs (Knäuper, Rabiau, Cohen & Patriciu, 2004). Rabiau et al., (2009) also found that high CHBs are related to lower diabetes treatment adherence. High CHBs are also related to higher calories intake (Kronick & Knäuper, 2010). The "Compensatory Health beliefs model" by Rabiau et al. (2006) describes three major strategies of compensating in a situation of health behavior. The first strategy Rabiau et al. (2006) describes is a behavioral strategy - an example considering this strategy can be described by people who just resist the temptation to eat candy or to watch internet videos and perform the opposite healthy behavior for example eating vegetables or doing sports. The second strategy describes the adaption of perception of the degree of risk caused by the behavior which does not match with a person health goal (convincing self that watching a movie instead of training does not have major disadvantages for health goals). The third strategy describes the creation or activation of compensatory health beliefs (CHBs). Moreover, the CHB model describes that using CHBs in the long-run should reduce a certain health behaviour because individuals have a strategy at hand to resolve their experienced imbalance without engaging in the health behaviour and often fail to engage in the intended compensatory behaviour (e.g., go to the gym the next day instead of going today) because of *procrastination* or because time passed by and the initially felt dissonance weakens over time (Rabiau et al., 2006).

Additionally people are not always following their own planned compensatory behaviors, instead they *procrastinate* and wait until they initially felt need to compensate for the unhealthy behavior fades away on its own (Knäuper et al.,2004). In addition to the findings above, people who are performing CHB's and also procrastinators tend to have fewer wellness behaviors (i.e less fruit and vegetable intake, less sports), and it is associated with poorer health (Sirois et al., 2003; Sirois, 2007; Kroese et al., 2016). Considering CHBs and its

statements which also implies delaying something important like "starting a new diet tomorrow compensates for breaking a diet today" it can be assumed that such statements measuring CHBs probably include the process of procrastination "I will start tomorrow with my diet". This parallel and decision-making process can be based on the cognitive dissonance theory by Festinger (1957) which describes the tendency for individuals to seek for consistency among their cognitions (i.e beliefs, opinions). In case of a dissonance and inconsistency between attitudes or behaviors, individuals change something to eliminate the dissonance, most likely they change the attitude to accommodate the behavior (Festinger, 1957). People who are faced with a temptation and within an intra-personal conflict of cognitive dissonance activate CHBs to overcome the temptation which may have positive short term outcomes but negative long term effects (Rabiau et al., 2006). The cognitive dissonance which may activate CHBs could also contribute to foster academic procrastination and its relation to perceived stress. In this context it may be plausible that CHBs as a result of cognitive dissonance do have explanatory value on the relation between academic procrastination and perceived stress or mental well-being. Hence, CHB may be a self-licensing cognitive strategy which justifies, worsens or maintains academic procrastination and its effects on perceived stress.

1.3 Self Compassion, Academic Procrastination and Perceived Stress

While CHBs may be a possible risk factor for academic procrastination another protective factor for academic procrastination examined in this study may be Self-compassion. Self-compassion has three components that are interrelated and exhibited during times of pain and failure (Neff, 2003). The three components are described as having two parts: being kind and understanding toward oneself rather than being self-critical (Self-kindness versus self-judgement), seeing ones fallibility as port of the larger human condition and experience rather than as isolating (Common humanity vs. isolation) and holding one's painful thoughts and feelings in mindful awareness rather than avoiding them or overidentifying (mindfulness vs. overidentificaton or avoidance) with them (Neff, 2003; Bardnard & Curry, 2011).

Self-compassion facilitates the practice of a range of important health behaviors and it is positively associated with a variety of health promoting behaviors for example regular exercise, healthy eating, healthy sleep behaviors and stress management (Sirois et al.,2015; Dunne, Sheffield & Chilcot, 2018).

Self-compassion has been found to be negatively associated with procrastination - students with low self-compassion reported significantly more procrastination (Williams ,2008; Sirois, 2014). The role and the link between stress and procrastination was investigated

by Sirois et al. (2014) who found that lower levels of self-compassion may explain the stress which is experienced by procrastination. Sirois conducted a mediation analysis to investigate whether self-compassion is related to procrastination and stress and found that self-compassion mediated the relationship between stress and procrastination. Considering the findings of Sirois et al. (2014) academic procrastination was associated with lower levels of self-compassion and higher levels of stress and a meta-analysis revealed that there is a moderate negative association of academic procrastination with self-compassion. In addition research from Sirois & Tosti (2012) within a student population has shown that procrastinators with low levels of mindfulness who may be lost in the moment engage in stress-provoking judgmental, self-critical and reactive thoughts about their unwilling own behaviour. Self-compassion implies self-critical and counteracting thoughts as well as mindfulness or common humanity (Neff, 2003), which makes it more plausible that self-compassion has explanatory value on the relation between academic procrastination and perceived stress or mental well-being. According to Sirois et al., (2014) the role of self-compassion considering academic procrastination can be crucial to determine interventions suitable for procrastinators. The findings of Sirois (2014) suggest that self-compassion could possibly also mediate the relationship between academic procrastination and perceived stress in this study. Thus, it can be assumed that self-compassion could also function as a moderator between academic procrastination and perceived stress or mental well-being. Self-compassion is also positively related to well-being and happiness but negatively associated with depression or anxiety (Barnard et al.,2011). This means that people who are highly self-compassionate are feeling better and people who are low-self-compassionate are feeling bad or suffer from depression or anxiety. It is required to investigate the relations among those variables by conducting direct studies of mediators to understand the relations between such variables. This makes it plausible to examine mental-well being as an outcome variable. The previous study from Sirois et al. (2014) has shown the mediating effect of self-compassion on the relationship between academic procrastination and perceived stress. This finding forms the basis for the mediation model. The model includes CHBs as a second mediator to investigate the relations between the predictors academic procrastination, CHBs and self-compassion and the outcome variables perceived stress and mental well-being.

1.4 Aim of the Study and the Research gap

There is a need to get to know more about the behavior academic procrastination, because people could suffer from it and it possibly negatively affects well-being and health. Steel (2007) already stated that "[...] research into procrastination should not be delayed,

especially because its prevalence appears to be growing." Till now not all factors or predictors of procrastination are examined to help to understand procrastination and its characteristics aswell as its relation to health related terms like perceived stress or mental well-being. Among crucial factors as self-compassion as a predictor or lower mental well-being and high perceived stress levels as consequences of procrastination, there is no research done yet about the relation between CHBs and the level students are procrastinating.

This study investigates the relations between academic procrastination, CHBs, self-compassion, perceived stress and mental well-being. The research questions are **(1)** What is the prevalence of academic procrastination in the student population ? **(2)** Does academic procrastination positively affect the level of perceived stress ? **(3)** Does academic procrastination and mental well-being have a negative relation ? **(4)** Does self-compassion and academic procrastination have a negative relation ? **(5)** Do compensatory health beliefs and academic procrastination have a positive relation ? **(6)** To what extent does compensatory health beliefs and self-compassion moderate the relation between academic procrastination and perceived stress and mental-well being ? and **(7)** To what extent does self-compassion and compensatory health beliefs as mediators affect the relation between procrastination perceived stress and mental well-being ? It is hypothesized that lower scores on self-compassion would increase the relation between the frequency of procrastination and perceived stress and mental well-being. Further it is hypothesized that strong CHBs would also increase the relation between the frequency of procrastination and perceived stress and mental well-being.

The following figures illustrate how the moderation and mediation analysis will be approached in this study.

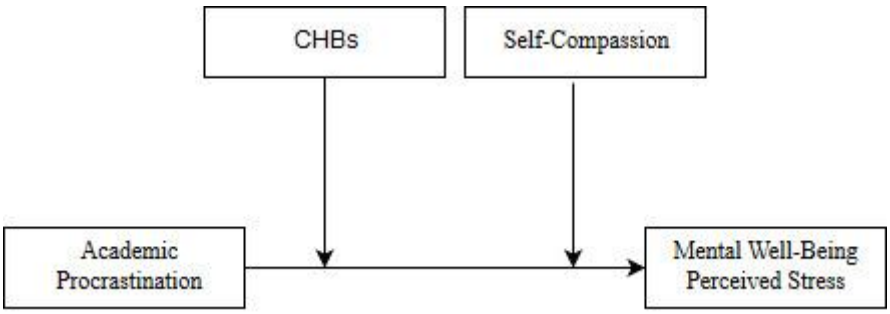

Figure 1. A moderation model with CHB's and self-compassion as moderators, and the relation between academic procrastination, mental well-being and perceived stress

No study yet has examined whether the relation between academic procrastination and stress or mental well-being is influenced via CHBs and vice versa. Earlier studies indicated that procrastination is causing poor health behavior stress and poor well-being (Kroese et al., 2016; Mortazavi, 2016). The following model suggests that CHBs and Self-Compassion could be functioning mediators between academic procrastination, perceived stress and mental well-being. The model states that the relation between academic procrastination could be explained by CHBs and Self-Compassion.

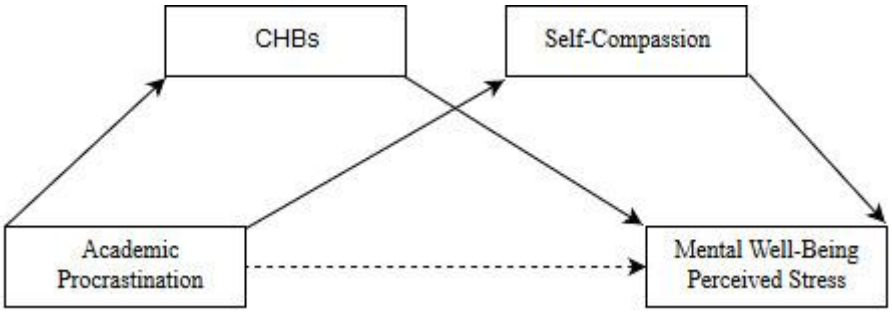

Figure 2. Mediation model with CHBs and Self-Compassion functioning as mediators between academic procrastination mental well-being and perceived stress

2.Method

2.1 Participants

Respondents, who sampled from a general student population had to complete the online survey in order to be included in the analyses. In total 175 people participated. The total sample size included was n = 96. A percentage of 45.1% of the respondents n = 79 did not finish the survey.

2.2 Procedure

This study was designed as a cross-sectional study, where only one measurement at one given time point will be necessary (Levin, 2006). Participants were students from different countries and from the University of Twente in the Netherlands who are approached through social media via facebook, Instagram and Sona Systems, an online tool of the University of Twente to recruit respondents by giving them extra credits as a reward for participating (convenience sampling method). In addition participants were asked to approach more people with the aim to get even more respondents (snow ball sampling). The questions were presented to the participants by using the *Qualtrics survey tool*, which is a tool to create online surveys. All of the participants took part voluntarily. The whole study and procedure was carried out online.

The questionnaire was written in english and targeted on students whereas most of the participants were expected from social science, such as psychology or communication science. Participants are informed about the aim of the study and the confidentiality considering the data which are gathered and it was applied for the ethical approval the 17th of October 2018 and approved by the Ethics Committee Faculty of Behavioral Sciences of the University of Twente, Enschede on the 5th of November 2018. Participants were able to take part in the online survey from November 2018 till the end of December 2018.

2.3 Instruments

The online questionnaire contained the Procrastination Assessment Scale (PASS), the scale to measure self-compassion the compensatory health beliefs (CHBs) scale, the Perceived Stress Scale (PSS) and the mental health continuum short form (MHC-SF). First, the participants got the informed consent and then answer demographic questions considering the age, gender, study. After that the questionnaires dealt with Academic procrastination, followed by questions about CHBs, self-compassion, perceived stress and mental well-being.

In the following only the questionnaires which were used to answer the research questions of this study are further described.

2.3.1 Academic Procrastination

The 12-item procrastination assessment scale (PASS) developed by Solomon and Rothblum (1984) used in this study assessed the frequency of academic procrastination within 6 academic domains based on a 5-point likert scale. The six academic domains are writing a term paper, studying for an exam, keeping up with weekly reading assignments, performing administrative tasks, attending meetings and performing academic tasks in general. Considering the cut-off score of the PASS it is assumed that an average score of 4 (nearly always procrastinate) is a useful cut-off score for any research, best by determining the average frequency of procrastination for the sample using this as the cut off score - anything higher indicates higher than average procrastination and anything lower is lower than average procrastination (Rothblum, 2015). According to the Scoring of the PASS by Rothblum (2015) a higher total score, which is calculated by summing up the items of the 6 academic domains indicates more self-reported procrastination. The internal consistency of the PASS measured in this study was high with an $\alpha = .81$.

2.3.2 Compensatory Health Beliefs

The Compensatory Health Beliefs Scale-DLV from Knäuper et al. (2004) used in this study contains 17 Items measuring general compensatory health beliefs with four factors/subscales*: substance use, eating and sleeping habits, stress and weight regulation*. In this study the subscales were collated. Example statements based on a 5-point likert scale ranging from 1 = " strongly disagree" to 5 = "strongly agree" are: " Relaxing on the weekend can make up for stress during the week " or "Starting a new diet tomorrow compensates for breaking a diet today". The reliability analysis of this study shows that cronbach's alpha $\alpha = .71$ was lower than the earlier measured internal consistency of the general 17 Item scale cronbach's alpha $\alpha = .80$ by Knäuper et.al (2004).

2.3.3 Self-Compassion

To measure the level of self-compassion of the participants the 12- item " Self compassion scale short form" (SCS-SF; Raes, Pommier, Neff & Van Gucht, 2011) was used. The SCS-SF includes the subscales: self kindness, self - judgment, common humanity, isolation, mindfulness and over-identification. Statements like "when I fail at something important to me I become consumed by feelings of inadequacy" are used in this scale and are rated by the participants using a 5-point likert scale. The scale ranges from almost never to almost always, which should indicate how often the participants behave in the stated manner. An example item to measure self-compassion is "When I'm going through a very hard time , I give myself the caring and tenderness I need." Cronbach's alpha was high in this study with $\alpha = .81$.

2.3.4 Perceived Stress Scale (PSS)

To determine the level of stress the 10-item Perceived Stress Scale (PSS) developed by Cohen et al., (1983) was used which measures whether people perceive their lives as stressful within the past month. Respondents had to answer questions on a 5-point likert scale with questions like : " In the last month how often have you felt nervous and "stressed" ? or "In the last month, how often have you been upset because of something happened unexpectedly ? ". The PSS scores were obtained by reversing responses to the four positively stated items (items 4, 5, 7, & 8). In this study Cronbach's alpha was sufficiently high with α = .83 and higher than the determined Cronbach's alpha by Cohen et al., (1983).

2.3.5 Mental well-being

In order to measure well-being the " mental health continuum short form" (MHC-SF; Keyes, 2009) was used. This questionnaire has 14 items measuring three components of well-being. The first component is emotional well-being ("during the past month, how often did you feel happy?") The second component has six items measuring psychological well-being ("during the past month, how often did you feel that you liked most parts of your personality?") and the third component has five items measuring and representing social well-being ("during the past month how, how often did you feel that people are basically good?"; Keyes, 2009). Answers on the MHC-SF are ranging from 1 = "never" to 6= " every day" , the total score was calculated by calculating the average of the 14 items. The internal consistency was high with a Cronbach's alpha of .87. This high internal consistency supports the finding of α = .80 by Lamers, Westerhof, Bohlmeijer, Ten Klooster and Keyes (2011).

2.4 Analysis

The statistical program SPSS *25* was used to analyze the data conducted by the online survey. First of all reliability analysis was applied for all questionnaires and subscales which were used for this study. Before applying the reliability analysis and testing the internal consistency of each construct the data was cleaned from respondents which not finished the questionnaire or did not meet the inclusion criteria (such as being younger than 18 years). An alpha of 0.05 was used for all the analyses to determine the significance of the data. Before starting the main analyses descriptive statistics were conducted considering the means, standartdeviations and frequencies of academic procrastination, the age, gender, the stage of the study and the type of study. For further analysis Pearson correlation analysis was done to examine bivariate correlations between all constructs and instruments. Considering the strength of a correlation it can be stated that correlations from 0 to 0.3 are weak, 0.3 to 0.5 as moderate and everything higher than a correlation of 0.5 can be determined as strong correlations (Cohen,1988). To get insight about the research question whether academic procrastination and perceived stress and mental health are related with self compassion and CHB's as moderators, moderation analysis using the process tool for SPSS developed by Andrew Hayes (2013) was used. A mediation analysis with CHB's and self compassion as mediators between academic procrastination perceived stress and mental well-being was also determined by using the process tool. Based on a preprogrammed and chosen model, process tool simplifies the implementation of mediation, moderation, and conditional process analysis with observed (i.e., “manifest”) variables (Hayes, Montoya, Rockwood, 2017). CHBs and Self-Compassion were both set as moderators and mediators within the preprogrammed models. The independent variable was academic procrastination and the dependent variable was perceived stress or mental well-being. Then, process estimates all the path coefficients, standard errors, t- and p-values, confidence intervals, and various other statistics relevant to answer the research questions.

3. Results

3.1 Description of the research group

The following table 2 represents the descriptive statistics and demographics from 96 respondents. In Total 96 respondents finished the survey. The majority of the respondents (N=84; 87.5%) were female and (N=12; 12.5%) were male, which is an unequal distribution of the gender of the respondents. The majority 74% (n = 71) of the respondents studied Psychology 74% followed by Communication Studies or Science 5,2 % (N =5). The rest of the respondents reported different studies such as Finance and Accounting 2.1% (n =2), Information Technology 2,1% (n = 2) , Social Work 2,1 % (n = 2). The majority of the respondents reported doing their Bachelor.

Table 1. *Descriptive Statistics and Demographics (N = 96).*

		n	Percentage (%)	min	max
Gender	Male	12	12.5		
	Female	84	87.5		
Age	mean (standard deviation)	21.7	(4.1)	18	38
Study	Psychology	71	74.0		
	Communication Studies	5	5.2		
	Counselling	2	2.1		
	Finance and Accounting	2	2.1		
	Bachelor of Art in International Studies	2	2.1		
	Information Technology	2	2.1		
	Social Work	2	2.1		
	Other	10	10.4		
Stage of Study	Bachelor	77	80.2		
	Master	19	19.8		

The following table 2 representing the means and standartdeviations of each construct shows that the self reported measurement of academic procrastination which was quite high (M = 35.1, SD = 8.2). Perceived Stress levels were quite high and above the average scores (M = 31.6, SD = 6.9).

Table 2. *Descriptive Statistics of the means standartdeviations (N = 96)*

	Total (N=96)				
	Range	M	SD	min	max
PASS	12 - 60	35.1	8.2	14	55
CHBs	18 - 90	45.2	8.9	22	72
SCS-SF	12 - 60	35.3	9.1	12	56
MHC-SF	14 - 84	43.4	9.9	18	70
PSS	10 - 50	31.6	6.9	17	50

The following table 3 shows the frequencies of academic procrastination. In order to answer the first research question considering the frequency of academic procrastination shows that the majority 54.2% (n = 51) reported to procrastinate lower than the average level. Almost half of the participants with 45.8 % (n= 44) reported a higher than average level of academic procrastination, which means that they reported to procrastinate nearly always or always.

Table 3. *Frequencies of academic procrastination based on cut-off score (N = 96)*

		Frequency	Percent (%)	Valid Percent	Cumulative Percent
Valid	1	51	54.2	54.2	54.2
	2	44	45.8	45.8	100
Total		96	100,0	100,0	

Categories based on cut-off score of PASS (M = 35.1); 1= lower than average 2= higher than average

3.2 Correlation Analysis

The following table 3 represents the correlations between the variables. In order to answer the second research question whether academic procrastination positively affects the level of perceived stress it was found that the frequency of procrastination correlates moderately and positively with perceived stress ($r = .421$, $p < 0.01$) which means that people who are procrastinating at higher levels experience higher levels of perceived stress. With regards to the third research question, academic procrastination and mental well-being are moderately negatively and significantly related to each other ($r = -.337$, $p < 0.01$), which means that people who are procrastinating at higher levels report poor mental well-being. In

order to answer the fourth research question whether academic procrastination and self-compassion are negatively related, it was found that the correlation is not significant, but a trend was visible towards a negative correlation (r= -.196, p = .055). In order to answer the fifth research question it was found that academic procrastination and compensatory health beliefs are not significantly related to each other (r =.051, p > .05).

It stands out that perceived stress correlates with all of the other obtained variables in this study except CHBs (r = .144, p = .162). Self-compassion correlate strongly and positively with mental well-being (MHC-SF), with a rather high r-value and correlation significance at the 0.01 level (r = .656, p < 0.01), indicating that people who are highly self-compassionate may experience better mental well-being. Self-compassion also strongly and negatively correlated with perceived stress, with a rather high r-value and correlation significance level at 0.01 (r = -.690, p < .001). Perceived stress and mental-well being were the only variables correlating moderately significantly with Academic Procrastination (PASS). CHBs were not significantly correlated to any other construct.

Table 4. *Correlations between the variables and constructs (N = 96)*

		1	2	3	4
1	Academic procrastination (PASS)				
2	CHBs (CHB-DLV)	.051			
3	Self Compassion (SC-SF)	-.196	-.095		
4	Mental well -being (MHC-SF)	-.337**	-.177	.656**	
5	Perceived Stress (PSS)	.422**	.144	-.690**	-.654**

*.P< .05 Correlation is significant at the 0.05 level (2-tailed).

**. P <.01 Correlation is significant at the 0.01 level (2-tailed).

3.3 Moderation analysis

A multiple moderation analysis was conducted to examine the sixth research question to find out whether Compensatory health beliefs and Self-compassion function as moderators between the relation of academic procrastination and perceived stress. The following table represents the moderation model with Academic Procrastination (PASS) as the predictor, the two moderators Self-Compassion (SCS-SF) and compensatory health beliefs (CHBs) and the outcome variable perceived stress. The findings conducted by the moderation analysis were not significant, no moderation effect occurred. The interaction effect of Academic Procrastination and Self-Compassion on perceived stress was not significant (β = - .00, R^2 = .000 ; p = .868) and the interaction effect of Academic Procrastination and CHB's was also not significant (β = - .00, R^2 = .001; p = .563). Both beta's of the direct effect of academic procrastination on perceived stress (β = .26, p = ,000) and the direct effect of self-compassion on perceived stress (β = - .47, p= 001) confirmed the findings of the bivariate correlations analysis .

Table 1 . *Moderation Model 1 with Perceived Stress as outcome variable (N = 96)*

		R	R-sq	F	df	p
Model Summary		.753	.567	23.57	5;90	.00
Model 1			B	SE β	t	p
	Academic Procrastination(PASS)		.257	.062	4.15	.000
	Self-Compassion (SC-SF)		-.470	.054	- 8.70	.001
	Compensatory Health beliefs (CHBs)		.050	.054	.931	.354
	PASS*SC-SF		-.009	.005	-.166	.868
	PASS*CHB's		-.005	.009	-.580	.563
			$R^{2\text{ -change}}$	F	df	p
	PASS*SC-SF		.000	.027	1,90	.868
	PASS*CHBs		.001	.336	1,90	.563

* p < .05 significant at the 0.05 level, ** p < .01 significant at the 0.01 level, Outcome variable = Perceived Stress

The following second multiple moderation model analysis with mental well-being (MHC-SF) as an outcome variable was conducted to answer the research question whether Compensatory Health Beliefs and Self-compassion are moderating the effect of academic procrastination on mental well-being. No moderation effect was found. The interaction effect of academic procrastination and self-compassion on mental well-being was not significant (β = .00 , p = .531 , CIs [-.012, .023]) confirmed by the interaction effects showing a low $R^{2\text{-change}}$ ($R^{2\text{-change}}$ = .002, p = .531), which means that no moderation of self-compassion on the relation between academic procrastination and mental well-being exists. Also the interaction effect of academic procrastination and Compensatory Health Beliefs on Mental Well-Being was not significant (β = .01 , p =.481, CIs [-.018, .037]) confirmed with a low $R^{2\text{-change}}$ value ($R^{2\text{-change}}$ = .003, p = .481). The direct effect of Academic Procrastination on Mental Well-Being was significant and negative within the model (β = - .27** , p = .006), which means that low self reported procrastination is related to better mental well-being. Another significant finding within the model was the direct effect of self-compassion on mental well-being with a high standardized coefficient (β = .65**, p = .000), indicating that individuals who are highly self-compassionate do experience better mental well-being. The direct effect of CHBs on mental well-being was not significant (β = - .11 , p = .171).

Table 2 . *Moderation Model 2 with mental well-being as outcome variable (N = 96)*

		R	R-sq	F	df	p
Model Summary		.700	.490	17.35	5;90	.000
Model 2			β	SE β	t	p
	Academic Procrastination (PASS)		-.269	.096	-2.79	.006
	Self-Compassion (SC-SF)		.649	.083	7.73	.000
	Compenstatory (CHBs)		-.115	.084	-1.377	.171
	PASS*SC-SF		.005	.008	.628	.531
	PASS*CHBs		.009	.014	.707	.481
			$R^{2\text{-change}}$	F	df	p
	PASS*SC-SF		.002	.394	1;90	.531
	PASS*CHBs		.003	.500	1;90	.481

* p < .05 significant at the 0.05 level, ** p < .01 significant at the 0.01 level, Outcome variable = Well-Being (MHC-SF)

3.4 Mediator analysis

It was assumed that CHBs and Self -Compassion could be functioning as a mediator between academic procrastination and perceived stress. There was no evidence found to support the stated multiple mediation model with two mediators considering the last and sixth research question (see figure 1). Neither CHBs nor Self-compassion function as mediators between Academic Procrastination and Perceived stress. The completely standardized indirect effects shows that there is no mediation effect between academic procrastination and perceived stress via CHBs (β = .00, CIs [-.01, .02]). There is also no mediation effect between academic procrastination and perceived stress via Self-Compassion. (β = .12, CIs [-.01, .26]). The direct effect of academic procrastination on perceived stress was positively significant (β = .25** , p =.001) and the direct effect of Self-Compassion on perceived stress was negative and significant (β = - .47** , p =.000).

The following *figure 1* represents the relations between the constructs. It can be presumed that the model is not significant with self-compassion and CHBs as mediators between academic procrastination and perceived stress.

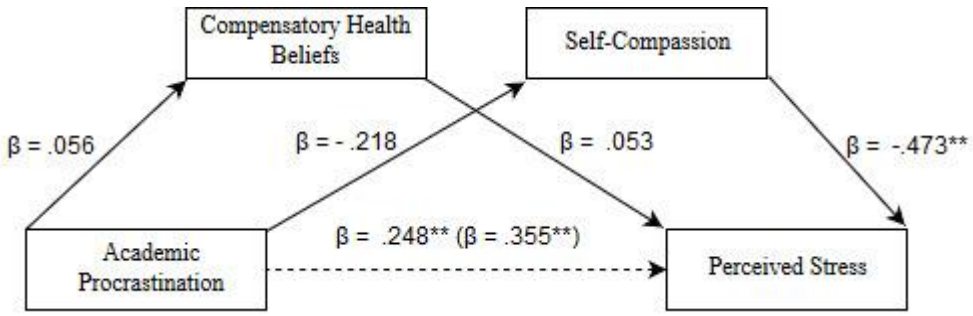

Figure 1. The standardized regression coefficients for the relationships between academic procrastination and perceived stress mediated by CHBs and Self-Compassion. Total effect is given in parentheses. *p< .05 , ** p <.01

The second mediation model with CHBs and self-compassion functioning as mediators between academic procrastination and mental well-being was not significant. No evidence was found to support the stated mediation model with mental well-being as the outcome variable (see figure 2). The completely standardized indirect effects shows that there is no mediation effect between academic procrastination and mental well-being via CHBs (β = -.00, CIs [-.03, .01]). There is also no mediation effect between academic procrastination and mental well-being via self-compassion. (β = - .11, CIs [-.25, .02]). This means that neither CHBs nor self-compassion function as mediators between academic procrastination and mental well-being, they are not interrelated.

Except the significant direct effects between academic procrastination and mental well-being (β = - .25**, p =.006) and the strong significant and positive effect of self-compassion on mental well-being (β = - .65**, p =.000) no significant direct effect was found between Self-compassion and Academic Procrastination.

The following *figure 2* represents the relations between the constructs. It can be presumed that the model is not significant with self-compassion and CHBs as mediators between academic procrastination and mental well-being.

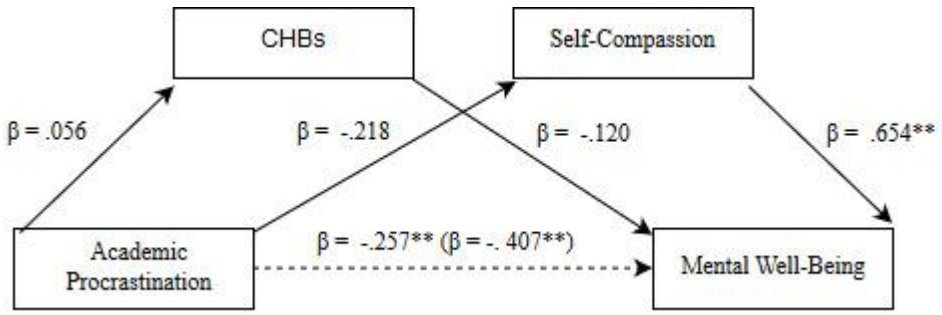

Figure 2. The standardized regression coefficients for the relationships between academic procrastination and mental well-being mediated by CHBs and Self-Compassion. Total effect is given in parentheses. *p< .05 , ** p <.01

4. Discussion

The aim of this research was to explain the relationship between academic procrastination, perceived stress and mental-well being by conducting moderation and mediation analysis with CHBs and self-compassion functioning as moderators and mediators. By conducting these analyses this study also tried to investigate the research gap considering the relation between CHBs and academic procrastination.

Considering the first research question **(1)** What is the prevalence of academic procrastination in the student population? A prevalence of 45.8% of students procrastinate more than the average. This finding does not differ much from the findings found by Solomon et al. (1984) who reported 46%, Day's et al. (2000) reported 50% and Özer et al. (2009) reported 52%. Although the found prevalence in this study does not differ much it has to be mentioned that it had the lowest prevalence in comparison to the mentioned studies above - it seems that the prevalence of academic procrastination does not grow and keeps its stability. However, this finding in this study can be still seen as quite a high prevalence of students who procrastinate. Thus, it can be still seen as a problem for almost half of the respondents in this study. In addition, studies for example from Steel (2007) who found a prevalence of 80 - 90% and a willingness to overcome procrastination of even 95% confirm that it is still a problem to many students. However Steel's findings concerning the prevalence which appears to be growing cannot be confirmed by the prevalence found in this study.

Another additional point to discuss is the possible link between the prevalence of academic procrastination found in this study and the high rate of 45.1% who did not finish the online survey. The high rate of respondents who did not finish the survey and could not be included in this study may be explained by the findings considering the nature of procrastination - people who procrastinate usually start tasks, but often do not finish them or postpone them (Salem,2016). The raw data set showed that non included participants stopped filling in the survey at different points. Since this study targeted at procrastinators and could attract procrastinators to participate, it is quite possible and plausible that the same participants who did not finish the survey just procrastinated. Hence it should be also mentioned that the prevalence of this study may be affected because procrastinators showed greater interest to participate in this study.

With regard to the second **(2)** research question whether academic procrastination and perceived stress are related, it was found that this correlations were confirmed and replicated in this study. This finding is in line with the findings of Siriois et al. (2014) and Tice et al. (1997) who also found a positive and significant relationship between academic procrastination and perceived stress. In addition, the correlations coefficients found in this

study do not differ much from the Sirois study. A recent explanation concerning the relation of academic procrastination and perceived stress was given by a study of Sirois & Tosti (2012) who found in a sample of students that procrastination was linked to low levels of mindfulness. According to Sirois & Tosti (2012) low levels of mindfulness results in stress-provoking judgmental, self-critical and reactive thoughts about the procrastinators own behaviour. One more time this study confirms that high frequencies of academic procrastination leads to students experience of higher levels of perceived stress. This finding makes it more important and underlines that procrastination can be a serious problem for individuals.

With regard to the third **(3)** research question whether academic procrastination and mental well-being are negatively related, this study could confirm and replicate the findings of earlier studies. The negative relationship was confirmed in this study and in line with the findings of Mortazavi (2016) and Flett et al. (1995) who found that frequent academic procrastination is linked to lower well-being status. Thus, students who procrastinate frequently and at higher levels experience lower levels of mental well-being.

With regard to the **(4)** research question do self-compassion and academic procrastination have a negative relation? No significant correlation was found in this study. Contrary to the findings of Sirois, Barnard and Williams in which people with low self-compassion reported to procrastinate more, this study cannot confirm and replicate this finding. The main reason for this finding may be the small sample size and the specific characteristics of the sample size itself. A greater sample size and a greater variance within the sample size may replicate the findings of Sirois, Barnard and Willams. Although the finding was not significant in this study it has to be mentioned that Sirois found a correlation between self-compassion and procrastination with the General Procrastination Scale (GPS; Lay, 1986) within the student sample but not for the Adult Inventory of Procrastination (Mc Cown & Johnson, 2001) with a smaller sample size of adults. It may be possible that in this study adults participated pretending to be students. According to the Sirois study the findings between students and adults (nonstudents) differ. Hence, the possibility of adults pretending to be students in this may affect the results, especially the correlation between academic procrastination and self-compassion.

Considering the new variable CHBs and the fifth **(5)** research question: Do compensatory health beliefs and academic procrastination have a positive relation ? No evidence was found that confirms a relationship between academic procrastination and CHBs. Against the expectation academic procrastination is not related to CHBs. Contrary to the CHB

model by Rabiau et al. (2006) which states that procrastination can be reason of failing performing health behavior academic procrastination is not linked with CHBs in this study. This could be possible because of the distinction of CHBs and Compensatory Behavior (CBs). The distinction described by Radtke & Scholz (2017) of CHBs and the actual CB may be one explanation for the non significant relationship between CHBs and academic procrastination. This findings confirms the findings of Radtke et al., (2010) considering the relationship between smoking-specific CHBs and general CHBs and procrastination which was not significant. According to Radtke et al. (2010) who investigated the divergent validity of the used constructs in their study found that general procrastination does not correlate with smoking-specific CHBs aswell as with general CHBs. Divergent validity is a way to assess measurements that are not supposed to be related to each other (Campell & Fiske,1959). This finding is contrary to the assumptions examined in this study within a student population. In addition, a developed CHB item including exam preparation ("Starting preparing for an exam last minute and continuing till late at night is okay when I can catch up sleep the next day") was also not related to academic procrastination. This item was not included in this study to measure general CHBs. However, this additional finding indicates that CHBs may include elements of procrastination but underlines that it does not correlate with the frequency of academic procrastination. Hence, even operationalised target-specific CHBs may not be related to academic procrastination.

Although the relationships between academic procrastination and perceived stress and mental well-being were confirmed, the correlation analyses concerning academic procrastination, CHBs and self-compassion already indicated that the stated moderation model and mediation model will not function as presumed.

Considering the sixth **(6)** research question: To what extent does CHBs and self-compassion moderate the relation between academic procrastination and perceived stress or mental-well being? it can be stated that both moderators are not affecting and explaining the existent relation between academic procrastination and perceived stress or academic procrastination and mental well-being. Also the last research question **(7)** To what extent does self-compassion and CHBs as mediators affect the relation between procrastination and stress and mental well-being ? is declined which means that CHBs and self compassion are not mediating the effect of academic procrastination on perceived stress or mental well-being. The finding considering the stated mediation model and the sixth research question was a surprising and outstanding finding. Against the findings of the study which of Sirois (2014) who determined across four samples with a total respondents of 768 that Self Compassion mediated the relationship between stress and academic procrastination it could not be

replicated in this study. This finding formed the basis for the mediation model conducted in this study and it was assumed to replicate and confirm the findings of Sirois. The main reason could be the sample size of 96 which may be not enough to get significant results considering the relation between self-compassion and academic procrastination and the characteristics of the sample size itself. Mainly, psychology students participated in this study which may already know the concept of self-compassion or CHBs and the other constructs, being primed by other studies which also examined self-compassion. Thus, they might have known the purpose of this study, which makes it possible that some of the respondents are manipulating the data. Although this study did not replicate the findings of Sirois it should be stated that the relation between self-compassion and academic procrastination was negatively and near a significant value ($p = 0.055$), which is almost significant and may turn to a significant value by adding just a few participants or by getting a sample with more variety. Furthermore the strength and direction of the correlation in this study ($r = -.19$) does not differ much from a non significant finding in the Sirois study considering the relation between procrastination and self-compassion ($r = -.16$) for an adult sample size ($N = 94$) comparable to the sample size of this study. Also the significant correlations between procrastination and self-compassion found by Sirois were negative and had a comparable strength considering the correlation coefficient found in this study. Although the strength and direction of the correlation coefficient does not differ that much from the findings of Siriois it has to be mentioned that in the end it was not significant.

Another possibility could be the different measurement instrument for academic procrastination used in this study than in the study of Sirois. Unlike Sirois, this study uses Rothblum's PASS, which differs from the measuring instruments used in Siriois' study, who used Lay's general procrastination scale (GPS; Lay, 1986) and the revised Adult Inventory of Procrastinaton (AIP-R; McCown & Johnson, 2001). It may also possible to explain the insignificant relationship between academic procrastination and self-compassion by a method effect, which occurs when the variance of the scores can be contributed to the measurement method rather than the attributable variance in the item of interest (Maul, 2013). The questionnaires used in this study varied in the directions of their formulation, some Items were formulated negatively whereas others were formulated positively, which may affect the answers given by the participants. To confirm or replicate the findings of Siriois and other related studies it could be better to use the same measuring instruments as Sirois did. In addition expanding the variety of participants by getting more respondents distributed equally considering the gender and different study types.

Additional findings considering the strong relation between self-compassion and perceived stress and self-compassion and mental well-being can be explained and supported by the broaden-and-build theory which is built up on positive emotions of individuals (Frederickson,2001). The theory explains that individuals who have a general positive state of mind focusing on positive feelings are able to cope better with negative states which in consequence leads to a positive mental health. Although self-compassion is not the same as a positive feeling of an individual it may be that people who are more self-compassionate also have more mental resources to cope with perceived stress and are able to manage their mental well-being in a positive way. From this perspective the quite high significant correlation coefficient (r = - .69) concerning the relation between self-compassion and perceived stress may be plausible. In addition the correlation coefficients found by Sirois (2014) were almost the same and quite high ranging from (r = -.58 to -.63) within 4 sample sizes. Hence, the findings in this study the strong relationship between self-compassion and perceived stress and strengthens the possibility that enhancing self-compassion may be beneficial for mental health.

4.1 Imitations and future research

Measuring procrastination can be challenging, it's unclear what's really defining the frequency of procrastination or how it is interpreted by respondents. Considering the scoring of the PASS by Rothblum (2015) the cut-off score can be determined by using the average of the scores measured within a study. But it can be questioned if this is the best way to measure the real time, amount and level of procrastination, because the self-reported measurement and statements like "always procrastinate" can be still be a vague measurement.

For further future research it would be useful to use several measurements for procrastination to make it possible to compare and explain different outcomes, just like Sirois did with the GPS and the AIP-R - Sirois found a correlation between the GPS and self-compassion but no correlation was found between the AIPR and self-compassion. The questionnaire used in this study covers the trait procrastination by asking general questions about academic procrastination, but not the reasons and thus not the state procrastination, which should be included in further examinations.

In this study measures were used which were based on retrospective self-reports which easily can be manipulated or answered with bias by the respondents. Since the survey was carried out online, it was not possible to check whether the respondents were students. Further research among students, carried out online should get rid of this possibility by first verifying that the participants is a student. Furthermore this research only delivered results at a given moment, which makes it not possible to examine longitudinal effects of procrastination or the

other constructs used in this study. This could be an interesting opportunity for further research, which could focus on a measurement of (academic) procrastination over longer period of time such as Tice et al., (1997) did. By this possible long term-effects of procrastination can be determined such as the findings in the study Tice et al.(1997) who stated that procrastination affects stress and illness late in the term and appears to be a self-defeating behavior pattern marked by short-term benefits and long-term costs. Radtke et al. (2017) who investigated the distinction between CHBs and CBs, stated that CBs should always be considered when investigating health behavior. Adding CBs and investigating if there are existent relations between CBs and academic procrastination and perceived stress or mental well-being may be valuable in this context.

The gender distribution of the respondents is unequal in this study. This limitiation could partly be explained by the strategy which was used to collect the data. However this study was posted on Sona Systems at the University of Twente, most of the respondents participated via social media like facebook or Instagram. Most of the respondents were collected via a platform called Instagram with private and public pages of its users. Explicitly the owner of a psychology student page with more than 60.000 followers was contacted to spread the study throughout its followers. In relation to the distribution of participants, explicitly gender, the uneven distribution of female and male participants can be explained by the high proportion of psychology students. There are more women than men studying psychology (Clay, 2017). This could also explain why the majority of the respondents were female, but the gender itself also influence online survey participation- women are more likely to participate than men (Smith, 2008). In addition, most participants were reached via the psychology student page, which also explains the majority of psychology students who participated on the online survey.

Further research should focus to get respondents from different study fields through different channels to get a greater and equal distribution. By doing so it could be possible to examine differences in procrastination within a student population between different study fields, age and gender - In addition it will be possible to confirm or replicate for example the findings in the study of Beutel et al. (2016) that younger individuals (14-29 years) procrastinate more and men procrastinate more than women (aged 14 to 29 years). Hence, it could be questioned if the outcomes of this study are generalizable to males.

4.2 Conclusion

In conclusion this study has shown and replicate the positive correlation between academic procrastination and perceived stress and mental well being as well as the relations between Self-compassion, perceived stress and mental well-being. This makes this study

valuable and confirms that academic procrastination and self-compassion are important factors in relation to people health that should not be ignored in future studies. Research and further studies examining the causes and consequences of academic procrastination and the effect on health related terms should not be delayed solely because of the existent and consistent relationship between perceived stress and academic procrastination, which was also confirmed in this study. Explicitly the relation between academic procrastination and perceived stress as well as the relation between academic procrastination and mental-well being should be further examined by conducting moderation or mediation analysis with different variables, to explain why they are related to each other. Self-Compassion should be re-introduced, because of the significant findings in previous studies considering its relation to academic procrastination. Through investigating more possible variables which explain the relations considering academic procrastination, perceived stress and mental well-being it could be possible to offer help and advice for students who cope with procrastination and the effects of it on perceived stress and mental well-being.

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6. Appendix

Questionnaire 1: Procrastination Assessement Student Scale, 12 Items

The following questions are about academic procrastination. The questionnaire determines to what degree you are actually procrastinating on tasks related to your study. At the top of each block you can read the task which is related to the questions considering procrastination

Writing a term paper

To what degree do you procrastinate on this task?	○ never procrastinate	○ almost never	○ sometimes	○ nearly always	○ always procrastinate
To what degree is procrastination on this task a problem for you?	○ not a problem at all	○ almost never	○ sometimes	○ nearly always	○ always a problem

Studying for an exam

To what degree do you procrastinate on this task?	○ never procrastinate	○ almost never	○ sometimes	○ nearly always	○ always procrastinate
To what degree is procrastination on this task a problem for you?	○ not a problem at all	○ almost never	○ sometimes	○ nearly always	○ always a problem

Keeping up with reading weekly reading assignments

To what degree do you procrastinate on this task?	○ never procrastinate	○ almost never	○ sometimes	○ nearly always	○ always procrastinate
To what degree is procrastination on this task a problem for you?	○ not at all a problem	○ almost never	○ sometimes	○ nearly always a problem	○ always a problem

Academic Administrative Tasks: Filling out Forms, Registering for classes, getting ID card

To what degree do you procrastinate on this task?	○ never procrastinate	○ almost never	○ sometimes	○ nearly always	○ always procrastinate
To what degree is procrastination on this task a problem for you?	○ not at all a problem	○ almost never	○ sometimes	○ nearly always a problem	○ always a problem

Attendance tasks: meeting with your advisor, making an appointment with a professor

To what degree do you procrastinate on this task?	○ never procrastinate	○ almost never	○ sometimes	○ nearly always	○ always procrastinate
To what degree is procrastination on this task a problem for you?	○ not at all a problem	○ almost never	○ sometimes	○ nearly always a problem	○ always a problem

School activities in general

To what degree do you procrastinate on this task?	○ never procrastinate	○ almost never	○ sometimes	○ nearly always	○ always procrastinate
To what degree is procrastination on this task a problem for you?	○ not at all a problem	○ almost never	○ sometimes	○ nearly always a problem	○ always a problem

Questionnaire 2: Perceived Stress Scale, 10 Items

The following questionnaire is the perceived stress scale. The statements are about the stress you perceived within the last month. Please read the statements carefully and indicate on the right in what manner the statement applies to you.

In the **last month**, how often ...

	Never	Almost Never	Sometimes	Fairly Often	Very often
... have you been upset because of something that happened unexpectedly?	○	○	○	○	○
... have you felt that you were unable to control the important things in your life?	○	○	○	○	○
... have you felt confident about your ability to handle your personal problems?	○	○	○	○	○
... have you felt that things were going your way?	○	○	○	○	○
... have you found that you could not cope with all the things that you had to do	○	○	○	○	○
how often have you been able to control irritations in your life?	○	○	○	○	○

how often have you felt that you were on top of things?	○	○	○	○	○
how often have you been angered because of things that were outside of your control?	○	○	○	○	○
how often have you felt difficulties were piling up so high that you could not overcome them?	○	○	○	○	○
how often have you felt nervous and "stressed"?	○	○	○	○	○

Questionnaire 3: Self-Compassion (SCS-SF)

Please read each statement carefully before answering. To the right of each question indicate how often you behave in the stated manner using the scale.

	Almost never	sometimes	quite often	more than often	almost always
When I fail at something important to me I become consumed by feelings of inadequacy	○	○	○	○	○
I try to be understanding and patient towards those aspects of my personality I don't like	○	○	○	○	○
When something painful happens I try to take a balanced view of the situation	○	○	○	○	○
When I'm feeling down, I tend to feel like most other people are probably happier than I am.	○	○	○	○	○
I try to see my failings as part of the human condition.	○	○	○	○	○
When I'm going through a very hard time, I give myself the caring and	○	○	○	○	○

tenderness I need.					
When something upsets me I try to keep my emotions in balance.	○	○	○	○	○
When I fail at something that's important to me, I tend to feel alone in my failure	○	○	○	○	○
When I'm feeling down I tend to obsess and fixate on everything that's wrong.	○	○	○	○	○
When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people.	○	○	○	○	○
I'm disapproving and judgmental about my own flaws and inadequacies	○	○	○	○	○
I'm intolerant and impatient towards those aspects of my personality I don't like	○	○	○	○	○

Questionnaire 4: General CHB-DLV, 17 Items

Different people believe different things about their health. Below is a list of beliefs that someone might have about staying healthy. Please read each sentence carefully and tell us how much you agree or disagree with it by clicking on one of the following responses. There is no right or wrong answers, because everybody believes different things

	totally disagree	somewhat disagree	neither agree nor disagree	somewhat agree	totally agree
Relaxing on the weekend can make up for stress during the week.	○	○	○	○	○
Using artificial sweeteners compensate for extra calories.	○	○	○	○	○
Exercising can compensate for smoking.	○	○	○	○	○
It is Ok to go to bed late if one can sleep longer the next morning (only the numbers of hours count).	○	○	○	○	○
Not drinking alcohol during the week can make up for the effects of drinking too much alcohol during the weekend.	○	○	○	○	○

Skipping the main dish can make up for eating dessert.	○	○	○	○	○
Relaxing in front of the TV can compensate for a stressful day.	○	○	○	○	○
Eating whatever one wants in the evening is ok if one did not eat much during the day.	○	○	○	○	○
Eating healthy can make up for the effects of regularly drinking alcohol.	○	○	○	○	○
Sleeping in on the weekend can compensate for too little sleep during the week.	○	○	○	○	○
Exercising can make up for the bad effects of stress.	○	○	○	○	○
Starting a new diet tomorrow compensates for breaking a diet today.	○	○	○	○	○

The effects of drinking coffee can be balanced by drinking equal amounts of water.	○	○	○	○	○
It is ok to skip breakfast if one eats more during lunch or dinner.	○	○	○	○	○
Sleep compensates for stress.	○	○	○	○	○
It is alright to drink a lot of alcohol as long as one drinks lots of water to flush it.	○	○	○	○	○
Smoking from time to time is ok if one eats healthy.	○	○	○	○	○

Questionnaire 4: Mental health short form (MHC-SF), 14 Items

The following questions are about mental health. Please answer the following questions which are about how often you feel the way described on the left during the past month. So during the past month how often did you feel...

	never	once or twice	about 2 or 3 times a week	almost every day	every day
happy	○	○	○	○	○
interested in life	○	○	○	○	○
satisfied with life	○	○	○	○	○
that you had something important to contribute to society	○	○	○	○	○
that you belonged to a community (like a social group, or your neighborhood)	○	○	○	○	○
that our society is a good place or is becoming a better place for all people	○	○	○	○	○
that people are basically good	○	○	○	○	○
that the way our society works makes sense to you	○	○	○	○	○
that you liked most parts of your personality	○	○	○	○	○

good at managing the responsibilities of your daily life	○	○	○	○	○
that you had warm and trusting relationships with others	○	○	○	○	○
that you had experiences that challenged you to grow and become a better person	○	○	○	○	○
confident to think or express your own ideas and opinions	○	○	○	○	○
that your life has a sense of direction or meaning to it	○	○	○	○	○