

Perfectionism as a Moderator in the Relationship Between Stress and Burnout in Students.

University of Twente

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Abstract

More and more students report having symptoms of burnout. Symptoms include being exhausted and less motivated to perform well in your study. Academic stress and perfectionism are factors that make students more prone to experiencing symptoms of burnout. Moreover, perfectionism is related to academic stress levels students experience (Brannan & Taylor, 2021). This research investigated the role perfectionism plays in the relationship between academic stress and symptoms of burnout. It was expected that perfectionism plays a moderating role in this relationship.

A descriptive explorative design and a sample of university students ($n = 128$, $M_{age} = 21.48$, 75.78% female) were chosen. Students completed an online survey which included demographic questions and the MBI-SS, the SLCS and the “Almost Perfect Scale”. Academic stress is measured as one variable with the SLCS, symptoms of burnout are measured with three variables (Exhaustion, Inefficacy and Cynicism) with the MBI-SS and lastly, perfectionism is measured with three variables (Standards, Order and Discrepancy) with the “Almost Perfect Scale”.

The results showed that Academic Stress is moderate to strongly positively related to all three components of burnout. Secondly, Discrepancy is positively related to the three subscales of burnout. Lastly, in contrast with the expectation of this research, the results showed that perfectionism does not play a moderator role in the relationship between academic stress and symptoms of burnout. To conclude, perfectionism is not a moderator in the relationship, therefore, future research could consider exploring perfectionism as a mediator. Next to this, future research should try to include the impact of COVID-19 as well as more males in the study.

Keywords: Perfectionism, burnout, academic stress, moderator

Perfectionism as a Moderator in the Relationship Between Stress and Burn-outs in Students.

Symptoms of burnout in students studying at a university is an increasing diagnosis after the COVID-19 pandemic (Interstedelijk Studenten Overleg (ISO), 2019). Many students show symptoms that could indicate burnout. This research investigated perfectionism's role in the relationship between academic stress and burnout.

A growing number of students in the Netherlands report having burnout-related symptoms. Symptoms could include emotional exhaustion and reduced personal accomplishment (Aronsson et al., 2017). According to the ISO (2019) approximately 54 percent of the students at a University experience these symptoms, in 2012 this was 39 percent of the students. Experiencing these symptoms could indicate actual burnout, which is defined as a condition characterized by total physical, mental, and emotional weariness (Maslach & Leiter, 2016). During the COVID-19 pandemic, all classes were online instead of in person; students are less inclined to engage in a discussion when it is online and the connection with teachers and other students is missing. Lastly, the constant switching from a meeting to online articles to learning materials and other necessities online is extremely tiring for students. This together led to an increased rate of burned-out students (Wang et al., 2021). However, according to Burki (2020), not only the switch to online education led to an increased rate of burned-out students, also loneliness, which comes from fewer social activities, and isolation are playing part in this. Since the start of the COVID-19 pandemic, a lot has changed in life, also in the life of students. Now, one year after the pandemic, the effects on students are still visible (Gonzalez et al., 2020). When experiencing such a burnout students could find it difficult to participate in the kinds of things they would typically find important and lose interest in the things that are significant to them or come to feel increasingly despondent (Aronsson et al., 2017). A burnout can be differentiated from an

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academic burnout. An academic burnout is caused by academic stressors, for example, too much pressure from the university or too many projects that need to be made. Students often suffer from academic burnout, which can be indicated via multiple symptoms, for example, emotional exhaustion, a cynical attitude towards learning and decreased efficacy. Next to these symptoms, also extreme tiredness and an inability to fill the brain with information are symptoms that could indicate academic burnout. Having academic burnout could lead to students stopping their current studies or their performance dropping dramatically (Seong et al., 2021).

Academic burnout can be caused by multiple factors such as bad nutritional habits, poor sleep quality and too much school work (Hwang & Kim, 2022). However, one of the predictors of academic burnout, that is more relevant for this research is academic stress. Students can experience academic stress due to extensive course work, challenging and repeated testing procedures, high expectations for themselves, and the pressure to perform and accomplish (Xu & Ba, 2022). When suffering from academic stress, students could encounter academic and emotional problems. Academic problems that students could encounter are difficulty in concentration and studying in general, also, students' memory could not work optimally. Getting easily irritated, not thinking properly and being sad for minor reasons are some examples of emotional problems students could encounter when experiencing unreasonable academic stress (Kumaraswamy, 2013).

One factor that enlarges academic stress is perfectionism. Perfectionism can be defined by high standards and being extremely critical towards someone's own work (Hill & Curran, 2015). Next to the fear of making mistakes, students that suffer from perfectionism also have the tendency to doubt the quality of their work, which makes them highly dependent on the value that others put on their work, for example, their parents (Frost et al., 1990). Another feature of perfectionism is the proneness to work as neatly as possible. People with

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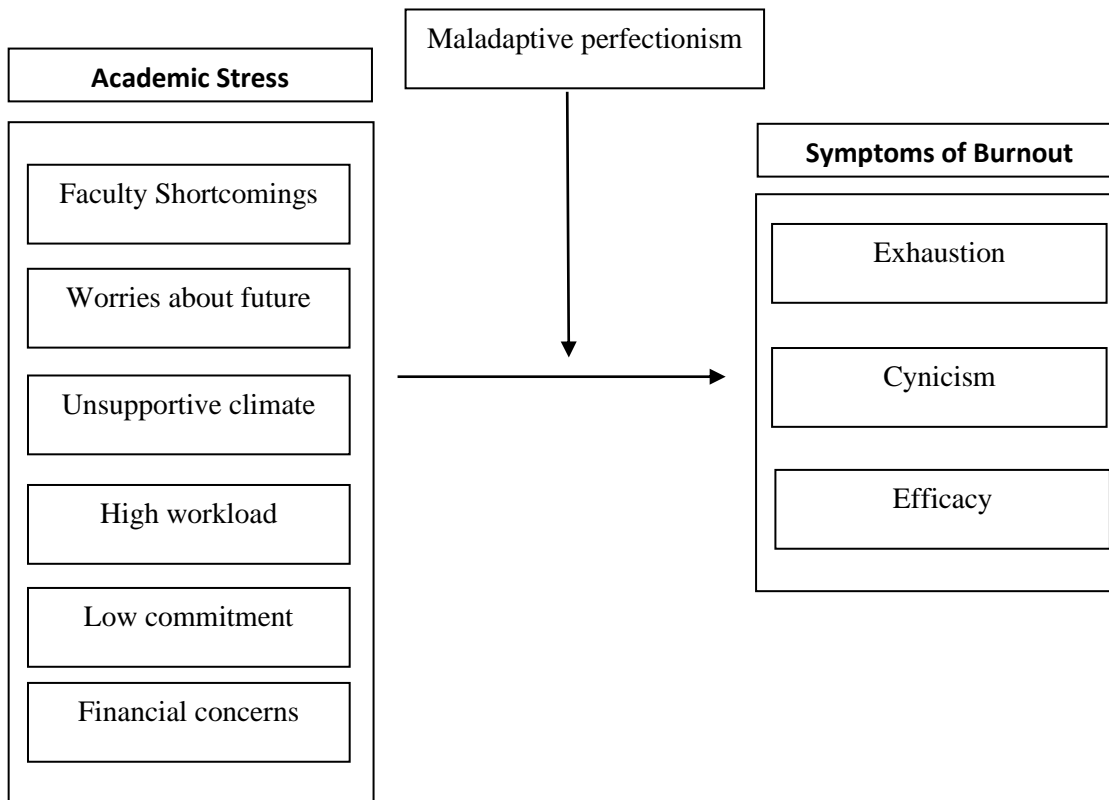
perfectionism often work extremely organized and it gets sometimes described as “a fetish for orderliness” (Hollander, 1965 (p. 96)). A distinction between two kinds of perfectionism can be made, the first one is the adaptive perfectionist, this perfectionist would still accept their work, even if it still contains some small mistakes. These perfectionists have high standards, and a high need of everything being in order that are often still realistically and reasonable (Hamachek, 1978; Lo & Abbot, 2013). However, maladaptive perfectionists are more stressed if their work would contain a mistake, they would see their work as failed if it is not completely perfect. Additionally, maladaptive perfectionists struggle with low self-esteem due to extremely high and often unrealistic expectations of themselves, therefore there is a discrepancy between their ought self and their actual self which causes more distress (Hamachek, 1978). Maladaptive perfectionism is also characterized by the discrepancy students have between their ought self and their real selves. This means that students have extremely high expectations of themselves, but they cannot manage to meet these expectations with their actions. Therefore, maladaptive perfectionism is often referred to as the negative side of perfectionism. Whereas adaptive perfectionism is the more positive side of perfectionism, which is characterized by having a strong feeling of order and standards, but these standards are still realistic and can be met with the actions of a student (Lo & Abbott, 2013). Struggling with maladaptive perfectionism could have big consequences for a student’s life. One of the consequences is decreased productivity, some students get so fixed on their work being perfect that it could lead to paralysis, which means that students will not do anything for that specific task anymore. Another effect of suffering from maladaptive perfectionism that is more connected to academic burnout in students is that perfectionism and especially maladaptive perfectionism could lead to depression and anxiety. When students do not meet the high expectations they set for themselves, tension and anxiety mount, and they could even experience depression (Brannan & Taylor, 2021).

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To summarize, for students that are suffering from maladaptive perfectionism academic stress might have a bigger effect on the symptoms of burnout, due to the high pressure they are putting on themselves. However, most of the studies that researched the relationship between perfectionism and burnout in students focused on students in the medical field or students that perform very well in sports (Yu et al., 2016; Pereira et al., 2022; Wang et al., 2019). These studies found that perfectionism is related to an increase in academic stress, which in turn has a negative effect on the feelings of burnout in students. Since most of the studies were about medical students or athletes, there is a gap in studies that focused on other student groups and the effect that perfectionism has on academic burnout. This makes it relevant to research perfectionism in the relationship between academic stress and burnout in other student groups as well. Next to this, in the before described studies (Yu et al., 2016; Pereira et al., 2022; Wang et al., 2019), a mediation effect was indicated, with perfectionism as a mediator. This means that the academic stress that students experience leads to a higher level of perfectionism, which would in turn lead to more symptoms of burnout. This current study will investigate if perfectionism plays a role as a moderator in the relationship between academic stress and burnout. When, in this study, a moderator effect is researched it will be tested whether perfectionism strengthens the relationship between academic stress and burnout. In this research, it is expected that maladaptive perfectionism will strengthen the relationship between academic stress and burnout. However, since adaptive perfectionism represents the positive side more than the negative aspects of perfectionism, it is expected that adaptive perfectionism does not have a direct effect on the relationship between academic stress and symptoms of burnout. A hypothesized model is illustrated in Figure 1.

Figure 1

Expected model with maladaptive perfectionism as moderator in the relationship between academic stress and burnout.



To make this research concrete, three research questions and expectations are formulated.

RQ1: Is there a relationship between academic stress and symptoms of burnout?

Based on the previously given information, it is expected that there will be a relationship between academic stress and symptoms of burnout. More precisely, it is expected that people with high academic stress are also experiencing more symptoms of burnout.

RQ2: Is maladaptive perfectionism related to burnout?

Based on the research done on medical students and athletes it is expected that there is a relationship between perfectionism and burnout. It is expected that maladaptive

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perfectionism will lead to an increased feeling of burnout symptoms, which is indicated by the discrepancy aspect of perfectionism.

RQ3: Is the relationship between academic stress and symptoms of burnout moderated by maladaptive perfectionism?

The expectation is that the relationship between academic stress and burnout will be strengthened by maladaptive perfectionism. This would mean that a moderator effect will be found while doing the analysis.

Methods

This study is a combined study of five researchers who all researched a different variable relating to academic stress and burnout. The five researchers all have different research questions that could be answered with a joint questionnaire.

Design

This study consists of a descriptive study design. With symptoms of burnout used as a dependent variable. As an independent variable, academic stress was used in this research. Furthermore, perfectionism was expected to function as a moderator in this study. Lastly, this study used quantitative methods to get a good overview of a big amount of students. This was also an explorative study rather than an experimental. This design allowed to create in-depth understanding.

Participants

For this research, a convenience sample was drawn consisting of 167 students. Every participant was requested to give informed consent before they could start with the questionnaire which was approved by the BMS Ethics Committee. Moreover, the participants had the opportunity to choose whether they wanted to be part of the study or not. The questionnaire was distributed via the network of the 5 researchers and it was put in the SONA

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system at the University of Twente. Inclusion criteria for participants were that they needed to have a good understanding of the English language, be at least 18 years old and be university students. Moreover, exclusion criteria for the selection of participants were that they were under 18 years, had no good understanding of the English language, and were not studying at a university. People that filled in under 95% of the questionnaire or that filled in the questions randomly were also excluded from the study, this excluded 39 participants. In Qualtrics (the program used for the questionnaire) it was assessed that there were no people that filled the questionnaire in too fast (two standard deviations from the mean), therefore, no participants were excluded for this reason. Next to that, there were no other reasons to exclude participants from the dataset. Finally, there was a final dataset of 128 participants that met all the criteria left, of which the characteristics can be found in Table 1. Most of the participants are female, and the most common nationality is German. However, also countries like Vietnam and Greece were mentioned as nationalities, which are described in the table as “other”. The division in the study years is rather spread, but it can be said that most participants are still in their bachelor’s. The category “other” includes answers from people that are studying law, which has no bachelor, and medicine, which also has a different curriculum. As seen most participants are from the University of Twente, and study Psychology.

Table 1*Sample characteristics (N=128)*

		n(%)	Mean	SD
Age			21.48	2.34
Gender				
	Male	30 (23.44)		
	Female	97 (75.78)		
	Non-Binary	1 (0.78)		
	Did not disclose	0 (0)		
Nationality				
	Dutch	43 (33.59)		
	German	66 (51.56)		
	Other	19 (14.84)		
Study year				
	Bachelor 1	29 (22.66)		
	Bachelor 2	32 (25)		
	Bachelor 3	46 (35.94)		
	Master 1	12 (10.16)		
	Master 2	3 (2.34)		
	Other	6 (4.69)		
Study				
	Psychology	61 (47.66)		
	Communication Sciences	20 (15.63)		
	Other	47 (36.71)		
University				
	University of Twente	88 (68.75)		
	Other	40 (31.25)		
Starting year				
	2020	42 (32.81)		
	2021	30 (23.44)		
	2022	32 (25)		
	Other	23 (17.97)		

Materials

The questionnaire (Appendix B) used in this research started with some general demographic questions, the age, study, study phase, gender and nationality of the students were asked. Next to that, also the year in which participants started studying and at which university was included in the demographic questions. Also, seven questionnaires were

included in this questionnaire. The three questionnaires relevant for this research and their properties are described below.

Academic Stress

Following the demographic questions, the students were presented with the “SLCS” which consisted of 22 items about different life challenges a student can encounter during their studies (Porru et al., 2022). This questionnaire had a four-point Likert scale (1 to 4) with which they could answer “totally agree” (4), “somewhat agree” (3), “somewhat disagree” (2), and “totally disagree” (1). This questionnaire measures how much students get exposed to challenges in their student life. This scale included 6 subscales, however, the subscale Low Commitment was not included in the analysis further in the research. The items in this subscale overlap significantly with the subscale Cynicism of the MBI-SS, therefore, it was more valuable to choose to not include this subscale in the analysis. The first subscale that is used is “faculty shortcomings” which exists of seven items, an example of a question in this subscale is “The teachers often fail to clarify the aims of the activities”. Lack of opportunity to influence studies or curricula, and the perception that education is not effectively educating students for the future workforce are examples of faculty deficiencies that are tested in this subscale. In the study of Porru et al (2022), this subscale had a Cronbach’s alpha of $\alpha=.74$. However, in this current study, the Cronbach’s alpha is $\alpha=.60$. The second subscale of this scale is “worries about the future” which exists of three items, an example of this subscale is “I am worried that I will not acquire all the knowledge needed for my future profession”. With a Cronbach’s alpha of $\alpha=.67$ in the study of Porru et al (2022) compared to a Cronbach’s alpha of $\alpha=.64$ in the current study, it measures how much students are worried about work pressure in their future careers. Thirdly, there is the subscale “unsupportive climate” which is tested with five items. In the study of Porru et al (2022) it was found to have a Cronbach’s alpha of $\alpha=.65$, however in the current study, this subscale has a Cronbach’s alpha of $\alpha=.71$.

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A question that is asked in this scale is for example “Studying has created a climate of anonymity and isolation among the students.”. This subscale measures the relationships students have with their fellow students and friends. A fourth subscale in this scale is “high workload” which is measured with three items. One of these items is “My study controls my life and I don’t have a lot of time for other activities”. It measures the balance students have between private life and their study life, next to that, it also measures how students are experiencing the pace of their study. This subscale has a Cronbach’s alpha of $\alpha=.68$ in the study of Porru et al (2022) and a Cronbach’s alpha of $\alpha=.77$ in this current study. Lastly, there is the subscale “financial concerns” with two items, which has a Spearman’s $r_s=.49$ in the study of Porru et al (2022) compared to a Spearman’s $r_s=.65$ in the current. Students’ vision of their future financial situation but also their satisfaction with their current financial situation is measured in this subscale. The scores of the subscales were calculated by taking the mean of the answers given on the items of the subscales. When students score high on the different subscales, this indicates that they are experiencing high academic stress (Porru et al., 2022).

Burnout

Secondly, burnout symptoms were measured with the Maslach Burnout Inventory – Student Survey (MBI-SS) which is a 15-item scale that has to be answered on 7-point Likert scales (Schaufeli et al., 2002). Students could answer the questions with “Never” (0), “A few times per year” (1), “Once a month” (2), “A few times per month” (3), “Once a week” (4), “A few times per week” (5), and “Every day” (6). Burnout is measured with three different subscales. The first subscale used in this questionnaire is “Exhaustion” which is measured with five items and has a Cronbach’s alpha of $\alpha=.74$ in the study of Schaufeli et al (2002), it turned out to have a Cronbach’s alpha of $\alpha=.90$ in the current study. These items measure to what extent students feel overloaded and exhausted by their emotional resources (Maslach,

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2001). An example question asked for this subscale is “I feel emotionally drained by my studies”. Secondly, there is the subscale “Cynicism” which measured the interpersonal distancing dimension of burnout (Maslach, 2001). This is measured with five items and in the study of Schaufeli et al (2002) it has a Cronbach’s alpha of $\alpha=.79$, in the current study it has a Cronbach’s alpha of $\alpha=.91$. A question that is asked in this subscale is for example “I have become less enthusiastic about my studies.”. Lastly, the subscale “Efficacy” consists of six items and measures feelings of being not good enough for the study or feeling that someone is lacking in their achievements (Maslach, 2001). This subscale has a Cronbach’s alpha of $\alpha=.76$ in the study of Schaufeli et al (2002), in the current study it has a Cronbach’s alpha of $\alpha=.80$. One of the questions asked in this subscale is “I have learned many interesting things during the course of my studies.”. An indicator of a student struggling with burnout symptoms is when a student scores low on the subscale efficacy and high on the other two subscales (exhaustion and cynicism) (Schaufeli et al., 2002). However, after reverse coding the efficacy scale, this scale will be named inefficacy. Therefore, burnout can be indicated by scoring high on the three subscales, which are calculated by taking the mean scores of the items corresponding with the subscale.

Perfectionism

The questionnaire that was used in this study is the “Almost Perfect Scale”, which is a 23-item scale, and measures with a 7-point Likert scale (Slaney et al., 2001). The answers that participants can give are “Strongly Disagree” (1), “Disagree” (2), “Slightly disagree” (3), “Neutral” (4), “slightly agree” (5), “Agree” (6) “Strongly Agree” (7). This scale measures three parts of perfectionism in students, high standards, order and discrepancy. “Discrepancy” is measured with twelve items, and has a Cronbach’s alpha that ranged between $\alpha=.91$ and $\alpha=.92$ in the study of Slaney et al (2001). In the current study, this subscale has a Cronbach’s alpha of $\alpha=.96$. An example item that is used to measure this is “I often feel frustrated because

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I can't meet my goals." This subscale measures the individual's subjective view of the failure to meet one's goals and objectives. With the Discrepancy subscale, the maladaptive aspect of perfectionism is measured. Next to this, the subscale "High Standards" measures the propensity for high levels of self-achievement. This is measured with seven items and has a Cronbach's alpha of $\alpha=.85$ in both the current study as in the study of Slaney et al (2001). An item that is asked in this subscale is for example "I have high standards for my performance at work or at school.". Lastly, the subscale "Order" has a Cronbach's alpha that ranged between $\alpha=.82$ and $\alpha=.86$ in the study of Slaney et al (2001) and a Cronbach's alpha of $\alpha=.80$ in the current study. It has four items, and for example "I am an orderly person." is asked as one of the items. Someone's propensity to favour one's own work over others is measured with this subscale. Both the subscales "High Standards" and "Order" are used to indicate the aspect of adaptive perfectionism. To calculate a participant's score on a certain subscale, the items corresponding to that certain subscale are added to each other.

Procedure

To make the questionnaire Qualtrics was used. Qualtrics is an online survey system of the University of Twente which can be used for free for students at the university. For students to be able to participate in this study, and therefore to fill in the questionnaire, they needed to have access to a mobile device or a PC with a working internet connection. The participants could enter the questionnaire via the link provided by the researchers. Since the study was also published in the SONA domain, students from the BMS faculty have been able to receive 0.25 credits when they participated in the study. Every bachelor student that studies behavioural sciences at the University of Twente has to earn 15 points via the SONA system in order to be able to graduate.

When students entered the questionnaire, the first thing that they encountered was the information sheet, in which information about the study was provided. Information about the

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purpose and procedure, confidentiality and risks and contact information was provided.

Finally, also information about consent was given, and the student was informed about the right to withdraw from the study at any time without explanation, next to that, they also were told that all the information is fully anonymized. What information was exactly provided to the participants can be found in Appendix A. Following the information sheet there was a dichotomous yes or no question where the student needed to either agree and give their consent to proceed with the questionnaire or disagree and not give their consent. When students did not give their consent in the consent form they were forwarded to the end of the questionnaire.

After giving their consent, students needed to fill in some demographic questions, after which they encountered seven different questionnaires, which all used a Likert scale (Appendix B). The “MBI-SS” and “SLCS” came both directly after the demographic questions and needed to be filled in before students could continue. The place of these two scales in the whole questionnaire was fixed. However, after these scales, the students had five more scales to fill in (one of every researcher of the project that measured a different variable). The place of these five scales was variable, this was done to overcome the fact that it is always the last scale that was not filled in. Therefore, when the scales change position, if a student quits the questionnaire because of the length, some of the researchers could still use the results that were filled in. If participants missed a question in a questionnaire they could not move forward to the next questionnaire. They did this for the seven questionnaires, which took approximately 20 minutes.

When students did fill in all the questions, they were asked if all the questions were understandable, this was done with a closed dichotomous “yes” or “no” question. If the participant indicated “no” they were asked which part was hard to understand, which was asked with an open question.

Lastly, students were debriefed about the study and they got some information about places that could support them if they are experiencing academic stress or burnout. Next to this, also the contact details of the researchers are mentioned again. This debriefing sheet can be found in Appendix C.

Data Analysis

After 4 weeks of data collection, the data collection was closed. This dataset was downloaded from Qualtrix and imported as a csv document in RStudio version 4.2.3, which is a statistical program. When all the data was collected, the data were checked for missing data. If there were missing data (participants did not fill in some essential information), this participant was deleted from the dataset. Next to that, based on the exclusion criteria: not 18 years old, no consent or not a student, participants were excluded from the dataset. When all the data was complete, the missing data was deleted and there was a correct readable dataset in RStudio, first, the demographical information was retrieved, which can be found in Table 1. Some items in the questionnaire were asked in such a way that their scores needed to be reversed. This was the case for the subscale Faculty Shortcomings of the “SLCS” as well as the Efficacy scale of the “MBI-SS”. The Efficacy subscale is called Inefficacy after reverse scoring this subscale. After this, normality was tested for all subcategories of the three questionnaires. Normality was tested by plotting a histogram and a QQplot to make the data visual. If some variables did not meet the normality assumption, bootstrapping was used in order to assure that the normality assumption was met.

After checking the normality assumption, the option of reducing the subscales of the “SLCS” to one or two factors was explored. This was done by running a factor analysis on the five subscales of this questionnaire. To do this, first a KMO (Kaiser-Meyer-Olkin) test was done to measure sampling adequacy. Secondly, to determine how many factors were suitable for this analysis, the eigenvalues were used. Whenever the eigenvalue was above 1, it could

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be said that that number of factors was suitable. Finally, this was made visible in a screeplot so the elbow criteria could be used as well (Appendix E).

The first question was if academic stress and symptoms of burnout are related to each other. In order to see the relationships between Academic Stress and the three subscales of the burnout scale Pearson correlations were used.

The second question was if perfectionism is related to burnout. This has been measured with the “MBI-SS” and the “Almost Perfect Scale” which measure burnout and perfectionism symptoms. The “MBI-SS” and the “Almost Perfect Scale” both consist of three subscales. To analyse the relationships between these two concepts Pearson correlations were used.

The last question was if the relationship between academic stress and symptoms of burnout is moderated by perfectionism. This was analysed with three multiple linear regression analyses for the three aspects of burnout (Exhaustion, Cynicism and Inefficacy) Before doing the regression analysis, the means of the variables used were centred to prevent multicollinearity between the interaction terms and the variables. Three interaction variables were calculated by multiplying each of the three aspects of Perfectionism with Academic Stress. In the regression analyses the three aspects of Burnout were set as dependent variables and Academic Stress, the three aspects of perfectionism (Order, Standards, Discrepancy), and the interaction terms between perfectionism and stress were set as independent variables. If a significant interaction between stress and perfectionism ($p < 0.05$) was shown it could be said that perfectionism has a moderating effect on the relationship between academic stress and symptoms of burnout.

Results

Parametric Assumptions

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The check for normality did show mixed results, which means that some of the variables met the normality assumption but not all of them. Alternative analyses that included bootstrapping were explored so that the normality assumption was met. However, including bootstrapping in the analyses did not give different outcomes compared to the analyses without bootstrapping. Therefore, no further measures such as bootstrapping were used in the analyses. The histograms, including extra information, can be found in Appendix D.

Factor Analysis

After this check, the factor analysis was run over the “SLCS” scale, which showed that one factor is appropriate to use based on the eigenvalue >1 and the screeplot that can be found in Appendix E. After which, the 5 subscales of the “SLCS” questionnaire were combined into one factor which is used in the rest of the analysis. This was done by taking the sum score of the five subscales and the variable is called “Academic Stress”. In Table 2, the factor loadings resulting from the factor analysis can be seen. It also shows that the factor loading of the subscale Financial Concern is relatively low.

Table 2

Factor loadings of the factor analysis of the Student Life Challenges Scale.

Subscale	Factor 1
Faculty Shortcomings	.70
High Workload	.65
Supportive Climate	.74
Worries about the future	.60
Financial Concerns	.34

Correlations between Academic Stress, Perfectionism and Burnout

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In Table 3, the mean scores and the standard deviation scores of the final variables used in the analysis are reported. As the maximum score on the Discrepancy scale is 84, a mean score in this sample of approximately 52 is moderately high. For Order, the maximum score is 28, which makes a mean score of approximately 20, relatively high. Lastly, Standards could have a maximum score of 49, which, as the previous two subscales, makes the mean score in this sample high. The Cynicism, Exhaustion and Inefficacy scale have a maximum score of six. This means that all of the means are relatively low, especially Cynicism and Inefficacy. A maximum score of 20 was possible for Academic Stress, which makes that a mean score of approximately 12 is around the middle, which makes it moderate. Next to this, the standard deviations related to the mean, are all relatively low, which means that the scores are clustered around the mean score.

Table 3

Means and standard deviations final variables used in the analysis

	Mean	Standard Deviation	Minimum	Maximum
Cynicism	1.62	1.65	0	6
Exhaustion	3.12	1.52	0.20	6
Inefficacy	1.96	1.03	0	4.83
Academic Stress	11.53	2.43	6.44	16.37
Discrepancy	51.7	17.93	12	84
Order	20.18	4.77	7	28
Standards	38.19	7.01	12	49

In Table 4, the Pearson correlations between these variables are reported. As seen in table 4, the Pearson correlations were between $-.10$ and $.61$. The correlations of Order with the other variables were relatively low, between $.10$ and $.20$. Which indicates a very weak correlation between Order and other variables. Based on the correlation, it can also be seen that Academic Stress did moderately to highly correlate with Cynicism, Exhaustion and

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Inefficacy. Next to this, the subscale Discrepancy of the Perfectionism questionnaire had moderate correlations with Academic Stress, Exhaustion, Cynicism and Inefficacy, between .34 and .44. However, the other two subscales of this questionnaire (Standards and Order) showed very weak correlations with these variables, between .01 and .14. A visualization of the significant relationships between Academic Stress and the three subscales of the burnout scale can be found in Appendix F.

Table 4

Pearson correlations

	Cynicism	Exhaustion	Inefficacy	Academic Stress	Discrepancy	Order	Standards
Cynicism	1.00						
Exhaustion	.47**	1.00					
Inefficacy	.48**	.30**	1.00				
Academic Stress	.52**	.61**	.40**	1.00			
Discrepancy	.38**	.44**	.34**	.38**	1.00		
Order	.11	.14	-.10	.10	.04	1.00	
Standards	.10	.14	-.11	.01	.51**	.31**	1.00

* $p < .05$ ** $p < .01$

Perfectionism as a moderator in the relationship between Academic Stress and Burnout

Lastly, the moderation analyses did not show significant results for Perfectionism as a moderator in the relationship between Academic Stress and Burnout. With p values from far above .2 and some even above .7 it does not show any significant results regarding a moderation effect. The exact p values and other descriptives can be found in Tables 5,6 and 7 for Cynicism, Exhaustion and Inefficacy respectively. These tables also show that in the moderation analysis Discrepancy and Academic Stress had a significant effect on Cynicism and Exhaustion. Next to this, in the moderation analysis of Inefficacy, it can be seen that Discrepancy, Standards and Academic Stress had a significant effect on Inefficacy.

Table 5*Moderation effects Perfectionism in the relationship between Academic stress and Cynicism*

Effects	Estimate	SE	95% CI		<i>p</i>	<i>t</i> -value
			LL	UL		
Single Effects						
Intercept	-.06	.13	-.32	.20	.65	-0.46
Discrepancy	.03	.01	.01	.05	.01*	2.60
Order	.02	.03	-.04	.08	.49	0.69
Standards	.02	.02	-.02	.06	.48	-0.71
Academic Stress	.29	.06	.17	.41	3.69e-06**	4.85
Moderation Effects						
Discrepancy:Academic Stress	.004	.003	-.002	.01	.30	1.05
Order:Academic Stress	-.004	.01	-.02	.02	.71	-0.34
Standards:Academic Stress	.01	.01	-.01	.03	.46	0.73

$R^2 = .29$; $F_{7,120}=8.53$; $p<.01$; CI = confidence interval; LL = lower limit; UL = upper limit;

* $p < .05$ ** $p < .01$

Table 6*Moderation effects Perfectionism in the relationship between Academic stress and Exhaustion*

Effects	Estimate	SE	95% CI		<i>p</i>	<i>t</i> -value
			LL	UL		
Single Effects						
Intercept	.03	.11	-.19	.25	.80	0.26
Discrepancy	.02	.01	.0004	.04	.006**	2.76
Order	.03	.02	-.01	.07	.20	1.30
Standards	-.01	.02	-.05	.03	.77	-0.30
Academic Stress	.31	.05	.21	.41	1.06e-08**	6.15
Moderation Effects						
Discrepancy:Academic Stress	-.002	.003	-.01	.004	.42	-0.81
Order:Academic Stress	.01	.01	-.01	.03	.55	0.60
Standards:Academic Stress	.002	.01	-.02	.02	.80	0.26

$R^2 = .40$; $F_{7,120}=13.18$; $p<.01$; CI = confidence interval; LL = lower limit; UL = upper limit;

* $p < .05$ ** $p < .01$

Table 7*Moderation effects Perfectionism in the relationship between Academic stress and Inefficacy*

Effects	Estimate	SE	95% CI		<i>p</i>	<i>t</i> -value
			LL	UL		
Single Effects						
Intercept	.005	.09	-.17	.18	.95	0.06
Discrepancy	.03	.01	.027	.033	.0001**	3.98
Order	-.01	.02	-.05	.03	.50	-0.68
Standards	-.05	.01	-.07	-.03	.002**	-3.15
Academic Stress	.10	.4	-.67	.87	.006**	2.78
Moderation Effects						
Discrepancy:Academic Stress	.005	.002	.002	.008	0.98	0.02
Order:Academic Stress	-.01	.007	-.02	.004	.33	-0.98
Standards:Academic Stress	.01	.006	-.001	.02	.13	1.53

$R^2 = .25$; $F_{7,120}=7.15$; $p < .01$; CI = confidence interval; LL = lower limit; UL = upper limit;

* $p < .05$ ** $p < .01$

Discussion

The goal of this study was to research if perfectionism plays a role in the relationship between academic stress and symptoms of burnout in students. For this, three research questions were established. This research did not find support for the fact that perfectionism has effect on the relationship between academic stress and the three components of burnout. However, the research did show a positive relationships between academic stress and burnout, and the Discrepancy component of perfectionism and burnout.

The first research question was if there is a relationship between academic stress and symptoms of burnout. In this research, academic stress shows a moderate to strong positive relationship with the three aspects of burnout. These results are in line with the research of Xu & Ba (2022), which states that due to the high amount of work students have to do for academic courses, students more and more encounter a high amount of academic stress, which

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results in higher numbers of students that report symptoms of burnout. This current research did show that students report elevated levels of academic stress. This study indicated that a higher level of academic stress is related to a higher level of symptoms of burnout in students.

Secondly, to answer the second research question, an analysis was done to find out if there is a relationship between perfectionism and symptoms of burnout. The Discrepancy aspect of perfectionism showed a strong positive relationship with all three aspects of burnout. This means that students that have high levels of Discrepancy are also reporting higher levels of burnout. However, the study also shows that Standards and Order do not have a relationship with the three aspects of burnout. The Discrepancy subscale indicates the maladaptive aspect of perfectionism, whereas Standards and Order measure the more adaptive side of perfectionism. This also makes Discrepancy a better predictor of symptoms of burnout than Standards and Order. Being an orderly person and having high standards does not make people uncomfortable. People get uncomfortable when the person they want to be is not the person they are, which is measured with the Discrepancy subscale (Slaney et al., 2001). This means, that students who have high standards but cannot meet those standards are more prone to have burnout. Also, the study of Rice and Ashby (2007) described that people that score high on the Discrepancy aspect of perfectionism are categorised as maladaptive perfectionists. In that study, it is also said that maladaptive perfectionists are more prone to suffer from symptoms of burnout than adaptive perfectionists (score low on discrepancy). Based on the research of Brannan & Taylor (2021) it was expected that a relationship between perfectionism and symptoms of burnout could be found. This current research paper can adopt this expectation, therefore, to conclude, Discrepancy does relate positively to the three components of burnout. However, the subscale Standards and Order do not show a significant relationship with the burnout components, which can be expected based on the results of the study of Slaney et al (2001). Slaney et al (2001) states that there was a high overlap between

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the Order and High Standards aspect, which were both related to the positive dimension of perfectionism, also called adaptive perfectionism in this current research. However, Discrepancy showed much less overlap with the other two aspects, and, next to that, was also a better indicator of the negative dimension of perfectionism, also called maladaptive in this current research.

Thirdly, the final and main research question of this paper was set up to analyse if perfectionism plays a moderator role in the relationship between academic stress and symptoms of burnout. At the beginning of this research paper, it was expected that maladaptive perfectionism would strengthen the relationship between academic stress and symptoms of burnout. However, in this study, maladaptive perfectionism does not strengthen this relationship. Therefore, for this research, it can be said that maladaptive perfectionism does not play a moderator role in the relationship. This is in line with the research of Hill & Curran (2015), which concluded that perfectionism is not a moderator in the relationship between Academic Stress and Burnout. However, whereas Hill & Curran (2015) did not measure perfectionism as a mediator, Yu et al (2016) did include perfectionism as a mediator rather than a moderator in their study. If perfectionism would play a mediating role it would mean that academic stress would lead to a higher maladaptive perfectionism which would lead to a higher level of burnout. In both studies, perfectionism did show significant results in a mediating role. However, only little to no studies have analysed perfectionism as a moderator, which made this research rather new in this field. Hill & Curran (2015) is one of the only studies that included the three variables (with perfectionism as moderator) that are also used in this research, however, in that study, there was no clear distinction made between maladaptive and adaptive perfectionism.

Strengths and Limitations

The findings of this current research should be seen with keeping some limitations of this study in mind. Although this study included a wide range of students, the participants are retrieved via a convenience sample, which means that there is not a random selection of students. Therefore, the sample used in this study is not representative of the student population. A second limitation regarding the sample is the high amount of female students that filled in the questionnaire. Most of the participants in this study are female, some studies have indicated that females are in the basis more perfectionistic than males. Therefore, having such a big percentage of females in the study could give a picture that is not representative of all students.

Thirdly, an important point to mention while looking at the descriptives of this study is that the starting years of the students in this research are 2020, 2021 and 2022. These are the years that students started studying with COVID-19 measures. People that started studying in 2020, studied with these measures for almost two years. Students that studied during the time of COVID-19 reported higher levels of symptoms of burnout and academic stress (Wang et al., 2021). Therefore, the sample used in this current study is remarkably impacted by the consequences of the COVID-19 pandemic, which could have influenced the results presented in this study.

Furthermore, the validity of this research is one of its limitations. This study measured the amount of stress and burnout in students. However, it did not measure this stress level at another point in time. At the beginning of this study, it was mentioned that it is one year after the COVID-19 pandemic. It is not known what the impact of this pandemic is on the stress level of students as said before. Therefore, it could be that the results are impacted by this pandemic, which gives a framed picture. Also, the reliability is a questionable point in this study, the high amount of females and Psychology students in this sample and the fact that the

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sample does not give a good representation of the student population. This makes that the outcome will probably be different the next time the study is executed with a different sample.

Lastly, a noticeable point to discuss about the factor analysis done in this study is the low factor loading of the financial concern aspect of academic stress. This low score indicates that the financial concern aspect does not fully measure the same as the other aspects of academic stress do. However, compared to the study of Joo et al. (2008), this outcome is not expected. This study states that financial concern is an important indicator of academic stress. As studying at a University is rather expensive, students often feel the urge to finish their education as soon as possible, which increases their stress levels. Based on the results of this study, it could be debated if financial concern is measuring the same as the other four subscales.

Next to the limitations, this study also has strengths. One of these strengths is the fact that this study used an online questionnaire. This gave the opportunity to include a lot of students from different universities and countries. Therefore, this study included a diverse sample of students (although not a random sample) in a relatively short time frame. Using an online questionnaire makes the distribution of the questionnaire fairly easy.

Another strength is that this study is one of the first studies that explore a moderation effect. This gives a new and fresh perspective on the variables that are used in this study: Academic Stress, perfectionism and burnout. Next to this, it deepens the understanding of the relationship between academic stress and burnout.

Future Research

This current study also leads to new points to study and points to keep in mind while doing future research. First of all, future studies could higher the validity of this study by including different points of time in the academic year in which they measure students' stress

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levels. For example, taking one point at the beginning of the year and one at the end of the year. This could improve the validity of the study as there can be more information about students' basic level of stress, and how much stress is added due to academic stressors.

Secondly, in future research, it would be profitable to also include more males in the study. In this current study, the males are a bit underrepresented, which leads to a less representative sample of the student population. Not only including more males would be beneficial for the representative ability of this study. To increase the representative ability of this sample, also, using a random sample instead of a convenience sample would be beneficial. This would give a better picture of the student population.

Lastly, future studies could explore the option to compare different school systems. Including this in the study, it would give a clearer picture of what exactly is affecting students' stress levels. This could lead to a more effective recommendation about the use of different school systems and the effect it has on students.

As a more practical recommendation, an intervention to reduce the negative aspects of perfectionism in students could be used at universities. This current study did show a positive relationship between the Discrepancy aspect of perfectionism and burnout. This could argue for an intervention in which students gain more insight into their thinking patterns, how they see themselves, and their actual actions. Giving students insight into their thoughts and actions and coaching them on how to get their actions in line with their expectations could lower the Discrepancy aspect of perfectionism. Which in turn could eventually lead to fewer students that struggle with maladaptive perfectionism. An intervention including CBT (Cognitive Behavioural Therapy) to address maladaptive perfectionism was already explored in the study of Zikopoulou et al. (2021), which showed promising results.

Conclusion

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Keeping the limitations of this research in mind, based on the results presented in this research, it can be said that students that have high Academic Stress do have a higher chance of reporting symptoms of burnout. Next to this, also the Discrepancy aspect of perfectionism is a good predictor of students suffering from symptoms of burnout. However, neither of the three aspects of perfectionism influences the relationship between Academic Stress and symptoms of burnout. But, the Discrepancy aspect of perfectionism, which indicates maladaptive perfectionism does have a positive relationship with burnout. To overcome the limitations of the impact of COVID-19 and the high level of females in this study, future research could consider including COVID-19 to account for this impact and try to also have more males participating in the study. To end, students in this sample do report elevated stress levels, which is related to the reported levels of symptoms of burnout. Maladaptive perfectionism does not influence the relationship between Academic Stress and Burnout, but it is related to elevated levels of Burnout.

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Appendix A

Purpose and Procedure

The purpose of this study is to gain further information about the academic stress levels that university students experience, the potential influence of these stress levels on burnout symptoms experienced by students, and related factors. It is important to research these factors as university students have been shown to experience stress which influences their academic performance and well-being.

If you choose to participate in this study, you will be asked to fill out questions with regard to these variables.

Risk, anonymity & confidentiality

We believe there are no major risks associated with this research study beyond the chance that some items may feel uncomfortable to think about or lead you to recall upsetting situations.

We are minimising the risk of a data breach by anonymising all of your information and storing it in a secure way. Your answers in this study will be treated confidentially; they will not be shared with other parties than the researchers and their supervisor.

Contact

If you have any questions or concerns, you can contact the following people:

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Participant rights & consent

Your participation in this study is entirely voluntary. You are free to decline to participate, omit any question, or you can withdraw from the study at any time without the need to give a reason.

Clicking “I agree and consent to participate in this study” indicates that:

- you have been informed about the nature and method of this research in a manner that is clear to you,
- you have read this page thoroughly,
- you voluntarily agree to participate in this study
- you are 18 years of age or older

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Appendix B

General demographic questions

Firstly, we would like to gather some demographical data from you. Please answer the following questions.

How old are you?

How would you describe yourself?

- Male
- Female
- Non-Binary / third gender
- Prefer to self-describe

- Prefer not to say

What is your Nationality

- Dutch
- German
- Others (please indicate)

In which phase of your study are you right now?

- Bachelor year 1
- Bachelor year 2
- Bachelor year 3
- Master year 1
- Master year 2
- Other:

Which study are you doing?

In what year did you start your study?

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At which university do you study?

Student life challenges scale

The following statements refer to challenges that you might encounter in your academic life. Please read the statements and indicate to what extent you agree with them.

	Totally disagree	Somewhat disagree	Somewhat agree	Totally agree
I feel that my teachers treat me with respect.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The teachers often fail to clarify the aims of the activities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The study stimulates my personal development.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
As a student you are often expected to participate in situations where your role and function is unclear.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am able to influence the studies or curriculum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is too much focus on passive learning of facts and too little on active seeking of knowledge and time for reflection.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that the training is preparing me well for my future profession.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am worried that I will not acquire all the knowledge needed for my future profession.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The long hours and responsibilities of my future career worry me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The insight I have had into my future profession has made me worried about the stressful workload.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Studying has created a climate of anonymity and isolation among the students.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The professional role presented in our course conflicts with my moral viewpoint.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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I think things should be put away in their place	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have high expectations for myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I rarely live up to my high standards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like to always be organized and disciplined	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Doing my best never seems to be enough.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I set very high standards for myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am never satisfied with my accomplishments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I expect the best from myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often worry about not measuring up to my own expectations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My performance rarely measures up to my standards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am not satisfied even when I know I have done my best.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I try to do my best at everything I do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am seldom able to meet my own high standards of performance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am hardly ever satisfied with my performance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I hardly ever feel that what I've done is good enough.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a strong need to strive for excellence.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often feel disappointment after completing a task because I know I could have done better.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Ending question

Q10

Were the questions clear and understandable for you?

Yes

No

Appendix C

You just participated in a research study focussing on the influence of stress on university students. The aim of this study is to investigate both the potential relationship between the amount of stress experienced and the amount of burnout symptoms experienced by university students as well as factors influencing this relationship. The study is important as it allows for increased knowledge with regard to providing help to university students and people affected by stress. If reporting and thinking about these variables led to negative emotions, you can refer to the following resources to calm down or reach out for emotional support:

Calming Breathing Exercise

<https://www.thetrevorproject.org/breathing-exercise/>

For further guidance for dealing with stress, students studying at the University of Twente can go to:

-<https://www.utwente.nl/en/ces/sacc/well-being/>

-<https://canvas.utwente.nl/enroll/K9PNAR>

General support for Mental Health

If reporting about these variables caused strong psychological consequences, such as panic, distress, or strong anxiety, we recommend reaching out to your General Practitioner (Huisarts) to arrange adequate, professional support for your mental health.

Information regarding the research study

If you're interested in finding out more about this study or have any comments, you can contact the researcher(s) here:

Perfectionism as Moderator in Academic Stress and Burnout

First Supervisor: Erik Taal (e.taal@utwente.nl)

Second Supervisor: Luisa Reiter (l.c.reiter@utwente.nl)

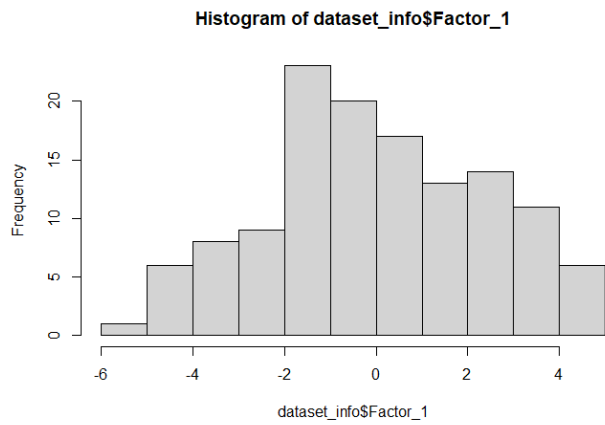
Alexa Schulze (a.schulze@student.utwente.nl)

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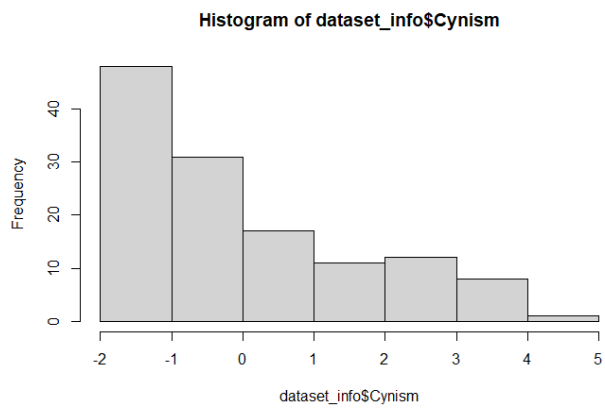
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Appendix D**Figure 2***Histogram of Academic Stress variable*

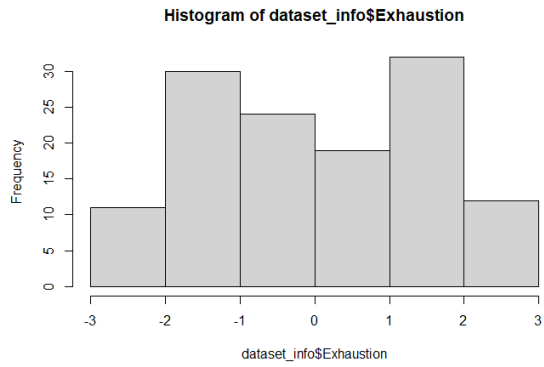
$n=128$, $mean=3.869048e-06$, $sd=2.43$, $skewness=0.02$, $kurtosis=2.32$

Figure 3*Histogram of Cynicism variable*

$n=128$, $mean= -.01$, $sd= 1.65$, $skewness=0.98$, $kurtosis=2.78$

Figure 4*Histogram of Exhaustion variable*

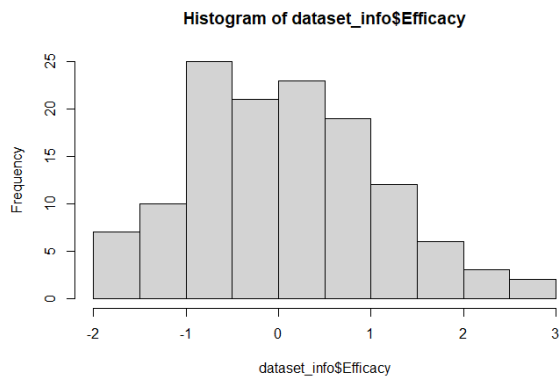
Perfectionism as Moderator in Academic Stress and Burnout



$n=128$, $mean= -5e-07$, $sd= 1.52$, $skewness=0.05$, $kurtosis=1.94$

Figure 5

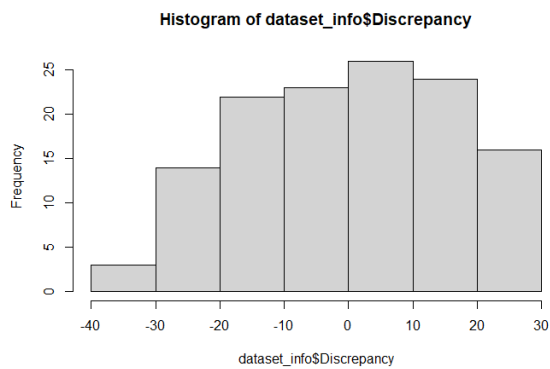
Histogram of Efficacy variable



$n=128$, $mean= -2.5e-07$, $sd= 1.03$, $skewness=0.30$, $kurtosis=2.75$

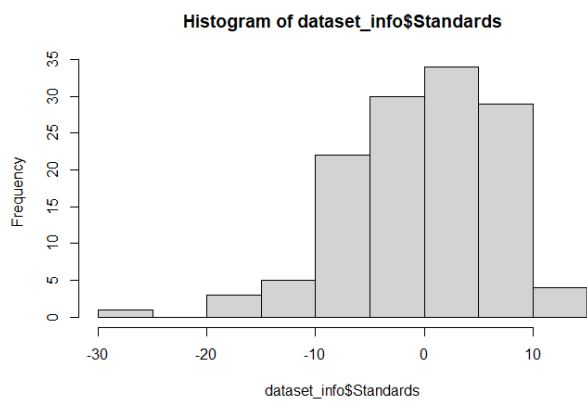
Figure 6

Histogram of Discrepancy variable

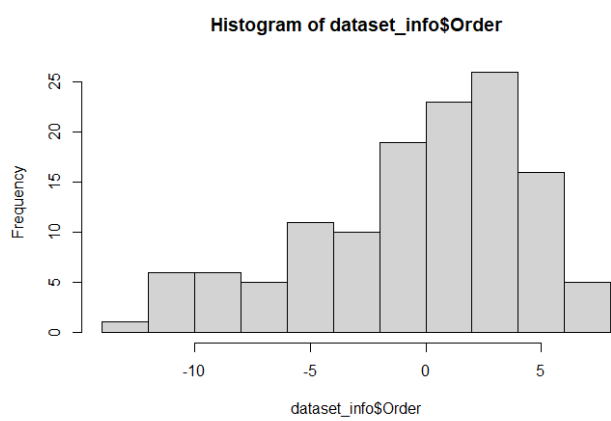


$n=128$, $mean= 2.5e-06$, $sd= 16.39$, $skewness=-.15$, $kurtosis=2.10$

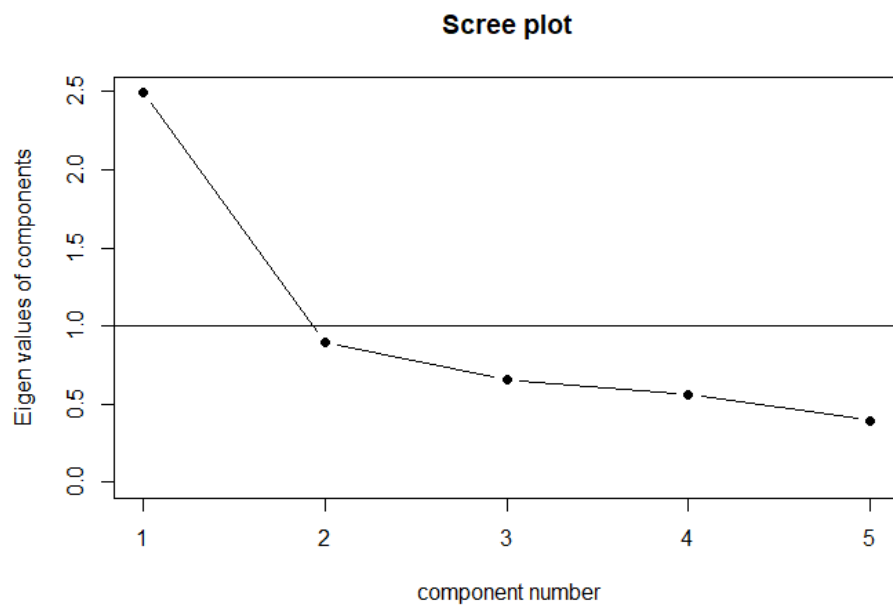
Perfectionism as Moderator in Academic Stress and Burnout

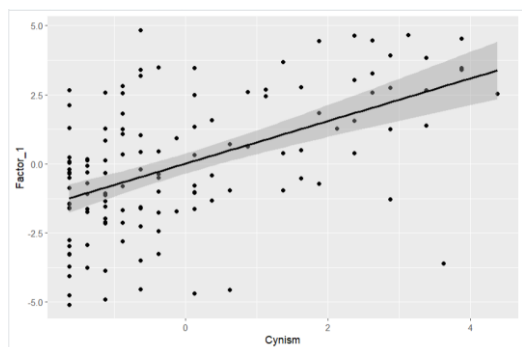
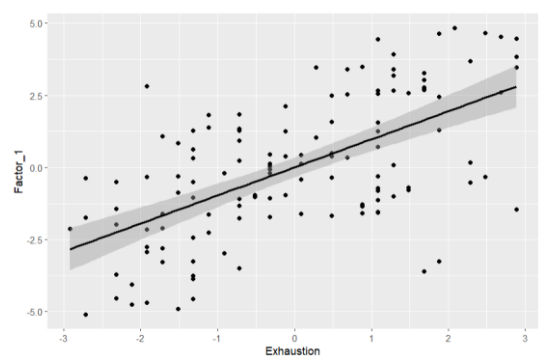
Figure 7*Histogram of Standards variable*

$n=128$, $mean= 2.5e-06$, $sd= 7.01$, $skewness=-0.70$, $kurtosis=3.66$

Figure 8*Histogram of Order variable*

$n=128$, $mean= -2.5e-06$, $sd= 4.77$, $skewness=-0.70$, $kurtosis=2.80$

Appendix E**Figure 9***Information Factor Analysis**KMO: 0.75, $p < 0.001$ on cortest bartlett test*

Appendix F**Figure 10***Regression plot Academic Stress and Cynicism***Figure 11***Regression plot Academic Stress and Exhaustion***Figure 12***Regression plot Academic Stress and Efficacy*