

The association between stress and academic performance

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I would like to thank my parents, without the endless love you've given me thorough my entire life, I am sure I wouldn't be here. Thank you for supporting me.

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Abstract

Aims: This study sought to investigate the complex relationship between stress and academic performance. **Method:** A questionnaire was administered to 69 participants. It included basic demographic questions and three scales. The Perceived Stress Scale (PSS-10), the Perceived Academic Performance Scale (PAPS) and the General Self-Efficacy Scale (GSE). **Results:** An initial Pearson correlation analysis found a significant moderate negative between perceived stress and perceived academic performance ($r = -.344$, $p = .004$), however a multiple regression analysis that controlled for other variables did not find that perceived stress could significantly predict perceived academic performance ($\beta = -.103$, $p = .522$). Rather, general self-efficacy was the only variable able to significantly predict perceived academic performance ($\beta = .445$, $p = .003$). This model explained 24.3% of variance in academic performance. **Conclusion:** Findings suggest that stress does not have a direct effect on academic performance when controlling for self-efficacy. This could mean that psychological interventions within a higher education context could be more effective at increasing academic performance by focusing on improving students' self-efficacy rather than reducing stress. Though a combined approach is recommended. However, further research is necessary.

Table of contents

Introduction.....	9
Methodology.....	16
Results.....	23
Discussion.....	26
References.....	34
Appendices.....	41

Introduction

Stress is a thoroughly researched phenomenon that has considerable impact on daily life with many different models being developed in an attempt to explain and study it. Cohen shifted the focus from the external stressors (stressors being an object that causes stress) towards how individuals interpret each stressor in their own subjective way and their own responses (means to cope). Meaning that this model prioritises each individual's subjective evaluations of stressful events rather than relying on what the stressors are (Cohen & Wills, 1985; Harris et al., 2023). Cohen's model suggests that there are three different groups of stressors: unpredictability, uncontrollability and overload. In simpler terms, how often an individual faces unexpected challenges, feel limited control over outcome and experience being overwhelmed by demands (Harris et al., 2023).

Well known consequences of prolonged exposure to stress are depression, anxiety, cognitive impairment and cardiovascular diseases. Although stress is a multidimensional phenomenon, most of research has focused on improving academic understanding of its impact on the immune and cardiovascular systems, behaviour and psychological health (Ghasemi et al., 2024). Stress itself and the ability to cope with each stressor is known as perceived stress (Feng et al., 2023). This model also suggests that social support is an important mitigating factor against stress. However, this is only true when the individual himself perceives the social support as adequate. Thus reinforcing the importance of each individual's subjective perception (Cohen & Wills, 1985)

To synthesise, Cohen's theoretical framework suggests that stress is caused by a cognitive process in which individual perception is crucial for the understanding of stress itself. Environmental demands are filtered through an individual's cognition. The individual's cognition will evaluate the challenge/hassle and the adequacy of our coping mechanisms.

Stress also significantly impacts overall performance. Although initially proposed as a simple linear relationship, research has developed sophisticated models that recognise the complex, context dependent interactions between stress and performance. According to the Yerkes-Dodson law, stress has an inversed U-shaped impact on performance. Meaning that an absence of stress leads to underperformance, moderate amounts to best performance and excessive stress also leads to underperformance. This is due to the fact that acute stress initially activates the sympathetic nervous system, thus enhancing concentration and overall performance in the short term. Long term exposure to stress will impair cognitive function, memory consolidation and decision-making process. Leading to increased error rates, longer task completion times and diminished precision in skill execution. However, stress effects on performance are not uniform, with technical skills showing particular vulnerability to stress-induced events, while some aspects of performance may show initial improvement under moderate stress, performance consistently drops after stress reaches a certain threshold (Tam et al., 2024; Lupien et al., 2024). High levels of stress also affect performance through motivational and emotional pathways. Excessive stress hampers intrinsic motivation by making tasks feel more burdensome and less enjoyable, even when they would otherwise be easy and enjoyable to the individual. Negative emotions developed by stress such as anxiety and frustration can further chip away the cognitive resources that would otherwise be available for the task, thus creating a negative feedback loop that maintain and reinforce stress responses (Marques-pinto et al., 2025; Pérez-Jorge et al.,2025).

Note that most stress performance related research has focused on better understanding how work-related performance is impacted. Perhaps unsurprisingly, results have also shown that higher levels of stress are associated with worse performance (Madhavi & Rao, 2024).

The effects of stress on academic performance, on the other hand, is a much less explored topic. The academic environment presents unique stressors which in turn leads to less known stress-performance relationships. Academic stress is significantly different from most general life stress as it occurs in a context of which performance is being constantly evaluated in an explicit manner. Some of the main stressors identified are homework overload, assessment pressure and difficulty conciliating academic and personal life, sustaining the suggestion that academic stress has different characteristics from general life stress. Research suggests that a student's ability to manage stress determines their academic performance. Essentially, those who manage their stress better will perform better than those who do not. Which could be explained by exploring how excessive stress affects cognition in an academic context. Cognitively, students worry about their performance, they ruminate about potential failure, which can create self-perpetuating cycles where worry about performance interferes with the cognitive resources needed for effective studying and task completion, leading to an actual decrease in performance that will confirm students' fears and increase future stress. Behaviour manifestations include procrastination, avoidance of academic tasks and disruption of study habits that directly impact academic performance. (Akanpaadgi et al., 2023; Pérez-Jorge et al., 2025). Research indicates that stressful experiences have a cascading that compounds over time which deteriorates performance over time. Suggesting that students who experience high levels of stress in early phases of their academic career may develop negative views of their own academic lives that persist even when objective circumstances improve (Liu et al., 2024).

The understanding of academic stress, its causes and effects is a relevant topic as it not only impacts performance itself but also influences academic engagement and dropout risk (Nazari et al., 2025). However, when examining academic stress and its effects and risks,

is important to consider that stress is a very complex and multilayered phenomenon of which there are many factors that influence it.

One of the most important factors that determines how well an individual can manage stress is self-efficacy. Self-efficacy is a concept proposed by Bandura and it was part of his social cognitive theory. Self-efficacy refers to an individual's belief that they are capable of taking certain actions and that by taking those same actions, they will achieve the outcome they desire. In simpler terms, if one believes they can successfully conclude a task, that same task becomes less stressful. Self-efficacy is a strong countermeasure to perceived stress and the lack of self-efficacy is a significant predictor of suboptimal academic performance. In the context of academia, academic self-efficacy can be defined as the student's belief in their capacity to organise and execute actions required for achieving the academic performance (Liu et al., 2024; Madson et al., 2022).

Academic performance itself can be defined as the extent to which a student manages to succeed his short and long-term educational goals. Academic performance is measured by exams and continuous assessments. Higher academic performance is associated with higher income, better employment benefits and more professional development opportunities. It is also associated with higher quality of life, lower rates of depression, lower levels of alcoholism and drug use (Al-Tameemi et al., 2023). However, much like objective stress is different from perceived stress, objective academic performance (measured by grades) does not always equate perceived academic performance. And much like early stress research, most of academic stress research focuses on objective, rather than perceived performance. Perceived academic performance, refers to the student's evaluation of his own academic success. It encompasses how each student evaluates their learning progress, skill development and overall competence (Cruz et al., 2023; Harris et al., 2023).

Other important variables that can influence perceived stress and academic performance are gender, age and average study hours per week. Gender is a variable that has been extensively researched within the context of stress. In the academic environment, females tend to score slightly higher in the perceived stress scale when compared to males and males tend to have slightly higher self-efficacy, however, there does not seem to be any significant difference between genders when evaluating perceived academic performance or when considering objective grades. However, results may vary based on what specific academic area is being studied. (Graves et al., 2021; Huang, 2013).

Research has shown that much like the previously discussed factors, age has a complex association with stress and performance. Sheard (2009) suggested that older students often possess more life experience and therefore tend to have better coping strategies, which may lead to a different result when investigating perceived stress and academic performance when compared to younger students. At the same time, older students might have unique stressors such as adapting to technology and concerns about cognitive changes that come with aging. Therefore, the extent to which one can cope with academic stress and its effects on performance can be impacted by one's age.

The amount studied (weekly study hours average) may also represent an important control variable. Though at immediate face value one might expect that those who study more will have better grades therefore better perceived academic performance, therefore better self-efficacy, it is much more complex than that. Recent research has suggested that while total study time is an important factor when predicting academic performance, the quality and effectiveness are just as crucial. Interestingly enough, much like the effect of stress on performance, the amount studied seems to also have a diminishing returns type of association after a certain threshold has been achieved. Meaning that increasing the amount

of hours studied will increase academic performance up to a point, then if increased further, the performance will diminish (Rowell & Frey, 2021; Zubair et al., 2024).

The relationship between study hours and stress itself is also complex. There is longitudinal evidence that longer time spent studying at home could result in a higher accumulation of stressors, which naturally increases perceived stress levels. Which in turn affected performance related measures (Teuber et al., 2024).

The inclusion of self-efficacy, gender, age and weekly study hours as control variables is crucial, as research has shown that they not only influence both perceived stress and academic performance, but also one another. For example, Huang (2013) found that gender differences in academic self-efficacy can be moderated by age, finding that the largest gender effect sizes in self-efficacy occurred for participants aged 23. Similarly, the association between study hours and performance may be moderated by self-efficacy, with students with higher self-efficacy being more likely to use their study hours more effectively and therefore they may be less stressed.

The current study

Most existing research has focused specifically focused on investigating the relationship between stress and objective academic performance or between objective stressors and subjective stress responses, but there is little to no research on perceived stress and perceived academic performance. This gap is particularly important as perceived academic performance may be more proximally related to students' true overall impressions of their own academic life. This study proposes to study address this gap by directly investigating the association between perceived stress and perceived academic performance. Controlling for variables such as self-efficacy and demographics such as age and sex.

This study seeks to improve scientific understanding of how students' subjective experiences relate to their own evaluations of academic performance, potentially providing

insight for targeting interventions that will improve academic performance, stress management and potentially preventing dropouts. Thus also allowing for the further development of policies that will more effectively support students' wellbeing.

The focus on perceived rather than objective measures acknowledges the importance of the subjective perceived stress experiences in accordance with Cohen's theoretical framework while also addressing the practical importance of students' self-perception in academic context.

Research question: what is the association between perceived stress and perceived academic performance?

Hypothesis: There will be an association between perceived stress and perceived academic performance.

Methodology

Participants

The research sample within this study consisted of 69 participants. Tabachnick and Fidell's (2013) formula was used to calculate sample size for multiple regression analysis of which recommends a sample of at least 90 participants for the current study design as it contains five predictor variables (perceived stress, self-efficacy, age, sex and study hours). This limitation is acknowledged and will be further discussed in the discussion section. The participants were recruited through a non-probability convenience sampling through the use of messaging apps such as whatsapp and discord. They were all engaged in higher education.

The gender distribution was 53 (76.8%) women, 13 men (18.8%) and 1 participant preferred to not disclose (1.4%). Participants' age ranged from 19 to 61 years ($M=35.17$, $SD=12.66$).

Participants were required to provide informed consent before starting the questionnaire. Besides the above-mentioned demographics, they were also asked how many hours they spend studying per week on average. Collected data was anonymous and participants were allowed to retract data at any point before submitting it. In line with ethical guidelines, participants were required to be at least 18 years of age to participate.

Materials

The study questionnaire used demographic questions such as sex and age followed by a question regarding how many hours they study on average. Then participants were presented with the General Self-Efficacy scale (GSE), followed by the Perceived Stress Scale (PSS-10) and finally the Perceived Academic Performance Scale. This study utilised google forms to collect all data.

Perceived Stress Scale (PSS-10)

The PSS-10 is a 10-item questionnaire designed to measure the degree as such one's life is appraised as stressful. The PSS-10 is a widely utilised and validated scale and its Cronbach's alpha coefficients typically exceed .70. It has strong correlations with other measures of psychological distress (Lee, 2012).

It is a Likert scale with 5 ratings that indicate frequency of those events in the past month. 0 is never, 1 is almost never, 2 is sometimes, 3 is fairly often and 4 is very often. Items 4, 5, 7, 8 are reverse scored. Scores range from 0-40 with higher scores indicating greater perceived stress. They aim to measure how often situations in one's life are perceived as stressful, unpredictable, uncontrollable and overloading. It contains both positively and negatively worded items to reduce response bias with items 4, 5, 7 and 8 being reversed scored (Cohen et al, 1988).

1- In the past month, how often have you been upset because of something that happened unexpectedly?

2- In the last month, how often have you felt that you were unable to control important things in your life?

3- In the last month, how often have you felt nervous and stressed?

4- In the last month, how often have you felt confident in your ability to handle your personal problems?

5- In the last month, how often have you felt that things were going your way?

6- In the last month, how often have you felt that you could not cope with all the things that you had to do?

7- In the last month, how often have you been able to control irritations in your life?

8- In the last month, how often have you felt you were on top of things?

9- In the last month, how often have you been angered because of things that were outside of your control?

10- In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

Perceived Academic Performance Scale (PAPS)

The Perceived Academic Performance Scale was utilised to assess participants' subjective evaluations of their own performance. It seeks to evaluate a student's perception of how well they are meeting academic expectations and learning requirements. This scale was used instead of objective performance indicators such as grades due to perceived performance being potentially a better predictor of psychological well-being and motivation than objective measures and it accounts for differences in programmes and institutions.

Research has demonstrated that the PAPS has good reliability with a Cronbach's alpha coefficient typically exceeding .80 (Verner-Filion & Vallerand, 2016).

The Perceived Academic Performance Scale is a 5-item questionnaire that uses a 7-point scale. Ranging from 1- Do not agree at all to 7- very strongly agree. A higher score is associated with higher perceived academic performance. The score is calculated as the mean of all five items.

1- I meet the official performance requirements expected of a student.

2- I adequately complete assigned duties

3- I fulfil responsibilities specified (e.g., study, homework, readings, papers) in the course outline.

4- I perform tasks that are expected of me

5- My performance is beyond demands

General Self-Efficacy Scale (GSE)

The General Self-Efficacy Scale (Schwarzer & Jerusalem, 1995) was included as a control variable. It assesses individuals' beliefs in their capacity of handling challenges.

Previous research has identified self-efficacy as an important factor when predicting perceived stress and perceived academic performance, making it an important control variable (Liu et al., 2024). Total scores are calculated as the mean of all items, with higher scores indicating greater self-efficacy beliefs. The GSE has demonstrated consistent reliability across cultural contexts with a Cronbach's alpha of high .80s (Schwarzer & Jerusalem, 1995).

The GSE is a 10-item questionnaire that aims to measure an individual's self-efficacy. It's a 4-point scale that ranges from 1- Not true at all to 4- Exactly true. A higher score indicates higher self-efficacy.

1- I can always manage to solve difficult problems if I try hard enough.

2- If someone opposes me, I can find the means and ways to get what I want.

3- It is easy for me to stick to my aims and accomplish my goals.

4- I am confident that I could deal efficiently with unexpected events.

5- Thanks to my resourcefulness, I know how to handle unforeseen situations.

6- I can solve most problems if I invest the necessary effort.

7- I can remain calm when facing difficulties because I can rely on my coping abilities.

8- When I am confronted with a problem, I can usually find several solutions.

9- If I am in trouble, I can usually think of a solution.

10- I can usually handle whatever comes my way.

Design and analysis

This study used a quantitative, cross-sectional research designed to investigate the association between perceived stress and perceived academic performance in students. Additionally, control variables included: general self-efficacy, age, gender and weekly hours of study.

Procedure

Data collection was conducted entirely online through the use of a Google Forms questionnaire, ensuring anonymity. It was expected that it would take on average 10 minutes for a participant to go through the questionnaire. This questionnaire was sent to multiple potential participants who are engaged in a higher education programme, and it was posted in students' class online groups on whatsapp and discord, with some participants sharing it to their fellow acquaintances creating a snowball effect.

Those who chose to partake in the study would first be presented with the information sheet. The information sheet detailed the purpose of the study, the origin of the study (the author and his institution), risks, rights of the participants and were informed the sort of

questions they would be asked. They were informed on the estimated length, and the participants were explicitly informed that their participation was entirely voluntary and that they could withdraw at any moment before submitting data, but not after as all data collected was fully anonymous. The participants also were given the author of this study's e-mail and his supervisor's e-mail as well in case they had any question regarding the study or their participation.

Following the information sheet, participants were presented with the consent sheet of which required the participant's active agreement to proceed. In the consent sheet, participants were reminded that they could withdraw at any point by closing the browser they were using to fill the questionnaire until they submitted the data. After which it would be impossible to retroactively remove it. They also confirmed they have read and understood the information sheet, that they were above the age of 18, understood the data storage and usage procedure and that they had all their questions answered.

If they provided consent, the participants would then be taken into the questionnaire itself, which is divided into 4 parts. The first part presented demographic questions such as sex and age, but also the time they spent on average studying each week. Followed by the General Self-Efficacy scale then the Perceived Stress Scale-10 and finally the Perceived Academic Performance Scale. Each scale had a short explanation of how the scale itself worked and what it aimed to measure.

After finishing the questionnaire, participants were presented with a debriefing sheet where they would be thanked for their participation, reminded that they could still withdraw from the study if they wished to, but once they submitted, they would not be able to and in case they suffered any distress, they could contact one of the helplines displayed on the sheet.

They were also reminded what was the nature of the study, what would happen with their data and that it would be stored according to NCI policy. And that if they had further questions, they could contact the author or his supervisor through e-mail.

Results

The total sample of this study initially consisted of 69 participants. Of which 18.8% were men ($n = 13$), 76.8% were women ($n = 53$) and 4.3% preferred to not disclose ($n = 3$).

Descriptive statistics

Means (M) and standard deviations (SD) for the continuous variables are provided in table 2. Participants had a mean age of 35.5 years ($SD = 12.49$), ranging from 19 to 61. Participants reported studying between 1 and 40 hours per week with a mean of 12.1 ($SD=7.93$).

Continuous variables included perceived stress, perceived academic performance, general self-efficacy, age and weekly study hours. Mean, standard deviation, minimum and maximum scores (range) are displayed on table 1 below.

Table 1

Descriptive statistics for continuous variables

Variable	M	SD	Range
Perceived Stress (PSS)	29.6	7.62	14-44
Perceived Academic Performance (PAPS)	27.1	5.87	10-35
Self-Efficacy (GSE)	29.4	6.26	19-40
Age	35.2	12.66	19-61
Weekly study hours	12.1	7.93	1-40

Inferential statistics

Preliminary analyses were performed to ensure no violation of normality. Tests for normality revealed that perceived stress scores were normally distributed (Shapiro-Wilk $W=.973$, $p=1.55$) however, perceived academic performance scores were non-normally distributed (Shapiro-Wilk $W=.913$, $p = <.001$). Visual inspection of the histogram and Q-Q plot (which can be found at appendix X and XI) suggested mild negative skewness without severe outliers. Which is why, despite violation, Pearson correlation coefficient was still computed as this test is still robust to mild violations of normality with samples this size and the skewness (-1.08) still falls within acceptable limits for analysis.

A Pearson correlation coefficient was computed to assess the relationship between perceived stress and perceived academic performance. There was a significant, moderate, negative correlation between the two variables ($r = -.344$, $n = 68$, $p = .004$). This indicates that the two variables share approximately 12% of variance in common. Results indicate that higher levels of perceived stress are associated with lower levels of perceived academic performance.

Table 2

Table for Pearson's correlation between perceived stress and perceived academic performance

Variable	1.	2.
1. Perceived Stress (PSS)	-	-.344
2. Perceived Academic Performance (PAPS)	-.344	-

A standard multiple regression analysis was performed to determine how well perceived academic performance levels could be explained by the predictor variables which include perceived stress, general self-efficacy, age, sex and weekly study hours. Due to

missing data in the weekly study hours variable, the analysis was conducted with 53 participants who had the full data available.

The results show that the model explained 24.3% of variance in perceived academic performance ($F(5,47) = 3.012, p = .019$). Of the five predictor variables, general self-efficacy was the only variable to predict perceived academic performance to a statistically significant level ($\beta = .445, p = .003$). Perceived stress did not significantly predict perceived academic performance when controlling for other variables ($\beta = -.103, p = .522$). Therefore, the null hypothesis was accepted, as there was no significant association between perceived stress and perceived academic performance.

Table 3

Table for standard multiple regression model predicting perceived academic performance total score

Variable	R ²	B	SE	β	<i>t</i>	<i>p</i>
Model	.243					.019
(Constant)		11.49	10.59		1.08	.283
Perceived Stress		-.086	.133	-.103	-.645	.522
Self-Efficacy		.578	.187	.445	3.09	.003
Gender		.773	1.868	.054	.414	.681
Age		-.041	.072	-.080	-.564	.575
Weekly Study Hours		.046	.106	.056	.433	.667

Discussion

The current study aimed to investigate the association between perceived stress and perceived academic performance among higher education students. This was done while controlling for self-efficacy, age, gender and weekly hours of study. The findings might provide insights into the complex relationship between stress and academic performance in higher education context.

The hypothesis that there would be an association between perceived stress and perceived academic performance was rejected by the multiple regression analysis. While an initial bivariate analysis found a moderate negative correlation between perceived stress and perceived academic performance ($r = -.344$, $p = .004$), it became non-significant when controlling for other variables in the regression model ($\beta = -.103$, $p = .522$). Therefore, the null hypothesis was accepted, indicating that perceived stress does not significantly predict perceived academic performance when control variables are included.

This suggests that the initial bivariate analysis was affected by other variables. The multiple regression analysis revealed that general self-efficacy was the strongest predictor of perceived academic performance ($\beta = .445$, $p = .003$), which explains a significant variation in perceived academic performance. Which suggests that a student's belief in their own capacity to perform well academically and to deal with challenges may be more important when predicting perceived academic performance than their perceived stress.

The results are partially consistent with previous research. Cohen et al. (2016) suggested that the relationship between stress and performance is not always straightforward and can be influenced by various factors. Lupien et al. (2024) suggested that stress-performance relationship follows an inverted U-shaped curve, where moderate levels enhance performance while low and high levels are detrimental. This current study supports this

concept of complexity, as the direct association between perceived stress and perceived academic performance was not maintained when controlling for other variables.

The significant role of self-efficacy in predicting perceived academic performance aligns with Bandura's Social Cognitive Theory (Bandura, 1997). Recent research has indicated that self-efficacy can act as a protective factor against the negative effects of stress on academic performance. In another words, students with higher self-efficacy were better at coping with stress and therefore maintained higher performance levels. This current study supports this protective role, as self-efficacy was the strongest predictor of perceived academic performance (Nazari et al., 2025; Liu et al., 2024). This is consistent with Pérez-Jorge et al. (2025) who suggested that self-efficacy had an important moderator effect on the relationship between stress and objective (as opposed to perceived) academic performance. Other than having a protective role, according to Bandura, self-efficacy beliefs will also affect behaviour and cognition in such a way that will influence how likely they are to engage in effective studying and seek help when needed. Which in turn will lead to better academic performance which itself increases the quality of one's self-efficacy and thus the positive feedback loop continues. This study suggests that this is a more important predictor of academic performance than stress.

The control variables of age, gender and weekly study hours did not significantly predict perceived academic performance in this study. Which suggests that demographic and behavioural factors may be less important than psychological factors in determining how students perceive their academic performance. However, this non-significance also warrants discussion.

As mentioned in the introduction, some studies have found statistically significant differences in perceived academic stress and performance across gender in higher education. Which is a diverging result compared to the present study. This study suggests that such

differences can be less significant if self-efficacy is included in the model. In another words, this aligns with research that suggests that differences in cognitive-motivational factors are more important than demographic factors in predicting perceived stress and perceived academic performance. However, it is important to note that this study had a limited sample, and that women (76.8%) were overrepresented, which can lead to inaccurate conclusions.

The non-significant effect of average hours of study per week should also be discussed. This result might imply that quality of time spent studying is a more impactful factor compared to time spent studying itself. The quality of study itself might also highlight the importance of self-efficacy in academia, as previously mentioned in this section.

Implications

This study provides several implications. From a theoretical perspective, the results support the relevance of Social Cognitive theory in academic performance research and the role of self-efficacy in it (Bandura, 1997; Pajares, 1996).

However, the implications go beyond validating previously established theory. This study suggests that self-efficacy has primacy over environmental stressors when discussing performance within academic contexts which supports that interventions based on academic performance should focus on enhancing students' self-efficacy rather than stress reduction. This is consistent with recommendations by Schunk and Pajares (2002) and Zimmerman (2000). This could be done by higher education institutions that could include skills training, mastery experiences and vicarious learning opportunities to help students build confidence in their own abilities (Bandura, 1997; Usher & Pajares, 2008). The effectiveness of such interventions has already been previously demonstrated by Margolis and McCabe (2006) in which such interventions have improved self-efficacy and academic performance.

It is important to note that stress management programmes are still important for students' well-being. It is merely being recommended to include both types of interventions

as they seem to be more effective as they address different angles of stress and performance (Regehr et al., 2013; Stallman, 2010). Still on the topic of institutions' academic support, counselling and support services could consider incorporating self-efficacy assessments into their interventions for students experiencing academic difficulties, as suggested by Zajacova et al., (2005). Increased support for self-efficacy could have significant impacts on academic performance (Kitsantas et al., 2009).

Finally, the findings suggest that higher education institutions' policies should be evaluated for their impact on the students' self-efficacy. This means that assessments practises should prioritise providing learning and improvement rather than ranking and comparisons.

Strengths and Limitations

The inclusion of multiple control variables (self-efficacy, age, sex, study hours) allowed for a more comprehensive examination of factors influencing perceived academic performance. Alongside with the use of established validated measures (PSS-10, GSE, PAPS) ensured reliable assessments of the intended measures. The use of said measures also facilitated the comparison with previous research that has utilised the same measures.

The diverse sample included students from undergraduate, master's and doctorate programmes, which increased the scope of findings across different levels of education. This is particularly relevant as much of previous research in this area has focused on the undergraduate population. The inclusion of students from a wide age range (19-61 years) may also provide an insight into the relationship between stress and perceived performance across different life stages. This is quite timely as the participation of older students into higher education has been increasing in the past years.

This study also contributed to the expansion of the understanding of perceived academic performance within the higher education context, as this is an important, but under

investigated aspect of academic experience. For context, most of perceived academic performance research has been concluded within a secondary education environment. The perceived academic stress has a strength when compared to objective measures as it directly affects their motivation, satisfaction and well-being.

However, many limitations must be acknowledged. Firstly, the sample size for the multiple regression analysis was 53, which is below the 90 recommended by Tabachnick and Fidell's (2013) guidelines for the number of predictor variables. Although the initial sample consisted of 69, listwise exclusion was implemented for all missing data which narrowed down the number of participants significantly. A lower number of data than recommended can impact the statistical power of the results, thus increasing the likelihood of type 1 and type 2 errors. The use of listwise exclusion was conservative, however the excluded participants' data could have significantly differed from the ones who had full data. Therefore, all findings should be taken with caution. Another important consequence of the smaller sample is that although stronger associations such as the self-efficacy's would probably be repeated in a larger sample, weaker and non-significant variables could have become stronger and potentially significant in larger samples.

Secondly, the study relied on self-report measures, which has been well known in academia to be prone to response biases. Participants might have provided responses that they believe are socially acceptable rather than accurate responses. Which is even more likely to happen due to the implementation of perceived scales rather than more objective ones, which may limit the generality of findings (Kuncel et al., 2005; Credé & Phillips, 2011). This is particularly true in academia, where students might feel impelled to sub report stress due to their beliefs that they must be competent. Also, as students, they might be more familiar with the challenges of conducting research, therefore compassion might compel them to report differently in an attempt to be helpful.

Thirdly, the study was conducted with convenience sampling, which may limit the representativeness of the findings. The sample was overwhelmingly female (76.8%) which may affect how much the findings can be applied to the male population. Although the wide age range is a strength, it can also be a limitation as the different age groups were not investigated in detail, meaning there could be a statistically significant finding for an age group but not another one.

Fourthly, data collection occurred in July, which coincides with the summer break for most higher education institutions. This timing might have influenced students' perception of stress level and academic performance, as students typically experience lower levels of stress during non-academic period (Robotham & Julian, 2006; Stallman, 2010). Academic stress fluctuates thorough the year, usually peaking during examination periods and lowering during breaks (Misra & McKean, 2000). This means that results on perceived stress might have been lower than if data were collected in different periods. Timing in academic data collection can be a very important factor (Abouserie, 1994; Dusselier et al., 2005).

Fifthly, the study did not collect data on the students' present year. Research has consistently shown that perceived stress in students fluctuates over the year. First year students might be more stressed due to the adjustment challenges of being in a new environment with new demands. Final year students might be more stressed due to the looming graduation requirements and future career prospects (Krumrei-Mancuso et al., 2013; Bewick et al., 2010). Parallel to that, the course the participants are enrolled in, might also influence results.

Future direction

Future research could address some of the limitations by collecting data from a larger sample. A longitudinal design might be appropriate, as stress fluctuates over time and so does

performance. Perhaps a study that covers a whole academic year, or perhaps a during each student's entire academic programme.

Objective academic measures should also be considered by future research. Both perceived and objective academic performance measures have different advantages, therefore a future study could either solely implement objective measures or both.

Research investigating the effectiveness of self-efficacy enhancement interventions in higher education settings could also be valuable. Previous intervention has been attempted in the past, however, in a middle education setting rather than higher education (Margolis & McCabe, 2006; Usher & Pajares, 2008).

Conclusion

To conclude, this study has found that perceived stress could not significantly predict perceived academic performance when controlling for variables such as gender, age, average weekly study hours, and, most importantly, self-efficacy. Therefore, the null hypothesis was accepted.

For higher education institutions, these findings emphasise the importance of developing programmes and support services that aim to improve students' self-efficacy rather than emphasising stress reduction on its own as a mean to improve academic performance, which would include staff training and curriculum integration. This also provides a shift in how students are seen. Rather than viewing struggling students as people who are lacking something or as someone who has something wrong with them and therefore they have a problem to be solved, they would be seen as people who have their own strengths of which if strengthened further, would lead to higher self-efficacy and thus improved performance.

Future research should continue to investigate the association between perceived stress and academic performance through a longitudinal design and a larger sample. A future

study should also consider variables such as which year a student is and objective academic performance alongside perceived. Another study could further investigate self-efficacy-based interventions in a higher education environment. Such research could lay the foundation for the development of more effective interventions resulting in improved academic performance and overall well-being in the student population.

The ultimate goal of research in this field should be to improve the scientific understanding of academic performance and the many factors that influence it so that effective interventions can be developed. Such interventions should aim to promote students' well-being and performance. This study contributed to the achievement of that goal by concluding that self-efficacy plays a central role in academic performance as opposed to stress who might play a minor role in it.

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Appendices

Appendix I

Information sheet

Would you like to contribute to science? Before you decide, here is why the research is being done and how it would involve you. Please take as long as you need to read the following information carefully. If you would like to ask any question about this study, you can contact the author of this study through the email x21196974@student.ncirl.ie. Ask questions if anything you read is not clear or if you would like more information. Take as long as you need to decide whether or not to take part.

My name is Miguel Silveiro and I am an undergraduate psychology student at the National College of Ireland (NCI). I have designed this study to evaluate the relationship between stress and perceived academic performance.

In order to participate in this study, you must be 18 or older, be an undergraduate student and have successfully completed at least one semester of an undergraduate program.

If you agree to take part in this study, you will be directed to a very short questionnaire that you are free to take as long as needed to answer. It includes a total of 28 short questions. You will be asked what your gender and age is. Followed by how many hours you spend on average studying per week. Then 10 questions will evaluate your self-efficacy; another 10 will measure your perceived stress in the past month and the last 5 will measure your perceived academic performance.

You will be asked to respond to questions such as “In the past month, how often have you been upset because of something that happened unexpectedly?” and “In the last

month, how often have you felt that you were unable to control important things in your life?”.

While you are free to take as long as needed to go through the questions, it is estimated that it will take about 5-10 minutes to complete this.

This study is aimed at undergraduate students as it seeks to improve the understanding of perceived academic performance its association with stress.

You are free to reject participating in this project and are free to withdraw at any given moment by closing the browser before submitting your answers, however you may not withdraw after submitting your data, as your identity is anonymous and therefore it is impossible to track any data. No name or e-mail address will be collected.

This research will help understand the importance of stress in academic performance. However, if at any point you feel distressed or uncomfortable by any of the questions, you are welcome to withdraw from the study and contact the free helpline Aware through the phone number 1800 80 48 48.

NCI will have responsibility for the data generated by the research. Anonymised data will be stored on NCI servers in line with NCI's data retention policy. Local copies of data saved on personal password protected devices/laptops will be deleted by the student's graduation or 3 months after the student exits the psychology programme at NCI. It is envisaged that anonymised data will also be uploaded to a secondary data repository to facilitate validation and replication, in line with Open Science best practice and conventions.

The findings obtained from this data will be used for my final year dissertation and will be presented at NCI.

If you have any questions, you can contact me through the email x21196974@student.ncirl.ie and my supervisor Dr Robert Fox through the email robert.fox@ncirl.ie

Thank you for your time.

By checking this box, you affirm that you have read and understood the information sheet, questions about your participation have been answered, you are aware of the potential risks, and you're participating in this study voluntarily.

Appendix II

Consent form

By ticking the box below, you agree that you are voluntarily participating in this study. You are also agreeing that you understand that you are free to withdraw at any given moment by closing whichever browser you are using to fill the form BEFORE submitting results. However, that you may not withdraw your data once it is submitted, as all data is anonymous and therefore impossible to track.

You also understand the nature of this study and have had the opportunity to ask questions about the study.

You also understand that NCI will have responsibility for the data generated by the research. Anonymised data will be stored on NCI servers in line with NCI's data retention policy. Local copies of data saved on personal password protected devices/laptops will be deleted by the student's graduation or 3 months after the student exits the psychology programme at NCI. It is envisaged that anonymised data will also be uploaded to a secondary data repository to facilitate validation and replication, in line with Open Science best practice and conventions.

And that the filter committee has reviewed this project, however it is the author of this project's (Miguel Silveiro) responsibility to ensure that the project is adhering to the ethical principles until the completion of this study.

You understand that you will be required to fill a questionnaire.

Tick the box below to confirm.

Appendix III

Demographic section

What gender do you identify with?

- 1- Man
- 2- Woman
- 3- Prefer to not disclose
- 4- Other

What is your age?

How many hours do you spend studying per week on average?

Appendix IV

General Self-Efficacy Scale (GSE)

This questionnaire seeks to measure your general self-efficacy. It attempts to measure how truthful each statement is to you. Select 1 if you disagree with the statement and 4 if you agree with it.

- 1- I can always manage to solve difficult problems if I try hard enough.
- 2- If someone opposes me, I can find the means and ways to get what I want.
- 3- It is easy for me to stick to my aims and accomplish my goals.
- 4- I am confident that I could deal efficiently with unexpected events.
- 5- Thanks to my resourcefulness, I know how to handle unforeseen situations.
- 6- I can solve most problems if I invest the necessary effort.
- 7- I can remain calm when facing difficulties because I can rely on my coping abilities.
- 8- When I am confronted with a problem, I can usually find several solutions.
- 9- If I am in trouble, I can usually think of a solution.
- 10- I can usually handle whatever comes my way.

Appendix V

Perceived Stress Scale (PSS-10)

This questionnaire seeks to measure how much stress you been through last month. Each question will measure the frequency of a specific stressful event. 1 means never and 5 means very often.

1- In the past month, how often have you been upset because of something that happened unexpectedly?

2- In the last month, how often have you felt that you were unable to control important things in your life?

3- In the last month, how often have you felt nervous and stressed?

4- In the last month, how often have you felt confident in your ability to handle your personal problems?

5- In the last month, how often have you felt that things were going your way?

6- In the last month, how often have you felt that you could not cope with all the things that you had to do?

7- In the last month, how often have you been able to control irritations in your life?

8- In the last month, how often have you felt you were on top of things?

9- In the last month, how often have you been angered because of things that were outside of your control?

10- In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

Appendix VI

Perceived Academic Performance Scale (PAPS)

This questionnaire seeks to measure your perceived academic performance scale. It measures this through the use of statements and how true they are in your life. 1 Means do not agree at all and 7 very strongly agree.

1- I meet the official performance requirements expected of a student.

2- I adequately complete assigned duties

3- I fulfil responsibilities specified (e.g., study, homework, readings, papers) in the course outline.

4- I perform tasks that are expected of me

5- My performance is beyond demands

Appendix VII

Debriefing

Thank you for participating in this study. You have contributed to the understanding of academic performance and its relationship with stress.

All your answers were anonymous, and the data generated will be stored by NCI. Please note that once you click to submit data, it will be impossible to retract it.

Keep in mind that the findings obtained through this data will be used for my final year dissertation and will be presented at NCI.

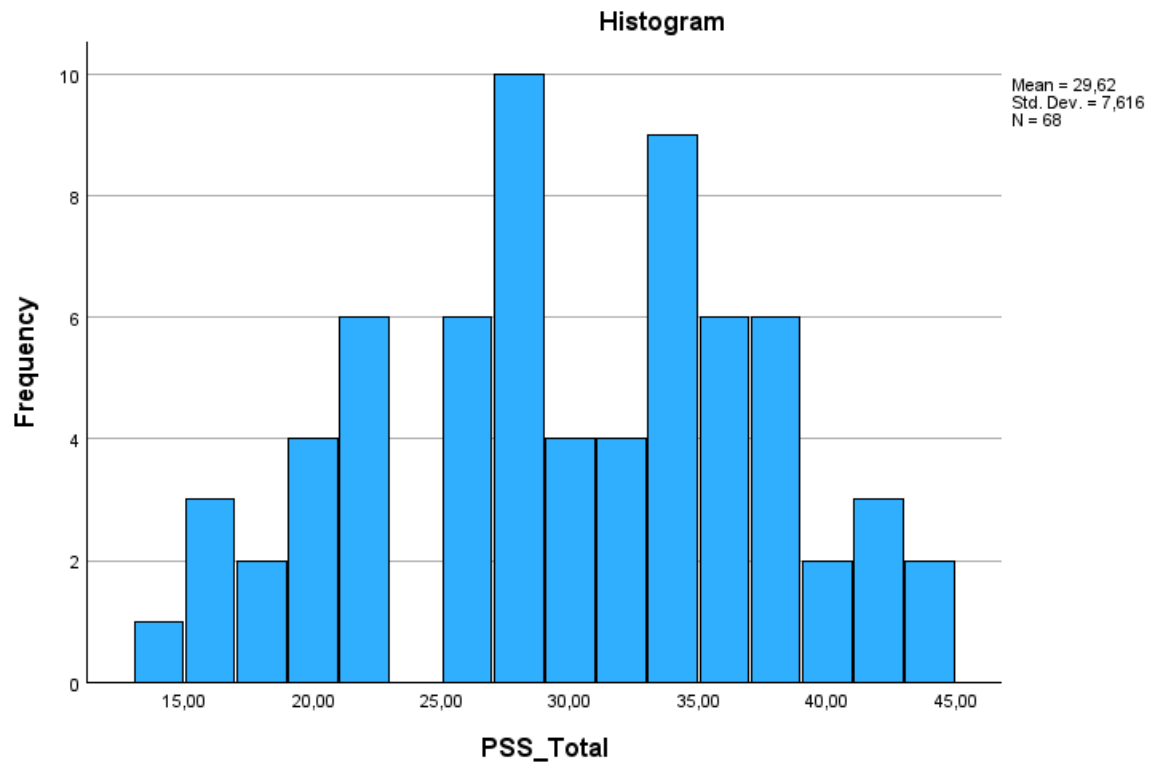
If you feel any sort of emotional distress after concluding this survey, please contact the free 24/7 phoneline of Aware through the phone number 1800 80 48 48 or the Samaritans through 116 123

If you have any questions, you can contact me through the email x21196974@student.ncirl.ie and my supervisor Dr Robert Fox through the email robert.fox@ncirl.ie

Submit

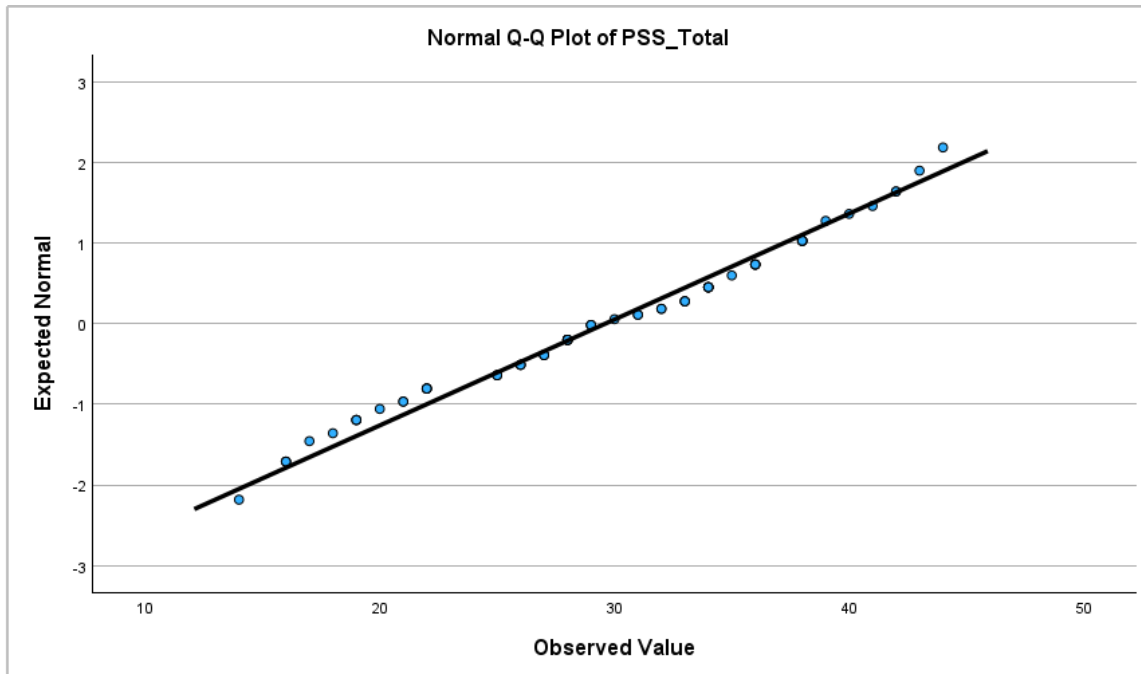
Appendix VIII

Histogram for PSS-10 scores



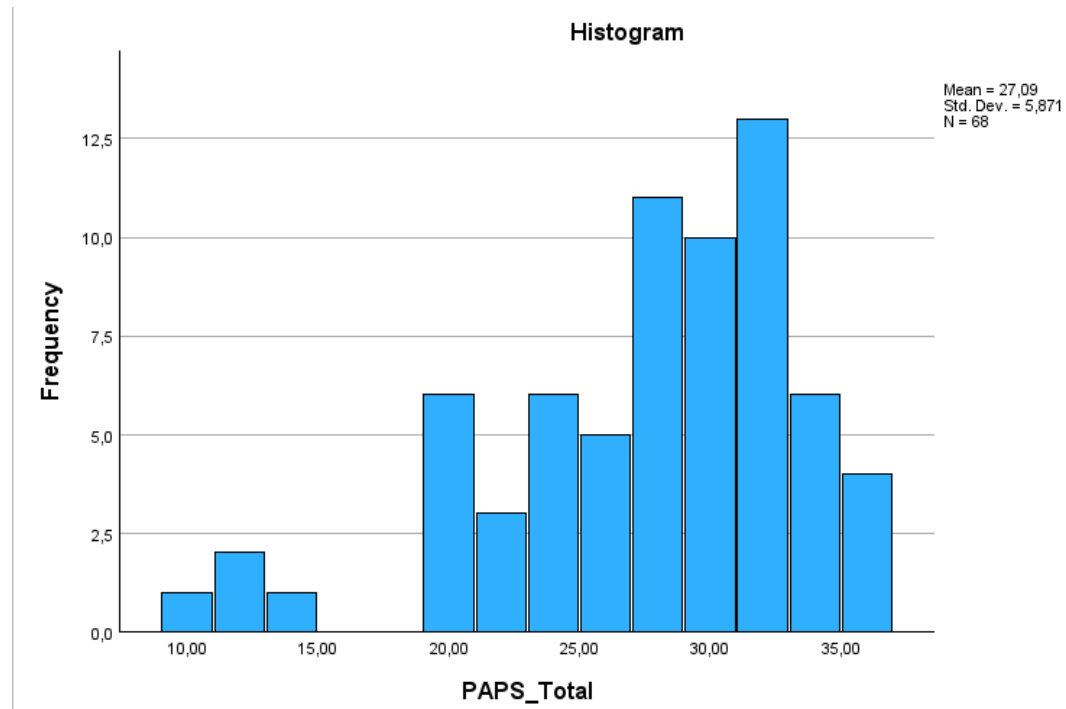
Appendix IX

Q-Q plot for PSS-10 scores



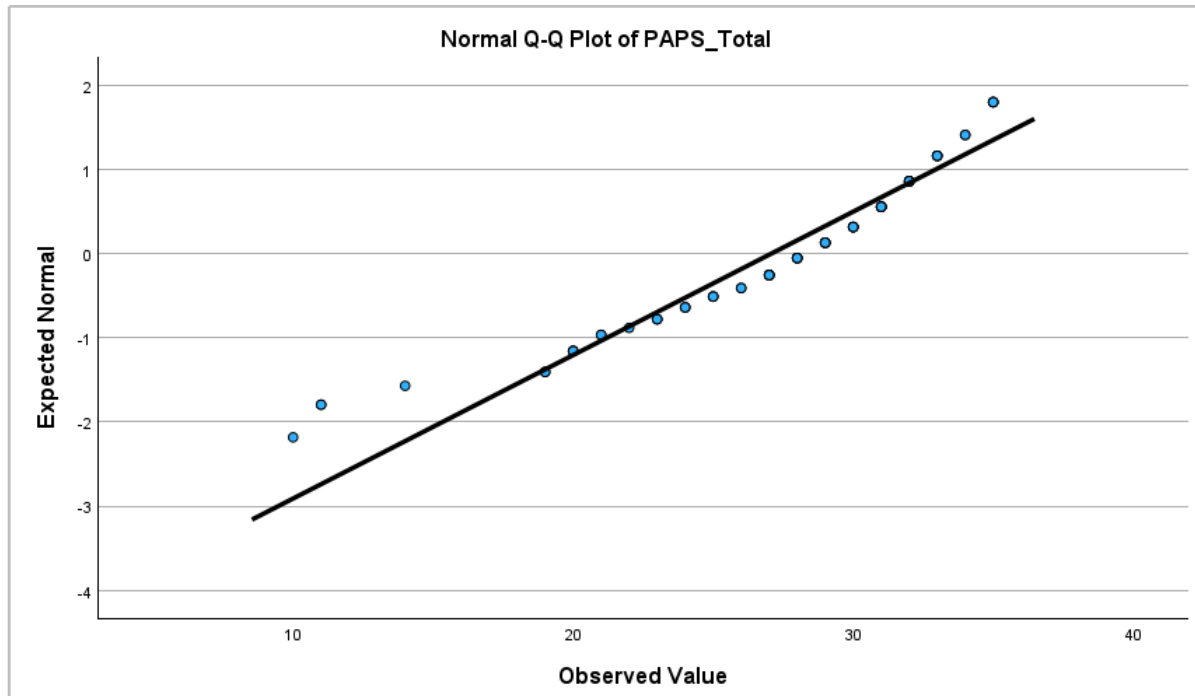
Appendix X

Histogram for PAPS scores



Appendix XI

Q-Q plot for PAPS scores



Appendix XII

Scatterplot for perceived academic performance and perceived stress scores

