

An Investigation into the Association between Academic Procrastination and Sleep Quality in Students.

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Submission of Thesis and Dissertation

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Abstract

Aims: This study aimed to investigate the association between academic procrastination and sleep quality amongst students. Additionally, this study investigated if demographic factors, age, gender, housing, degree level and degree discipline influenced the academic procrastination and sleep quality scores. **Method:** A questionnaire in survey format was administered to participants (n=101) on social media platforms. The survey consisted of demographic questions regarding age, gender, living arrangements, degree level and degree discipline, and questions from the Perceived Procrastination scale – Academic Adaptation, and The Adolescent Sleep Quality scale. **Results:** A positive moderate correlation was identified between academic procrastination and sleep quality. Sleep quality was the only variable found to be a significant predictor for academic procrastination. Academic procrastination and degree level were both found to significantly predict sleep quality. **Conclusion:** Findings from this study provide an insight into the association between academic procrastination and sleep quality, and the demographic factors which influence these variables. These findings may highlight to policy makers the need to educate students on the correlation between academic procrastination and sleep quality.

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Introduction

Academic procrastination and sleep quality are prevalent features among the student population. Academic procrastination, a subcategory of procrastination, is the habit of delaying important or time bound academic commitments (Dietz et al., 2007). Sleep quality refers to the standard of sleep experienced by an individual, which has been proven as vital to general wellbeing of all individuals (Oliver et al., 2019). The student population reflects some of the worst sleep quality scores compared to other populations (Steel, 2007). Literature has acknowledged and highlights the health risks associated with poor sleep quality (Slavish & Graham-England, 2014). Academic procrastination has also been identified to impact students negatively through anxiety and low self-esteem (Gautam et al., 2023). Both variables, academic procrastination and sleep quality, have been found to negatively impact students, however literature fails to investigate an association between the two variables. This study will aim to investigate if an association is present between the two variables, and if demographic factors influence the variables individually. Literature available surrounding the topics of procrastination, academic procrastination and sleep quality will be discussed, providing an overview of the variables, the prevalence of variables and the impact they have on the health of the general and student population.

Procrastination

Procrastination is a common occurrence amongst all people, it is defined as a voluntary delay of tasks or actions, commonly followed by discomfort and negative consequence (Bobe et al., 2022). Most literature displays the understanding that procrastination consists of three main aspects, the delay is voluntary, there is a gap between intention and action, and there is an expectation of negative consequence which can manifest negative emotions such as guilt (Steel, 2007). Procrastination is a common phenomenon which occurs amongst people of all ages, with about 20% of the adult population reporting

engagement in procrastination of daily tasks in regard to health check-ups or bills (Gautam et al., 2023). This phenomenon has been found to be associated with depression, anxiety, lower self-esteem and lower wellbeing (Gautam et al., 2023). Studies have demonstrated that procrastination is heavily prevalent amongst students, approximately 80-95% of college students are estimated to engage in some sort of procrastination (Steel, 2007). Whilst 50% of college students have been found to engage in procrastination on a consistent and problematic level (Steel, 2007). Procrastination amongst students has also been found to associate with lower grades, late submissions and higher course withdrawal rates (Onwuegbuzie, 2000).

Academic Procrastination and Students

Procrastination can be categorised into many different types, academic procrastination and chronic procrastination being examples. Academic procrastination, most commonly experienced by students, refers to the habit of delaying important or tie bound academic commitments whilst chronic procrastination is referred to as more of a personality trait of an individual, which also can manifest into other traits such as low efficacy and depression (Dietz et al., 2007). Previously, literature has investigated the prevalence of procrastination amongst under-graduate and graduate students, finding that graduate students were 3.5 times more likely to procrastinate academic tasks (Onwuegbuzie, 2000). Literature also suggests that students' personal values can influence the academic procrastination an individual student may be subject to experiencing (Dietz et al., 2007). Research has also shown that 60% of graduate students procrastinate completing assigned reading tasks (Onwuegbuzie, 2000). These studies clearly highlight the high volume of procrastination present amongst students. Studies have investigated the difference in procrastination between genders, finding that males experienced higher levels of procrastination in comparison to female classmates (Balkis & Duru, 2017). This study also found that females reported higher satisfaction with academic life and higher academic performance. These results indicate a relationship between

procrastination and life satisfaction experienced by college students. Procrastination plays a large role in many factors of student life, as discussed, literature has investigated many of these factors including academic performance and satisfaction (Balkis & Duru, 2017), cognitive symptoms such as anxiety and self-esteem (Gautam et al., 2023) and even the rates of course withdrawal (Onwuegbuzie, 2000). Academic pressures have been found to cause psychological effects such as high stress and anxiety which decrease sleep quality (Graham & Streitel, 2010) similar symptoms are experienced by students as a result of academic procrastination (Gautam et al., 2023), it can be theorised that academic procrastination could have a similar result on sleep quality among students.

The relationship between academic procrastination and internet usage within the student population is often reported, although it reflects a common issue amongst students it avoids the topic of sleep quality. Studies have found that a student's "internet addiction" positively related to the academic procrastination they experience (Liu et al., 2024, Özyer & Altınsoy, 2023). Academic self-efficacy was identified as a protective factor, showing a negative relationship with academic procrastination (Özyer & Altınsoy, 2023). Excessive mobile phone usage has been associated with poorer academic performance also (Shahzada Qaisar et al., 2017). However, internet usage in itself does not have a positive relationship with academic procrastination, it has been found that regulated online learning is negatively related to academic procrastination (Özyer & Altınsoy, 2023). Additionally, previous literature has identified a positive correlation between social media addition and academic procrastination (Kaleem et al., 2023).

Sleep Quality

Sleep quality and quantity has been proven as vital to general wellbeing to all individuals, not just students (Oliver et al., 2019). Sleep disturbance and poor sleep quality

have been linked to alcohol use and chronic pain (Graham & Streitel, 2010), along with hypertension, anxiety, and obesity (Slavish & Graham-Engeland, 2014). Some studies which have involved experimentally induced sleep deprivation to investigate effects of sleep deprivation on young adults, found changes to the metabolic profile, which places an individual at risk of conditions such as diabetes, hypertension, and insulin resistance (Slavish & Graham-Engeland, 2014). These studies have clearly highlighted the serious repercussions of poor sleep quality and sleep deprivation on the body, drawing attention to the importance of maintaining a good sleep routine. Poor sleepers have a higher chance of displaying autonomic imbalances while at rest, which may place them at higher risk of developing serious health problems later in life (Oliver et al., 2019). Many factors influence sleep quality, anxiety and stress have been frequently identified as contributing to poor sleep quality (Slavish & Graham-Engeland, 2014). Due to the outlined negative consequences of poor sleep quality, it is important to identify and manage factors influencing poor sleep quality.

Sleep Quality and Students

College students display poor sleep quality across majority of the population, with only 11% of students meeting criteria for good sleep (Graham & Streitel, 2010). Additionally, a recent study found 25.2% student participants had problems with sleep quality (Zhao & Kou, 2024). Sleep deprived students have been found to display higher emotional reactivity to stressful tasks (Oliver et al., 2019), which arguably could negatively impact academic assessments which are already a demanding experience for students. Poor sleep amongst students has also been linked to academic deficits, emotional dysregulation, and substance use (Graham & Streitel, 2010). Although students need sleep to regulate emotion and improve academic functioning, they are statistically more likely to routinely experience difficulty falling and staying asleep (Oliver et al., 2019). The psychological effects of academic pressure such as high stress and anxiety have shown to decrease sleep quality

(Graham & Streitel, 2010). These disordered sleeping patterns displayed by young people in college have also shown to place an individual at risk of developing illness and chronic issues later in life (Graham & Streitel, 2010). Some studies have investigated improving sleep quality among young adults, mindfulness being found to be an effective approach to improving sleep quality (Teoh & Wong, 2022).

Procrastination and Sleep Quality

Procrastination and sleep quality interact during a phenomenon called Bedtime Procrastination. In the case of bedtime procrastination, going to sleep is delayed by an individual without any external circumstances being at fault (Correa-Iriarte et al., 2023), to the point where sleep quality is negatively impacted. Studies have identified bedtime procrastination as a mediator between problematic phone use and sleep quality (Bozkurt et al., 2024). Although literature suggests an association between procrastination and sleep quality, literature often focuses on the use of technology and social media as a form of procrastination, which results in delaying sleep. Additionally, as previously discussed in the context of academic procrastination, internet and social media use are the most commonly investigated variables. A recent study found a positive correlation between mobile phone addiction and bedtime procrastination, additionally identifying anxiety to have a positive correlation with bedtime procrastination (Meng et al., 2024). Similarly, a study conducted by Zhao & Kou, 2024, found that short video addiction correlated with student sleep quality scores, additionally procrastination was found to correlate with both variables. Previous studies have found that mobile phone use in bed negatively correlates with sleep quality (Bozkurt et al., 2024). This study also found that 90.6% adolescents use phones in bed (Bozkurt et al., 2024), putting many students at risk of experiencing poor sleep quality.

Social Media addiction is also a commonly occurring variable in studies regarding sleep quality amongst adolescents and students. Literature has shown that students addicted to social media show higher rates of depression, anxiety, low self-esteem, and suicidal ideation (Swain & Pati, 2019), which relates to the findings of Meng et al., 2024, which found anxiety to positively correlate to bedtime procrastination. Problematic social media use has also been linked to poor sleep quality, delayed sleep onset, along with shorter sleep length and daytime sleepiness (Swain & Pati, 2019). Other research has found that the severity of social media addiction is positively correlated to insomnia, finding that the higher an individual's social media addiction, the higher their experience with insomnia was (Kaleem et al., 2023). In the study conducted by Kaleem et al., 2023, out of 34 people with severe social media addiction, 22 had clinically significant insomnia. Literature clearly highlights the severity of social media addictions influence of students' health, procrastination and sleep quality.

A recent study conducted on medical students, found academic procrastination to mediate the relationship between the ability to stay focused and plan tasks sufficiently and poor sleep quality (Csaba Hamvai et al., 2023). Specifically, this study identified academic procrastination, bedtime procrastination and addiction to smartphones as mediators in the relationship between sleep quality and a student's ability to plan tasks and focus effectively. This study highlights the combined effect of three variables, and as previously discussed bedtime procrastination has been found to mediate the relationship between problematic phone use and sleep quality (Bozkurt et al., 2024) and a positive correlation has been found between mobile phone addiction and bedtime procrastination (Meng et al., 2024). From these findings, it can be argued that the variables, bedtime procrastination, problematic mobile phone usage, academic procrastination and sleep quality are correlated and interact with one another. Other studies have focused on the relationship between sleep quality and

procrastination in the adult population, daily procrastination in a workplace setting has been found to negatively associate with sleep quality (Song et al., 2021). The study also identified a positive relationship between daily procrastination and negative effect, with results being stronger in individuals with high job autonomy (Song et al., 2021). Unfortunately, the most literature present regarding the relationship between the two variables, procrastination and sleep quality, focuses on general procrastination and the adult population, although procrastination rates are highest amongst students (Steel, 2007).

The Current Study

From the literature discussed, it can be concluded that procrastination is a prevalent occurrence amongst the population (Steel, 2007) and can negatively impact an individual's life (Gautam et al., 2023). It can also be concluded that sleep quality can have serious consequences on an individual's health, such as hypertension, anxiety, and obesity (Slavish & Graham-Engeland, 2014), as well as chronic pain (Graham & Streitel, 2010). The student population presents some of the highest levels of procrastination compared to other age groups (Steel, 2007), yet literature often investigates the adult population. Studies have found that academic related pressures can impact students sleep quality negatively (Graham & Streitel, 2010). Academic procrastination may result in academic related pressures, which in turn may impact students sleep negatively. However, studies have yet to thoroughly investigate if there is an association between academic procrastination and sleep quality. Research often heavily revolves around and highlights the role social media addiction and mobile phone usage in relation to both sleep quality and academic procrastination (Kaleem et al., 2023, Swain & Pati, 2019).

There are limitations on information available at present in regard to the association between academic procrastination and sleep quality within the student population. Due to the

known negative impact of sleep quality on health, this area of research is important to prevent health complications in the young adult's life. Research can also help identify if academic procrastination is a significant enough variable to impact sleep quality amongst students. To address this gap in literature, this study aims provide the necessary data on whether an association between academic procrastination and sleep quality is present within the student population. Research in this area will help identify avenues and policies which may help prevent long term negative effects of poor sleep quality on the younger population.

Rationale

This study was carried out in order to investigate the association between sleep quality, independent variable, and academic procrastination, independent variable, amongst the student population. Demographic factors were investigated to determine whether they influence the association between academic procrastination and sleep quality. Additionally, demographic factors were analysed to determine if they can predict academic procrastination and sleep quality. Poor sleep quality is prominent among student populations (Graham & Streitel, 2010), similarly, high levels of academic procrastination are also identified among this population (Onwuegbuzie, 2000, Steel, 2007). Males show higher levels of procrastination than their female classmates (Balkis & Duru, 2017), and post graduate students are more likely to procrastinate compared to undergraduate students (Onwuegbuzie, 2000). This study aims to identify if an association is present between the two independent variables, and if demographic factors indicate possible predictive qualities for academic procrastination and sleep quality.

Research Aims and Hypotheses

To investigate the association between Academic Procrastination and Sleep Quality in third level students. Additionally, to explore whether demographic factors, age, gender, housing, degree level and degree discipline influence the variables.

Research Questions:

RQ1. Is there an association between academic procrastination and sleep quality in students?

RQ2. Do demographic factors, age, gender, housing, degree level, and degree discipline influence academic procrastination in students?

RQ3. Do demographic factors, age, gender, housing, degree level, degree discipline and sleep quality influence academic procrastination in students?

RQ4. Do demographic factors, age, gender, housing, degree level, degree discipline influence sleep quality in students?

RQ5. Do demographic factors, age, gender, housing, degree level, degree discipline and academic procrastination influence sleep quality in students?

Hypotheses:

Hypothesis 1: The level of academic procrastination a student engages in will be related to the sleep quality they experience.

Hypothesis 2: Age, gender, housing, degree level and degree discipline will influence academic procrastination.

Hypothesis 3: Age, gender, housing, degree level, degree discipline and sleep quality will be related to procrastination.

Hypothesis 4: Age, gender, housing, degree level and degree discipline will influence sleep quality.

Hypothesis 5: Age, gender, housing, degree level, degree discipline and procrastination will be related to sleep quality.

Method

Design

This is a quantitative, cross-sectional, within-subjects study. The quantitative study design was selected as the association analysis between variables requires a quantitative approach. Data was collected at one point in time in order to measure the prevalence of the chosen variables, sleep quality and academic procrastination. This study is quantitative as the data collected was analysed statistically to identify any correlation in scores between the chosen variables. All participants took part in the exact same survey. The variables investigated in this study are academic procrastination, independent variable and sleep quality, independent variable. Demographic factors, age, gender, level of degree, living arrangements and discipline of degree, as seen in Appendix F, were analysed as predictor variables of academic procrastination and sleep quality.

Participants

The participants in this study were students over the age of 18, total number of participants (n= 101). 63 of the participants were female and 33 of the participants were male, 0 were other. The mean age of the sample was $m = 22.24$, $SD = 4.53$. The participants were recruited through posts on social media platforms and forums. Participants were recruited through convenience and snowball sampling.

Measures and Materials

The survey used for data collection was created using Google Forms. The first section of the survey consisted of an information sheet, Appendix A, and a consent form, Appendix B. The next section contained the Perceived Procrastination scale questions, Appendix D, followed by the Sleep Quality scale questions, Appendix E. The last section of the survey contained a debrief sheet, Appendix C. Data was stored online in Google Forms during data

collection, once the survey was closed, data was transferred into an excel spreadsheet and stored online on OneDrive. No identifiable information was collected. SPSS was the programme chosen for statistical analysis of data.

Academic Procrastination

The PPS, Perceived Procrastination scale – Academic Adaptation (Wu & Fan, 2017), was selected to measure academic procrastination. The scale consists of 11 items, items are answered using a five-point Likert scale, see Appendix D. The answers for this scale being strongly disagree (1) to strongly agree (5), with the options of disagree, neutral and agree in between. Higher scores reflect a higher level of procrastination present in the participant, scores ranging from 11 to 55. The scale was developed to measure academic procrastination behaviour within a sample of 584 students, internal analysis of the scale “satisfactory results with adequate Cronbach’s alpha values”, (Wu & Fan, 2017).

Sleep Quality

The Adolescent Sleep Quality scale (Short et al., 2013), was selected to measure sleep quality as it consists of only 8 items, with each item being answered on a Likert scale from 0 to 4. Higher scores indicate poorer sleep quality, scores may range from 0 to 32. Question 1 is reverse scored. All items can be generalised as they do not pertain strictly to adolescents, view questions in Appendix E. This will keep survey time down for participants and avoid overloading individuals with questions. Other sleep quality scales available for public use consist of more items with more complex structure, example Pittsburgh Sleep Quality Index, which consists of 25 items varying from average sleep time in minutes to type of discomfort experienced during sleep. This scale would be too advanced and time consuming for the study at hand. Additionally, The Adolescent Sleep Quality scale has shown good internal

reliability, Cronbach's Alpha of .87, (Short et al., 2013), and was developed in accordance to the theoretical framework around the Pittsburgh Sleep Quality Index, (Short et al., 2013).

Procedure

Procedure of this study began with an application for ethical approval with the Ethics Board at NCI. Once minor revisions were complete the letter of Ethical Approval (Appendix G) was granted, meaning data collection could begin. The survey used for data collection was created using Google Forms. Upon completion it was reviewed by project supervisor and a pilot study was conducted to ensure all questions were clearly understood, that appropriate language was used, that timing was accurate, and that data was collected and stored correctly. After the pilot study, the option to self-describe living arrangement was added and the level of degree, postgraduate and undergraduate was also added in the demographics section.

Once the survey was reviewed and ready for data collection, the survey was posted on online social media platforms, Instagram and Snapchat, on the stories format, and posts on the r/surveyexchange forum on Reddit. The survey was uploaded along with a quick brief, specifying sample requirements, time commitment and that participation is fully voluntary (Appendix H). Once an individual chose to participate and clicked the attached link, they would be rerouted to the survey and presented with the full information sheet and consent form.

Once the participant read through the information sheet and consent form, and provided consent, the survey began. The demographic questions (Appendix F) were first, followed by Academic Procrastination (Appendix D) questions and Sleep Quality Scale (Appendix E) questions. Upon completion of the questions, the participant is thanked for their participation and presented with a debrief sheet (Appendix C) which provides the participant with information on the study and scales used, services available if the participant found any of the topics distressing and the researcher's contact information. The data

collected from the survey was stored online in Google Forms throughout the data collection period, data was fully anonymous and no identifying information was gathered. Once data collection was completed, the data was transferred to an excel sheet and stored securely online on OneDrive. Data collected was analysed using SPSS.

Statistical Analysis

Descriptive statistics analysis was conducted to determine the frequency of demographic factors, age, gender, housing, degree level, and degree discipline. A Pearson's product-moment correlation coefficient test was conducted to investigate if a correlation between academic procrastination and sleep quality was present. A Standard Multiple Regression analysis was conducted to investigate if sleep quality, independent variable, can be predicted by age, gender, housing, degree level, degree discipline and academic procrastination. A Standard Multiple Regression analysis was conducted to investigate if academic procrastination, independent variable, can be predicted by age, gender, housing, degree level, degree discipline and sleep quality.

Results

Descriptive Statistics

The participants in this study were 33% male, 67% female, and 0% other, see Table 1. 73% of the participants lived at home, 19% away from home alone or with others and 7% in Student Accommodation, see Table 1. 2% of participants were other for living arrangements, this consisted of mature students who have their own established families with children. 85% of participants were undergraduate students and 15% were postgraduate students, see Table 1. Social Sciences, Journalism and Information was the highest degree discipline amongst participants, 25%, whilst Agriculture was the lowest at 0%, see Table 1. The mean age of participants was 22.24, see Table 2. The mean score for academic procrastination was 36.58 and the mean score for sleep quality was 17.07, see Table 2.

Table 1

Demographic data of study sample, gender, living arrangement, type of student and discipline of degree

Variable	Frequency	Valid %
Gender		
Male	33	32.7
Female	68	67.3
Other	0	0
Living Arrangement		
Living at home	73	72.3
Living away from home	19	18.8
Student Accommodation	7	6.9
Other	2	2.0
Type of Student		
Undergraduate	86	85.1
Postgraduate	15	14.9

Discipline of Degree (In accordance to CSO)

Arts and Humanities	21	20.8
Social Sciences, Journalism and Information	25	24.8
Business, Administration and Law	10	9.9
Natural Sciences, Mathematics and Statistics	2	2.0
Information and Communication Technologies	6	5.9
Engineering, Manufacturing and Construction	5	5.0
Agriculture, Forestry, Fisheries & Veterinary	0	0
Health and Wellbeing	13	12.9
Education	7	6.9
Other	12	11.9

Table 2

Demographic data for age and Descriptive statistics for total academic procrastination and total sleep quality scores.

Variable	<i>M</i> [95% CI]	<i>SD</i>	Range
Age	22.24 [21.34, 23.13]	4.53	18-43
Total PPS	36.58 [34.72, 38.45]	9.45	11-55
Total ADS	17.07 [15.60, 18.54]	7.35	3-33

Note: PPS = Pure Procrastination score – Academic Adaptation, ADS = Adolescent Sleep Quality score

Inferential Statistics

A Pearsons product-moment correlation coefficient test was conducted to investigate the presence of a correlation between academic procrastination scores and sleep quality scores. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. There was a moderate positive correlation identified between academic procrastination and sleep quality ($r = .33$, $n = 98$, $p < .001$). This indicates that the variables shared 10.89% variance. The results indicate that higher levels of academic procrastination are associated with poorer sleep quality.

A Multiple Regression Analysis was conducted to investigate if Academic Procrastination can be predicted by age, gender, housing, degree level, degree discipline and sleep quality. Preliminary analyses were conducted to ensure no violations of the assumptions of normality, linearity and homoscedasticity. The correlations between predictor variables and criterion variable were analysed and the r values ranges from .446 to -.361, see Table 3. Tests for multicollinearity were also conducted, Tolerance and VIF values were in acceptable ranges.

Table 3

Inter Correlation (Pearson's r) between model variables

Variable	1.	2.	3.	4.	5.	6.	7.
1. Total Academic Pro	-						
2. Total Sleep Quality	.329	-					
3. Gender	-.081	-.022	-				
4. Age	.055	.148	-.027	-			
5. Housing	-.034	-.050	.008	.446	-		
6. Degree Level	-.093	-.298	.053	-.361	-.087	-	
7. Degree Discipline	-.030	.034	-.097	-.170	-.226	.169	-

Note: Academic Pro = Academic Procrastination

A standard multiple regression was conducted as there was no requirement for inputting predictors into the model in a specific order. The predictor variables explained 11.7% of variance in academic procrastination scores ($F(6,91) = 2.01, p = .072$). Sleep quality was the only statistically significant predictor for academic procrastination. The strongest predictor for academic procrastination was sleep quality ($\beta = .33$), see Table 4. An increase of one standard deviation in sleep quality scores would predict an increase of 0.33 standard

deviation in academic procrastination scores. The variables with the weakest predictor tendency were age and degree level ($\beta = .02$), see Table 4.

Table 4

Multiple Regression table predicting Academic Procrastination

Variable	R ²	B	SE	β	<i>t</i>	<i>p</i>
Model	.12					
Sleep Quality		.43	.13	.33	3.18	.002
Gender		-1.61	1.99	-.08	-.81	.420
Age		.04	.25	.02	.16	.875
Housing		-.49	1.51	-.04	-.32	.748
Degree Level		.63	2.94	.02	.22	.830
Degree Discipline		-.18	.31	-.06	-.56	.576

Note:

A standard multiple regression analysis was conducted to investigate if Sleep Quality can be predicted by age, gender, housing, degree level, degree discipline and academic procrastination. Preliminary analyses were conducted to ensure no violations of the assumptions of normality, linearity and homoscedasticity. The correlations between predictor variables and criterion variable were analysed and the *r* values range from .446 to -.361, see Table 5. Tests for multicollinearity were also conducted, Tolerance and VIF values were in acceptable ranges.

Table 5*Inter Correlation (Pearson's r) between model variables*

Variable	1.	2.	3.	4.	5.	6.	7.
1. Total Sleep Quality	-						
2. Total Academic Pro	.329	-					
3. Gender	-.022	-.081	-				
4. Age	.148	.055	-.027	-			
5. Housing	-.050	-.034	.008	.446	-		
6. Degree Level	-.298	-.093	.053	-.361	-.087	-	
7. Degree Discipline	.034	-.030	-.097	-.170	-.226	.169	-

Note: Academic Pro = Academic Procrastination

A standard multiple regression was conducted as there was no requirement for inputting predictors into the model in a specific order. The predictor variables explained 19.7% of variance in academic procrastination scores ($F(6,91) = 3.71, p = .002$). Academic procrastination ($p = .002, \beta = .30$) and degree level ($p = .012, \beta = -.26$) were statistically significant predictors of sleep quality, see Table 6. Academic procrastination was the strongest predictor of sleep quality ($\beta = .30$), see Table 6. The second strongest predictor for sleep quality was degree level ($\beta = -.26$). Gender had the weakest predictor tendency for sleep quality ($\beta = .03$), see Table 6.

Table 6*Multiple regression table predicting Sleep Quality*

Variable	R ²	B	SE	β	t	p
Model	.2					
Academic Procrastination		.23	.07	.30	3.18	.002
Gender		.44	1.48	.03	.30	.767
Age		.14	.18	.09	.79	.432
Housing		-.86	1.12	-.08	-.77	.444
Degree Level		-5.38	2.11	-.26	-2.55	.012
Degree Discipline		.20	.23	.08	.88	.384

Note:

Discussion

This study aimed to investigate the association between Academic Procrastination and Sleep Quality within the student population. Additionally, to explore whether demographic factors, age, gender, housing, degree level and degree discipline influence or predict the variables.

Hypothesis 1

Based on prior literature, it was hypothesised that the level of procrastination a student engages in would be associated with the sleep quality experienced. This study used a correlation analysis to investigate this hypothesis, finding a moderate positive correlation between academic procrastination and sleep quality. This indicated that higher scores on the procrastination scale were associated with poorer sleep quality, supporting the hypothesis. This result aligned with previous literature, Song et al., 2021, identified that daily procrastination in the workplace was negatively associated with sleep quality. This was reflected by the association identified in this study, in regard to academic procrastination instead of workplace procrastination. Another study has identified academic procrastination to mediate the relationship between the ability to stay focused and plan tasks sufficiently and poor sleep quality (Csaba Hamvai et al., 2023). The results from the current study elaborate on this mediatory effect, finding a direct moderate correlation between sleep quality and academic procrastination. Although, the ability to focus and plan tasks may also be present among the student sample, it is clear that a direct correlation between the two variables is also present. Academic pressures have been found to cause psychological effects such as high stress and anxiety which decrease sleep quality (Graham & Streitel, 2010) similar symptoms are experienced by students as a result of academic procrastination (Gautam et al., 2023). Drawing on these studies it was hypothesized that academic procrastination would also decrease sleep quality, which was supported by the results of this study.

Hypothesis 2

The second hypothesis proposed the possibility of demographic factors, age, gender, housing, degree level and degree discipline influencing academic procrastination among students. A standard multiple regression was used to explore if a correlation was present among the variables, this type of regression was selected as it is suitable for both numerical and categorical predictors, and there was no need to input predictor variables in a specific order. The overall model did not reach statistical significance. The demographic variables failed to reach statistical significance as predictor variables for academic procrastination among students. Therefore, based on a failure to reach statistical significance, Hypothesis 2 was rejected. This finding did not align with previous literature as degree level has been found to predict higher levels of procrastination, Onwuegbuzie, 2000, finding graduate students 3.5 times more likely to procrastinate academic tasks. Additionally, males have been found to experience higher levels of procrastination in comparison to female classmates (Balkis & Duru, 2017), which was not reflected by this studies results.

Hypothesis 3

The third hypothesis proposed the possibility of demographic factors, age, gender, housing, degree level, degree discipline and sleep quality predicting academic procrastination among students. Similarly to the previous hypothesis, a standard multiple regression was conducted to determine if a correlation was present among the variables, this regression was selected for the same criteria as previously mentioned. The overall model did not reach statistical significance. Furthermore, the demographic variables failed to reach statistical significance. However, sleep quality presented with a statistically significant correlation with academic procrastination. Specifically, it was identified that an increase in sleep quality scores would predict an increase in academic procrastination scores, meaning poorer sleep

quality predicted higher procrastination. Based on these findings, the hypothesis was partially rejected. These findings were supported by previous literature which found a correlation between sleep quality and academic procrastination (Graham & Streitl, 2010, Gautam et al., 2023). These finding also contradicted literature, as demographic factors were not found to predict academic procrastination, but some studies have found gender (Balkis & Duru, 2017) and degree level (Onwuegbuzie, 2000) to influence academic procrastination.

Hypothesis 4

The fourth hypothesis proposed the possibility of demographic factors, age, gender, housing, degree level and degree discipline influencing sleep quality among students. A standard multiple regression was conducted to determine if a correlation was present among the variables, this type of regression was selected as it is suitable for both numerical and categorical predictors, and there was no need to input predictor variables in a specific order. The overall model did reach statistical significance. However, only degree level reached statistical significance as a predictor for sleep quality. This demographic factor was selected as literature identified a significance between postgraduate and undergraduate students in the context of academic procrastination (Onwuegbuzie, 2000). Unexpectedly, a correlation was identified in the data between sleep quality and degree level, which wasn't specifically highlighted in previous studies. Due to these findings, this hypothesis was partially rejected, as only one demographic factor produced significant predictor features.

Hypothesis 5

The fifth Hypothesis proposed the possibility of demographic factors, age, gender, housing, degree level, degree discipline and academic procrastination influencing sleep quality among students. Similarly to previous hypotheses, a standard multiple regression was conducted to determine if a correlation was present among the variables, this regression was

selected for the same criteria previously outlined. The overall model did reach statistical significance. Academic procrastination and degree level were the only predictor variables in the model to reach statistical significance. However, due to the method of regression used and the variable being categorical, it is not possible to determine which type of student, post graduate or undergraduate predicts sleep quality. Age, gender, housing and degree type were not statistically significant predictors of sleep quality. Degree level was selected as a demographic factor in this study based on literature which identified a correlation between degree level and procrastination scores (Onwuegbuzie, 2000), however, a correlation was identified in the data between sleep quality and degree level. The results in this study surrounding demographic factors did not align with previous literature, as degree level was found to predict sleep quality and not academic procrastination. However, some aspects of the results supported previous literature, specifically the correlation between sleep quality and academic procrastination has been identified in many studies (Graham & Streitel, 2010, Gautam et al., 2023). Due to these findings the hypothesis was partially rejected, as only two of the variables tested had statistically significant results.

Limitations

Although findings from this study are compelling, they lack generalisability due to the small sample size. The sample size fit minimum requirements for the selected analyses, however a larger sample size would provide a more accurate representation of the student population. Similarly, the gender representation in this sample was unequal, with almost 70% of the sample being female. This may skew results and present correlations at an increased or decreased significance. Increasing sample size and recruiting more male participants would improve the validity and generalisability of the data, making it suitable for policy makers to use as a foundation for future policies for student support resources. Future student support resources may provide students with information on the importance of good sleep quality, due

to serious health risks such as hypertension, anxiety, obesity (Slavish & Graham-Engeland, 2014), and chronic pain (Graham & Streitel, 2010). Highlighting the correlation between academic procrastination and poor sleep quality may inform students of the mental and physical risks associated with delaying academic tasks. Increasing sample size can be achieved by changing recruitment method, or by using multiple recruitment methods. Convenience sampling and snowball sampling methods are effective, however introducing more avenues for recruitment through these methods such as posters or flyers on various college campuses could increase participation in the study.

Furthermore, another limitation presents itself within the analysis selected for identifying correlations among demographic factors, sleep quality and academic procrastination. Although a significant correlation was identified between degree level and sleep quality, it cannot be determined which type of student, post graduate or undergraduate, predicts poor sleep quality. Dummy coding is an appropriate procedure which should be used to determine whether postgraduate or undergraduate degree level predicts poorer sleep quality. Additionally, this study has a cross-sectional design, meaning data was gathered from the sample at one point in time. Academic procrastination and sleep quality scores may fluctuate due to personal and environmental reasons. Exam season or periods of time with increased academic deadlines may influence the scores also. A longitudinal design, which would entail measuring academic procrastination and sleep quality scores in the sample at different points throughout the semester may provide a better representation of the students' baseline levels of academic procrastination and sleep quality. This approach would create a more accurate and representative data set, which would in turn provide accurate representation of any correlations between sleep quality scores, academic procrastination scores and demographic factors.

Conclusion

To summarise, this study identified a significant moderate correlation between sleep quality and academic procrastination. This finding supports previous literature and contributes further to the narrative of students' experiences with sleep quality and academic procrastination. Additionally, this study identified degree level as a predictor for sleep quality. This study supports previous literature which identified an association between academic procrastination and sleep quality among students. These results highlight the need for further research into the predictors of poor sleep quality among students, due to the health risks associated with poor sleep quality this topic is of high importance. Due to the moderate correlation identified between sleep quality and academic procrastination, governing bodies in charge of student resources may develop programmes or resources to inform students of the mental and physical risks of delaying academic tasks. Further research with a larger sample size may also identify if other demographic factors in this study, age, gender, housing and degree discipline, display any predictor qualities, as trends in scores are easier to identify within larger sample populations.

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Appendices

Appendix A

Information Sheet

PROJECT TITLE

An Investigation into the association between academic procrastination and sleep quality in students.

INVITATION

You are being asked to take part in a research study on levels of academic procrastination in students and their sleep quality. The aim of this study is to identify if there is a relationship between procrastination and sleep quality in students, controlling for demographic factors such as age, gender, housing and degree type. My name is Wiktoria Nowak, year 3 student BAH in Psychology at NCI. The research is supervised by NCI. This project has been approved by the Psychology Research Ethics Committee. This study is strictly for students in third level and higher-level education, over the age of 18.

WHAT WILL HAPPEN

In this study, you will be asked to answer questions based on academic procrastination and sleep quality. Demographic information questions will also be asked in regard to age, gender, housing and degree type, no identifiable information will be gathered. The later questions are from standardised scales used to measure academic procrastination and sleep quality. The results of these scales will be compared to investigate if there is a relationship present. The survey will take place in a google form document, all results will be kept anonymous.

TIME COMMITMENT

The study typically takes 10-15 minutes at most.

PARTICIPANTS' RIGHTS

You may decide to stop being a part of the research study at any time without explanation or penalty. You have the right to ask that any data you have supplied to that point be withdrawn/destroyed. You have the right to omit or refuse to answer or respond to any question that is asked of you as appropriate. You have the right to have your questions about the procedures answered (unless answering these questions would interfere with the study's outcome). If you have any questions as a result of reading this information sheet, you should ask the researcher before the study begins.

BENEFITS AND RISKS

There are no known benefits or risks for you in this study. Participation in this study involves completion of some standardised tests and measures of sleep quality and academic procrastination.

COST, REIMBURSEMENT AND COMPENSATION

Your participation in this study is voluntary.

CONFIDENTIALITY/ANONYMITY

The data we collect does not contain any personal information about you. No one will link the data you provided to you. The data gathered in this study will be used to complete a final year project which will be submitted as part of assessment in the BAHPSYCH programme at NCI.

FOR FURTHER INFORMATION

Wiktorja Nowak will be glad to answer your questions about this study at any time. You may contact her at x22472446@student.ncirl.ie.

If you want to find out about the final results of this study, you should contact the email above for further information on when the study will be completed.

Appendix B

Consent Form

- The method proposed for this research project has been approved in principle by the Departmental Ethics Committee, which means that the Committee does not have concerns about the procedure itself as detailed by the student. It is, however, the above-named student's responsibility to adhere to ethical guidelines in their dealings with participants and the collection and handling of data.
- If I have any concerns about participation, I understand that I may refuse to participate or withdraw at any stage by exiting my browser.
- I understand that once my participation has ended, that I cannot withdraw my data as it will be fully anonymised.
- I have been informed as to the general nature of the study and agree voluntarily to participate.
- All data from the study will be treated confidentially. The data from all participants will be compiled, analysed, and submitted in a report as part of the BAH of Psychology Programme Final Project.
- I understand that my data will be retained and managed in accordance with the NCI data retention policy, and that my anonymised data may be archived on an online data repository and may be used for secondary data analysis. No participants data will be identifiable at any point.
- I understand that data collected from this study may be used in future presentations and/or publications.
- At the conclusion of my participation, any questions or concerns I have will be fully addressed.
 - I Consent to participate in this study.

Appendix C

Debrief Sheet

Thank you for participating in this study, your time is greatly appreciated. This study is taking place to investigate if there is a relationship between academic procrastination and sleep quality.

For any queries, Wiktorja Nowak will be glad to answer your questions about this study at any time. You may contact her at x22472446@student.ncirl.ie. If you want to find out about the final results of this study, you should contact the email above for further information on when the study will be completed.

Should you have found any of the topics in this survey distressing, the following resources are available to you for support.

- Samaritans, Call [\(041\) 984 3888](tel:0419843888), [free anonymous call service, available 24/7](#).
- Text 50808, Free anonymous text service, available 24/7.

If you are interested in any of the scales used in this study, here are the full references:

Wu, F., & Fan, W. (2017). Pure Procrastination Scale--Academic adaptation [Dataset]. In *PsycTESTS Dataset*. <https://doi.org/10.1037/t64675-000>

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Appendix D

Pure Procrastination Scale- Academic Adaptation (PPS) (Wu & Fan, 2017)

Items

Delay

Even after I make a decision, I delay acting upon it.

I waste a lot of time on trivial matters before getting to any final decisions about my schoolwork.

In preparation for some academic deadlines, I often waste time by doing other things.

Even assignments that require little else except sitting down and doing them, I find that they seldom get done for days.

I often find myself performing schoolwork I had intended to do days before.

For my academic work, I am continually saying ‘I’ll do it tomorrow.’

I generally delay before starting readings or assignments that I have to do.

Missing deadlines

When it comes to school tasks, I find myself running out of time.

I don’t get assignments done on time.

I am not very good at meeting academic deadlines.

Putting off assignments until the last minute has cost me in the past.

Note. Items use a 5-point Likert-type scale format ranging from 1 (strongly disagree) to 5 (strongly agree).

Appendix E

Adolescent Sleep Quality Scale (Short et al., 2013)

1. In the last two weeks, how often have you had a good night's sleep?
2. Do you have difficulty falling asleep?
3. Do you have difficulty staying asleep?
4. How often do you experience restless sleep?
5. How worried/distressed are you about sleep at the moment?
6. Do you wake up feeling that your sleep has not been refreshing?
7. How happy/unhappy are you with current sleep pattern?
8. In the last two weeks, how often have you felt satisfied with your sleep?

Note: Questions answered on a 5-point Likert scale from 0 to 4, Very often to Very Rarely, Happy to Unhappy etc, higher scores indicating poorer sleep quality

Appendix F

Demographic Questions

How old are you?

Insert age in numbers

Gender

- Female
- Male
- Other: Prefer to self-describe

Living

- Living at home with parents/guardians
- Living away from home/ alone
- Living in Student Accommodation
- Other, please describe.

What type of student are you?

- Undergraduate
- Postgraduate

Discipline of Degree (In accordance to CSO)

- Arts and Humanities
- Social Sciences, Journalism and Information
- Business, Administration and Law
- Natural Sciences, Mathematics and Statistics
- Information and Communication Technologies
- Engineering, Manufacturing and Construction
- Agriculture, Forestry, Fisheries and Veterinary
- Health and Wellbeing
- Education
- Other (Please Specify)

Appendix G



National College of Ireland
Mayor Street, IFSC, Dublin 1, Ireland

Coláiste Náisiúnta na hÉireann
Sráid an Mhéara, IFSC
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Website: www.ncirl.ie

Date: 04th November 2024

Ref: Ethics Approval Number: 04112024x22472446

Proposal Title: *An Investigation into the association between academic procrastination and sleep quality in third level students.*

Applicant: Wiktoria Nowak

Dear Wiktoria,

Thank you for your application to the NCI Psychology Ethics Filter Committee, and for responding to clarification requests related to the application. I am pleased to inform you that the ethics committee has approved your application for your research project. Ethical approval will remain in place until the completion of your dissertation in part fulfilment of your BA Honours Degree in Psychology at NCI.

Please note that:

- Students are responsible for ensuring that their research is carried out in accordance with the information provided in their application.
- Students must abide by PSI ethics guidelines in completing their research.
- All procedures and materials should be approved by the supervisor prior to recruitment.
- Should substantial modifications to the research protocol be required at a later stage, a further amendment submission should be made.

Sincerely,



Dr Robert Fox

Chairperson, Psychology Ethics Filter Committee

Ethics Committee members: *Dr Robert Fox (representative on the NCI Research Ethics Subcommittee), Dr Michelle Kelly, Dr Amanda Kracen, Dr Conor Nolan, Dr Lynn Farrell, Dr Fearghal O'Brien, Dr David Mothersill, Dr Michele Kehoe, Dr Barry Coughlan, Dr Conor Thornberry, Dr Brendan Cullen, Cassandra Murphy, Eden Bryan.*

Appendix H



Hi everyone 🐶 as
you's probably know
I'm currently
conducting a study for
my final year project

I only need a few more
participants in order
to meet the minimum
sample size

If you have 5 mins to
spare I'd really
appreciate if you could
fill it out 🐶 it is for
students over 18 and
fully anonymous

[Survey link](#) 📄