Factors Influencing Academic Procrastination in College Students during the COVID-19

Pandemic.

Ruby Stafford

19391603

Supervisor: Dr. April Hargreaves

B.A. (Hons) in Psychology

National College of Ireland

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Name: ____Ruby Stafford_

Student Number: _____19391603_____

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Abstract

The present study aims to investigate the factors which influence academic procrastination in college students during the COVID-19 pandemic. Previous research into this topic suggests that gender differences do exist in academic procrastination, with the majority of research indicating that males tend to procrastinate their academic work more than females. Previous research has been attributed these differences to fear of failure in females, and desire to partake in risk-taking behaviours among males. Previous studies also indicate that age, social media addiction and academic self-efficacy are predictors of academic procrastination among college students. There is a gap in the available literature with regard to the relationship between Covid-19 related anxiety and academic procrastination, therefore the present study aimed to further understand the relationship between these variables. A total of 95 participants took part in the following research, which required participants to take part in four questionnaires which measured academic procrastination, social media addiction, Covid-19 related anxiety, and academic self-efficacy. The participants in this study were college students aged 18-25. A multiple regression analysis was conducted to test the ability of age, social media addiction, Covid-19 related anxiety, and academic self-efficacy to predict

academic procrastination, the results indicated that self-efficacy was the only significant predictor of academic procrastination. A Mann-Whitney U test was carried out to examine gender differences in procrastination, with results revealing that females are significantly more likely to procrastinate than males.

Table of Contents

Introduction

There are many reasons why students may find themselves procrastinating their academic responsibilities. The following study aims to investigate some of these reasons, mainly focusing on the impact of social media addiction, self-efficacy, gender and COVID-19 related anxiety on academic procrastination. This literature review will elucidate up to date research on procrastination and refer to the research questions.

Academic Procrastination

Procrastination can be described as a global phenomenon considering the amount of individuals affected by its negative consequences every day (Khan, Noor & Muneer, 2014). Investigating the factors which influence academic procrastination is of growing concern to researchers due to its association with negative mental health outcomes, poor performance with regard to academic work, as well as negative attitudes towards education (Chang, 2014). Research (Klingsieck et al., 2013) suggests that around 70% of college students have a tendency to procrastinate their academic responsibilities. While current college students may be inclined to procrastinate through the multitude of internet resources constantly available to them, it is important to note that older research (Ellis & Knaus, 1979) also estimated that the same percentage (70%) of college students engaged in procrastination behaviours. A general definition for procrastination does not exist as the characteristics vary from person to person (Steel, 2007). However, Al Shaibani describes academic procrastination as a delay in beginning or completing a due plan or task, with regard to academic responsibilities (Al Shaibani, 2020). Procrastination can be dangerous and harmful, according to Steel (2007). Procrastination can also be associated with "lack of self-control, lack of time management skills, and lack of work discipline" (Steel, 2007, p.10). The first serious discussions and analyses of academic procrastination emerged in the 1970's, in which academic procrastination was found to be linked to academic anxiety surrounding

exams in students (Wark, 1971). Earlier research in academic procrastination found a correlation between procrastinating academic tasks and depression and low self-esteem, with participants procrastinating due to feelings of anxiety and fear of failure (Solomon & Rothblum, 1984). Consistently, Sadler & Buley (1999), found that college students procrastinated their academic work due to anxiety, specifically test anxiety, and fear of negative evaluation (Sadler & Buley, 1999). A multitude of studies (Ahmadi & Zeinali, 2018; Akinci, 2021; Zacks & Hen, 2018) have since been carried out in an effort to investigate the reasons why students may procrastinate their academic responsibilities, with recent studies recognising social media and social networking as a possible predictor of academic procrastination in students (Ahmadi & Zeinali, 2018).

Grounded Theory

Schraw et al. (2007) proposed a grounded theory for academic procrastination based on college students procrastination data. They proposed that there are four instruments of procrastination; "fear of failure, task aversiveness, task avoidance and postponement" (Schraw et al., 2007, p.13) . Their goal was to construct a paradigm model of academic procrastination, which investigated these four instruments in terms of "construct and predictive validity" (Schraw et al., 2007, p. 13). However, it needs to be recognised that this research was conducted in 2007 at a time before instant access to social media and internet use and therefore does not mention either. A recent study (Zacks & Hen, 2018) outlines how our mental health and our environment can impact procrastination. It is mentioned in Zacks & Hen's research that the exact reasons behind individual reasoning for engaging in procrastination behaviours have not yet been brought to light, however, research can be carried out to uncover potential risk factors for procrastination. This study further supports this research project as it references the effect of procrastination on younger college students.

Gender Differences

Males have been found to procrastinate their academic responsibilities more than females (Khan et al., 2014; Tezer, 2020; Balkis & Duru, 2017, Özer, Demier & Ferrari, 2009).Khan et al., (2014) carried out a research study on gender differences in academic procrastination among college students aged 16-27. The results of this study found a significant difference between males and females, with male students being found to procrastinate more than female students. Similarly, Tezer (2020) found that during the COVID-19 pandemic, males were found to have higher levels of academic procrastination, as well as higher levels of internet usage. In addition to these studies, research carried out by Balkis & Duru (2017) on the role of gender differences in academic procrastination found males to be more likely to engage in procrastination. It must be noted that although Tezer's research supports this project, it was carried out outside of Europe therefore there may be slight differences. Both an Asian study (Lowinger at al., 2016) and an Irish study carried out by O'Sullivan (2020) on the role of self-regulation, internet use, anxiety and gender in academic procrastination, found no significant differences between males and females in academic procrastination levels or internet use levels. Therefore, it is imperative that further research is carried out in this area due to the contrasting results of previous studies in order to examine whether gender plays a significant role in the act of academic procrastination. The contrasting results of these studies leave it difficult to understand the ways in which academic procrastination negatively affects each gender. It is important that further research be carried out in this area in order to offer a possible solution for students to understand why they may fall into procrastinatory behaviour and how to improve their habits in relation to completing their academic responsibilities on time.

It is possible that males may procrastinate more due to being more susceptible to destructive and careless behaviour in relation to academic work, and their reckless instincts

with regard to academia (Balkis & Duru, 2017). This research (Balkis & Duru, 2017) also showed Academic procrastination in males may lead to poor academic satisfaction and poor life satisfaction overall. Males have been found to procrastinate as a method of rebelling against the rules, as well as being more inclined to partaking in risk-taking behaviours (Özer, Demier & Ferrari, 2009). The study carried out by Özer, Demir & Ferrari (2009) on gender differences in academic procrastination in Turkish students also found male participants to procrastinate more than females. These male participants admitted to procrastinating as a way of rebelling against rules, as well as being more inclined to risk-taking behaviours, while female participants reported that they procrastinate their academic tasks due to a fear of failure (Özer, Demier & Ferrari, 2009). Balkis & Duru (2017) suggest that male students should make a conscious effort to form a relationship with their available counsellor in college, in order to form a better insight into their own procrastinatory behaviour and how they can improve them (Balkis & Duru, 2017).

Age

Research (Balkis & Duru, 2017) found that younger students were more likely to procrastinate than older students. However, a study by Yong (2010) produced contrasting results, finding that older students procrastinated more. Neither of these studies provided any further insight into why this may be, or how it can be prevented or helped. Therefore, future research is necessary to provide further insight into these findings.

Social Media Addiction

Recent studies (Al Shaibani, 2020; Aznar-Diaz, et al., 2020) have found an increasing amount of individuals procrastinating their academic responsibilities due to their levels of regular social media usage, considering the growing popularity of social media usage. Social networking can predict academic procrastination in students due to the negative effects it can cause on sleep quality and increased stress about social situations and socialising (Ahmadi &

Zeinali, 2018). A study by He (2017), attempted to investigate the various reasons why students may procrastinate, and found a positive relationship between the amount of time participants spent on social media and academic procrastination. Social media addiction, although not considered an addiction disorder, significantly affects the daily lives of many individuals. Social media addiction refers to spending an unintentional amount of time on social media sites, such as Instagram, Facebook, WhatsApp, Snapchat and Twitter (Eksi, Turgut & Sevim, 2019). Social media addiction most commonly affects adolescents and college students (Aznar-Diaz et al., 2020). Individuals who are addicted to using social media sites are often unaware of the amount of time they are spending on these sites, and find themselves constantly craving social media usage. Despite its interference with their daily tasks, such as academic work, personal lives and business lives they are subconsciously addicted to using social media sites. This can have adverse effects on physical and mental health (Eksi, Turgut & Sevim, 2019). A study by Yang, Asbury & Griffiths (2018) on problematic smartphone use and its associations with academic procrastination found that problematic smartphone use positively correlated with academic procrastination. However, there are limitations to this study, as there are previous studies which suggest this is not the case. In particular, the theoretical academic procrastination framework as proposed by Schraw et al. (2007) found no correlation between academic procrastination and smartphone usage. However, the theoretical framework was proposed in 2007 and it is likely that participants did not all have access to social media sites or smartphones at the time of this research to the extent that participants would have today. For this reason it is important that further research is carried out, considering the vast availability of social media sites to students today. A study by Anierobi et al. (2021) investigated social media addiction as a predictor of academic procrastination in Nigerian students. The results found a high positive relationship between social media addiction and academic procrastination. There has been

contrasting results in this area of research (Nwosu et al., 2020), with some findings suggesting no significant relationship between social media addiction and academic procrastination (Nwosu et al., 2020).

Covid-19 Related Anxiety

As other studies investigated in this research found anxiety to be a major predictor of academic procrastination, it is possible that the ongoing Covid-19 pandemic has caused further anxiety in students, resulting in increased academic procrastination. Therefore, in order to provide a modern take on research surrounding academic procrastination levels among students, Covid-19 related anxiety must be considered. The Covid-19 virus was officially labelled as a pandemic by the World Health Organisation in March, 2020 (Ciotti et al., 2020). This instilled increased feelings of anxiety in those previously suffering with an anxiety disorder, as well as new feelings of anxiety for those who did not suffer from pre-existing mental health issues (Cullen, Gulati & Kelly, 2020; Pfefferbaum & North, 2020). The Covid-19 pandemic led to increased stress in students, which has been found to increase academic procrastination (Shokeen, 2018). Academic procrastination levels were found to rise in students during the pandemic, as well as their social media usage levels (Tezer, et al., 2020). This statement poses the idea that Covid-19 related anxiety may be a predictor of academic procrastination, as previous research (Farran, 2004) has found general anxiety to be a predictor of academic procrastination. Mental health issues associated with the Covid-19 pandemic are becoming increasingly recognised as a serious problem, and it has been suggested that students increase their own care for their mental health as well as increased availability of resources to deal with mental health issues, especially those induced by the Covid-19 pandemic (Peteet, 2020). Anxiety has been previously found to be associated with decreased motivation in students (Mohammed, 2016), as well as decreased academic self-efficacy (Alemany-Arrebola et al., 2020). Therefore, it is necessary that research is carried

out on the topic of Covid-19 related anxiety, to avoid the possible negative outcome it may have on student's mental health, as well as their academic life. Very limited previous research exists surrounding this possible matter of Covid-19 related anxiety and its effect on procrastination tendencies, thus creating a potential rationale for further research. Zacks & Hen (2018) recognises that procrastination can be accelerated by "external as well as internal conditions" (Zacks & Hen, 2018, p.118). Although this study was carried out before Covid-19 it recognises the influence of an external condition on academic performance. While external influences can effect an individual's likeliness to engage in academic procrastination, it is also important to investigate internal factors, such as self-efficacy.

Academic Self-Efficacy

Multiple studies (Farran, 2004; Klassen, Krawchuk & Rajani, 2008; Odaci, 2011) have found self-efficacy to be a predictor of academic procrastination in students. Early studies of self-efficacy (Bandura;1978, Bandura; 1994) define self-efficacy as ones belief in their own ability to produce an acceptable level of work (Bandura, 1994). Bandura introduced the theory of self-efficacy in his social cognitive theory, in which he proposed that an individual's self-efficacy levels can predict the level of effort in which they apply to tasks, as well as the level of persistency an individual is likely to apply when faced with adverse situations (McAuley, 1985). Therefore, many studies ranging from as early as 1992 (Ferrari, Parker & Ware) until present time (Svartdal et al., 2021) have found evidence to support this idea. For example, Ferrari, Parker & Ware (1992) carried out a study in which participants were required to complete measures of both academic procrastination and self-efficacy. The results of their analysis suggested that general self-efficacy scores predicted academic procrastination scores. Svartdal et al. (2021) performed a study on the role of academic self-efficacy on study habits and procrastination. The results of their study revealed that academic self-efficacy is necessary for students to obtain healthy and successful study habits and

therefore avoid engaging in procrastination habits (Svartdal et al., 2021). While the results of the previously mentioned studies point towards the conclusion that academic self-efficacy is necessary in order to avoid procrastination, both studies failed to mention potential ways in which students can improve the relationship between self-efficacy and academic procrastination. Self-efficacy and motivation levels have both been found to contribute to academic procrastination, with research finding that a strong relationship between self-efficacy and motivation can lead to decreased academic procrastination (Cerino, 2014).

The Present Study

The current research study aims to investigate the factors which influence academic procrastination in students attending third level education during the Covid-19 pandemic. Further research is necessary as the existing literature surrounding the topic is slightly lacking due to the recency of the Covid-19 pandemic, as well as contrasting results in the area. The studies presented thus far led to the following hypotheses; the current study hypothesises that gender, age, social media addiction and Covid-19 related anxiety will be predictors of academic procrastination, as well as hypothesising that higher levels of academic self-efficacy will predict lower levels of academic procrastination.

RQ1: Is gender a predictor of academic procrastination levels among college students during the COVID-19 pandemic?

H1: Males will score higher in academic procrastination scores than females.

RQ2: Is age a predictor of academic procrastination in students?

H2: Younger students will score higher in academic procrastination than older students.

RQ3: Is social media addiction a predictor of academic procrastination among college students during the COVID-19 pandemic?

RQ4: Are COVID-19 anxiety levels a predictor of academic procrastination levels among college students during the COVID-19 pandemic?

RQ5: Are academic self-efficacy levels a predictor of academic procrastination levels in college students during the COVID-19 pandemic.

H3: Social media addiction, Covid-19 related anxiety and academic self-efficacy will be predictors of academic procrastination in college students.

Methods

Participants

The sample size within the current research consisted of 95 participants (n = 95). G*Power: Statistical Power Analyses (Faul et al., 2009) was used to determine the sample size required for this research. The sample for this study consisted of 55 females (57.9%) and 40 males (42.1%). While the initial sample consisted of 95 participants, four participants' data were excluded from the study on the basis of not being a college student at the time of the study, subsequently, the sample size consisted of 91 participants (n = 91), consisting of 53 females (58.2%) and 38 males (41.8%). Participants ranged in age from 18-25, with the average age of participants being 21. The participants for this study were recruited using non-probability, convenience sampling. This was carried out through the researchers social media accounts. The social media sites Instagram, WhatsApp and Snapchat were used to collect data for this study. As this study was concerned with social media, using social media to collect the data ensured that the participants were members of at least one social media site. For this current research, eligibility criteria required participants to be over the age of 18 to participate, as this was in line with current ethical considerations, and under the age of 25, to ensure the data provided a typical sample of college students. Eligibility criteria also required participants to confirm that they are currently a student attending third level education, as this research is concerned with college students only, as well as being asked to confirm that they are a member of at least one social media site. Before taking part in this research, participants

were required to provide informed consent, by ticking a box provided in the questionnaire, this confirmed that they had read the consent form and consented to provide their data for the research.

Design

This study implemented a cross-sectional research design using a quantitative approach. A within-subjects design was used in order to examine all hypotheses. An online survey was employed to collect the data. It was decided that an online survey was the most practical method to adopt for the current research as it was accessible to large groups of people. There was one dependent, or criterion, variable; academic procrastination, and five independent, or predictor, variables social media addiction levels, COVID-19 related anxiety levels, self-efficacy levels , gender and age.

Measures

The survey for the current research was comprised of a short demographic section, as well as four separate standardised scales

Demographics

Before taking part in the survey, participants were asked to provide some simple demographic information. Participants were asked to provide their age (18-25), and their sex (male, female, and other), as part of the current research is concerned with examining gender differences and age differences in regard to the factors which influence academic procrastination in college students during the COVID-19 pandemic.

Pure Procrastination Scale – Academic Adaptation (PPS)

The Pure Procrastination Scale – Academic Adaptation; Cronbach Alpha in this study: .91 and .91, (PPS; Wu & Fan, 2017) . The PPS was used to assess the participants levels of academic procrastination. The participants were asked to answer the questions based on the last month. The PPS is a standardised questionnaire which consists of 11 questions

regarding the participants procrastination levels in terms of their academic responsibilities. A 5-point Likert type scale format is used for all 11 questions on the scale. The Likert scale used for this questionnaire ranged from 1-5, with 1 being strongly disagree, and 5 being strongly agree. The PPS is separated into two sub-scales that measured Delay (7 items) and Missing Deadlines (4 items). The Delay scale measured the extent to which participants put off their academic responsibilities, while the missing Deadlines scale measured participants levels of procrastination to the point of missing academic deadlines. The following is an example of an item on the Delay scale "I waste a lot of time on trivial matters before getting to any final decisions about my college work", while an example of an item on the Missing Deadlines scale is as follows "I am not very good at meeting academic deadlines". For this scale, question 9 and question 10 were reverse scored, as they were negatively worded. The maximum score is 55 and the minimum score is 11. Higher mean scores would indicate high levels of academic procrastination, while lower mean scores would indicate low levels of academic procrastination. The Cronbach's alpha for the PPS in this current research was (a = .91), which indicates high internal consistency. See Appendix I for further detail on the PPS.

The Social Media Addiction Scale (SMAS)

The Social Media Addiction Scale; Cronbach Alpha in this study: .79 and .79, (SMAS; Zivnuska et al., 2019). The SMAS was used in the current research to measure the amount of time the participants spend using social media sites. The participants were asked to answer the questions based on the last month. The SMAS is a standardised scale consisting of six questions. A 5-point Likert scale was used for this scale, with 1 being never, and 5 being always. An example of a question on the SMAS is as follows "How often in the last two weeks have you used social media so much that it had a negative impact on your studies/job?". Participants could score a maximum of 30 and a minimum of 5 on the SMAS,

with higher scores indicating high levels of social media addiction, and lower scores indicating low levels of social media addiction. The Cronbach's alpha for the SMAS in this current research was (a = .79), this indicates good internal consistency for this scale. See Appendix II for further detail on the SMAS.

The COVID-19 Pandemic Anxiety Scale (COVID-19 PAS-10)

The COVID-19 Pandemic Anxiety Scale; Cronbach Alpha in this study: .84 and .84, (COVID-19 PAS-10; Kumar et al., 2020). The Covid-19 PAS was used to measure the participants anxiety levels in relation to the COVID-19 pandemic. The participants were asked to answer the questions based on the last month. The COVID-19 PAS is standardised questionnaire consisting of ten questions. It is scored using a 4-point Likert scale, with 0 being did not apply to me at all, and 3 being applied to me very much or most of the time. The COVID-19 PAS consists of two sub-scales; Fear, consisting of 6 questions, and Somatic Concerns, consisting of 4 questions. The following is an example of a question on the Fear sub-scale "I become anxious after watching or hearing pandemic related news and updates", while an example of a question on the Somatic Concerns sub-scale is as follows "In recent times, I often feel fatigued and powerless". The participants could score a maximum of 30 and a minimum of 0 in this scale, with higher scores indicating high levels of COVID-19 related anxiety and lower scores indicating low levels of COVID-19 related anxiety. The Cronbach's alpha for the Covid-19 PAS in this current research was (a = .84), this indicates a high rate of internal consistency. See Appendix III for further detail on the Covid-19 PAS.

Academic Self-Efficacy Scale (ASES)

The Academic Self-Efficacy Scale; Cronbach Alpha in this study: .74 and .75, (ASES; Shank & Cotton, 2013). The ASES was used to assess the participants levels self-efficacy in relation to their academic work/achievements. The participants were asked to answer the questions on this scale based on the last month. The ASES is scored using a 3-

point Likert scale, with 1 being almost never, and 3 being almost always. The ASES consists of 6 questions, with an example of a question on the ASES being "I can figure out how to do the hardest college work". The participants can score a maximum of 18 and a minimum of 6 on the ASES, with higher scores indicating high levels of academic self-efficacy, and lower scores indicating low levels of academic self-efficacy. The Cronbach's alpha for the ASES in this current research was ($a = .74$ to $.75$), indicating good internal consistency. See Appendix IV for further detail on the ASES.

Procedure

An online survey was created using the platform Google Forms to collect the necessary data. The survey was shared with potential participants using the social media platforms 'Instagram', as well as being shared in multiple group chats on the messaging app 'WhatsApp', along with a brief description of the study and the eligibility criteria for participation. A link was provided for the participants to enter the survey. Prior to commencing the survey, participants were required to read the Participant Information Sheet (see Appendix V), which was presented to them at the beginning of the survey. The information sheet detailed what the aim of the research was, what would be expected of the participants, what the survey would entail, as well as the researchers name, association and contact details, and the supervisors name and contact details should they have any questions or enquiries regarding the study prior to taking part. The eligibility criteria were listed here again, and participants were asked to confirm that they were eligible for the survey before going any further. The participants were informed that any information they provided would be completely anonymous, and that participation was voluntary and they could withdraw from the study without penalty at any time before submitting the form.

The following page of the survey contained a Participant Consent Form (see Appendix VI). This contained further information regarding the study. At this point,

participants were asked to verify that they were over the age of 18, and to provide voluntary informed consent to take part in the study. After obtaining informed consent from the participants, a short questionnaire regarding demographic information was presented on the following page, in which participants were asked to provided their gender and their age. This was followed by The Pure Procrastination Scale – Academic Adaptation (see Appendix I), The Social Media Addiction Scale (see Appendix II), The COVID19 Pandemic Anxiety Scale (see Appendix III), and The Academic Self-Efficacy Scale (see Appendix IV). Prior to completion of the four scales, participants were provided with a Participant Debriefing Sheet (see Appendix VII), which once again provided them with relevant details about the survey, as well as relevant helpline websites to visit/ helpline phone numbers to call should they have found the nature of any of the questions in the survey distressing. The participants were then thanked for their participation.

Ethical Considerations

All data collected for the current research was in accordance with the National College of Ireland's ethical guidelines. Participants were informed of the risks and benefits of taking part in the research prior to beginning the survey. Participants were also informed that participation was voluntary, and asked to provide informed consent before beginning the survey. Participants were provided with information about what would happen with the results of the study A debriefing sheet was provided upon completion of the survey, which included appropriate helplines and websites to visit for any participants that may have found the nature of the study distressing. (See Appendices V and VII for further detail on the participant information sheet and the debriefing sheet).

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Results

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Descriptive Statistics

Descriptive statistics were carried out on all variables; gender, age, academic procrastination, social media addiction, Covid-19 related anxiety and self-efficacy. The data was taken from a sample of 95 participants (n = 95), this included 55 females and 40 males. The inclusion criteria for this study stated that participants were required to be attending third level education to be eligible to take part, however, there were four participants who were excluded from the study on the basis of stating that they were not a student at the time of taking part, therefore, the data obtained from those participants was deleted and subsequently it was not included in the statistical analyses for this research. Therefore (n = 91), including 53 females and 38 males. Descriptive statistics were carried out in order to obtain the Means (M), Median (MD), Standard Deviations (SD), and the Range for all variables. The descriptive statistics revealed that the average age of participants was 21. There are four continuous variables in this data, including academic procrastination scores, social media addiction scores, Covid-19 related anxiety scores, and academic self-efficacy scores. The breakdown of the results for the continuous variables are displayed below in Table 1.

Table 1

Table for descriptive statistics – continuous variables

Variable	*M* [95% CI]	*SD*	Range
Age	21	1.22	18-25
Academic Procrastination	40.16	9.1	20-55
Social Media Addiction	18.99	5.13	6-30
Covid-19 Anxiety	24.93	7.9	10-50
Academic Self-Efficacy	12.73	2.78	7-18

Inferential Statistics

Preliminary analyses were carried out to check for outliers and to ensure that there were no violations of the assumption of normality, linearity, and homoscedasticity. The results of the tests of normality show that academic procrastination, Covid-19 related anxiety, and self-efficacy were non-normally distributed, as well as social media addiction being non-normally distributed in the Kolmogorov-Smirnov test. Histograms, Q-Q plots, and boxplots were obtained for each variable. Upon inspection of the histograms, it can be seen that the scores are reasonably normally distributed, however, non-parametric signed rank tests were required. The results obtained from the histograms are presented in Appendix VIII. Since the data is non-normally distributed, and it was necessary to execute a non-parametric Spearman correlation for the values that were non-normally distributed, rather than a Pearson correlation coefficient.

A multiple regression analysis was carried out to investigate the ability of the predictor variables gender, age, social media addiction, Covid-19 related anxiety and academic self-efficacy to predict academic procrastination scores. The correlation between the dependent and independent variables was tested. Since no a priori hypotheses had been made to determine the order of entry of the predictor variables, a direct method was used for the multiple linear regression analysis. The results of the multiple regression analysis revealed that the correlation between the variables age, social media addiction, and Covid-19 anxiety and the dependent variable (academic procrastination) was non-statistically significant. Academic self-efficacy was the only significant predictor of academic procrastination (p < .0005). The independent variables in the model explained 25.3% of the variance of academic procrastination scores, ($F(5,89) = 6.04$, $p < .005$). Academic self-efficacy was the only variable to predict academic procrastination on a statistically significant level ($\beta = -.43$, $p = .000$). See Table 2 below for further detail on the multiple regression analysis.

Table 2

Table for standard multiple regression model predicting academic procrastination

Variable	R^2	B	SE	B	T	p
Model	.253		15.7		3.64	
Age		-.25	.69	-.033	-.36	.72
Social Media Addiction		.089	.2	.050	.45	.65
Covid-19 Anxiety		.061	.13	.053	.48	.63
Academic Self-Efficacy		-1.457	.33	-.429	-4.45	.000
					.	

An independent samples Mann-Whitney U test was conducted to compare gender differences with regard to academic procrastination levels. A non-parametric Mann-Whitney U test was chosen as the data for this sample was non-normally distributed. The results of the Mann-Whitney U test revealed no significant difference in the academic procrastination levels of males (*MD* = 37.5, n = 40) and females (*MD* = 43, n = 55), *U* = 1411.5, *z* = 2.35, *p* = 0.19, *r* = 0.24. The r value being 0.24 indicates a small effect size, according to Cohen (1988) criteria, however a slight difference in scores for males and females was detected.

To summarise the results, there is a significant correlation between academic self-efficacy and academic procrastination, and a non-significant correlation between age, social media addiction, and Covid-19 related anxiety and academic procrastination. There were no statistically significant differences between male and females levels of procrastination, however females were found to procrastinate more than males.

Discussion

The current research was concerned with examining predictors of academic procrastination, with regard to students attending college during the Covid-19 pandemic. Gender, age, social

media addiction, Covid-19 related anxiety, and academic self-efficacy were investigated as potential predictors of academic procrastination. Previous research has found gender differences in academic procrastination, with the majority of research indicating that males are more likely to procrastinate than females. Previous research has also found that younger students are more likely to procrastinate their academic responsibilities than males, and that students with higher levels of self-efficacy will have lower levels of academic procrastination. There was little previous research surrounding the topic of Covid-19 related anxiety and academic procrastination, therefore it was important that this research was conducted to provide further insight into this. Five hypotheses were formulated after analysing the available previous research surrounding these topics.

The first hypothesis stated that males would score higher in academic procrastination levels than females (H1). This hypothesis was investigated using a Mann-Whitney U test, the scores of which surprisingly indicated that females scored higher than males in terms of academic procrastination. The reason behind this may be the larger sample size of females compared to males in this current research.

For the second hypothesis (H2), which hypothesised that younger college students would score higher in academic procrastination than older participants, a multiple regression analysis was executed. The results of this analysis were insignificant, suggesting that age is not a predictor of academic procrastination. However, it can be seen from the results that older participants scored lower in academic procrastination, thus rejecting the null hypothesis and accepting the alternative hypothesis.

A multiple regression analysis was also conducted for the third hypothesis (H3), which stated that social media addiction, Covid-19 related anxiety, and academic self-efficacy would be predictors of academic procrastination. The results of the multiple regression analysis found that overall, the model was insignificant. However, academic self-

efficacy was found to have a statistically significant correlation with academic procrastination, meaning academic self-efficacy scores did predict academic procrastination scores. These results state that participants who scored higher in terms of academic self-efficacy, scored lower in terms of academic procrastination.

The findings of this research are consistent with regard to the self-efficacy results, as well as the finding that younger students were more likely to procrastinate than older students. These results provide support to the previous literature, which suggested that older students scored lower on procrastination scales (Balkis & Duru, 2017), and that higher reported self-efficacy scores would coincide with lower academic procrastination scores (Farran, 2004; Klassen, Krawchuk & Rajani, 2008; Odaci, 2011). The current findings are also however, inconsistent with previous research with regard to gender, which suggested that males procrastinate more than females (Khan et al., 2014; Tezer, 2020; Balkis & Duru, 2017, Özer, Demier & Ferrari, 2009). There are several possible explanations for this result, firstly, there were more female than male participants in the present research, and secondly, some authors have speculated that females may procrastinate more than males due to a stronger desire for perfection within their academic work, which can lead to anxiety surrounding the work due to a strive for perfection and flawlessness (Balkis & Duru, 2017). In contrast to earlier findings (Al Shaibani, 2020; Aznar-Diaz, et al., 2020), the current research detected no evidence of social media addiction being a predictor of academic procrastination. This rather contradictory result may be due to the mean age of participants being 21, as previous research (Gazi, Çetin & Caner, 2017) suggests that younger adults (18-20 year olds) are more likely to struggle with social media addiction. The current research provides further insight regarding the topic of Covid-19 related anxiety, as little previous research existed surrounding the topic, and there was no research to suggest that Covid-19 related anxiety would predict academic procrastination.

In summary, the findings of the current study contribute to previous research, which was lacking in information with regard to the Covid-19 pandemic, and also provide further support for the hypothesis that self-efficacy is a predictor of academic procrastination.

Implications

The findings of the present study make several contributions to the existing literature, for example, the present research further demonstrates the importance of conducting research on gender differences within academic procrastination, since the hypothesis that males would be more likely to procrastinate than females was rejected. Further research on gender differences in academic procrastination, in particular female academic procrastination may be useful to provide insight and guidance for females to avoid behaviours that may lead to academic procrastination, considering the negative outcomes such as poor academic performance and poor health (Kuftyak, 2022). The present study also indicates that further research may be necessary on the topic of Covid-19 related anxiety and academic procrastination, due to the gap in the previous literature surrounding this topic. Therefore, this research may serve as a base for future studies surrounding Covid-19 and the mental health implications associated with it.

It may be useful for future researchers to adopt a qualitative approach when carrying out research on academic procrastination, to further investigate possible predictors of AP, in order to provide students with useful strategies to avoid engaging in procrastinatory behaviours. This current research provides practical implications in the area of academic self-efficacy, considering that the results indicated a significant relationship between academic procrastination and academic self-efficacy, indicating that higher levels of self-efficacy are associated with lower levels of procrastination. Considering the research surrounding the positive outcomes associated with high levels of self-efficacy (Svartdal et al., 2021), this research further demonstrates the importance of helping students to increase their perceived

academic self-efficacy, in order to help those struggling with negative effects of procrastination. Further research in this field with a greater focus on academic self-efficacy would be a great help in helping students to reduce their procrastinatory behaviours and in turn, improve their satisfaction with academic life, and improve their health overall.

Strengths and Limitations

Finally, a number of limitations need to be considered. First, a possible limitation of the current research is that there were more female participants than males. It is possible that this accounted for the significant difference between males and females academic procrastination scores, and therefore, skewed the results in a specific direction. Further research may benefit from using an equal sample size in order to provide a more reliable result in the area of gender differences in academic procrastination.

Second, it is possible that this research would have benefitted from the use of a self-report scale in order to receive a direct report from participants regarding their reasons for procrastination. This would have helped to gain insight into the reasons why males and female participants differed in their procrastination scores, as the current study was unable to analyse these variables.

Third, another possible limitation is that it is possible that students felt less anxiety surrounding the Covid-19 pandemic at the time of taking part in the research than they may have a year ago. This may have had an effect on the result regarding the effect of Covid-19 related anxiety on academic procrastination.

A strength of this study is that it provided further insight into the possible effect the Covid-19 pandemic may have on students behaviours. To the researchers knowledge, there is a lack of previous research on the anxiety induced by the pandemic and it's causal effect on academic life.

Conclusion

In conclusion, this research has given an account of a few possible reasons for academic procrastination. The present research found that females are significantly more likely to procrastinate than males. The present research also found that younger students are more likely to procrastinate, however, not at a statistically significant level, and that Covid-19 related anxiety does not predict academic procrastination. Surprisingly, , social media addiction was also not found to predict academic procrastination, contrary to expectations based on previous findings. The present study indicated a strong relationship between self-efficacy and academic procrastination. Prior studies have noted the importance of self-efficacy in minimizing academic procrastination behaviours, therefore, this current research adds to previous research on this topic. Further research needs to be undertaken to gain a deeper insight into the reasons why students procrastinate their academic responsibilities, in order to provide a strategy to minimise procrastination.

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Appendices

Appendix I

Pure Procrastination Scale--Academic Adaptation PPS

Delay

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

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

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

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

5. I often find myself performing college work I had intended to do days before.

6. For my academic work, I am continually saying 'I'll do it tomorrow.'

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

   Missing deadlines

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

9. I don't get assignments done on time.

10. I am not very good at meeting academic deadlines.

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

Scoring

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

Appendix II

Social Media Addiction Scale

Items

How often during the last three months have you…

1. Felt an urge to use social media more and more?

2. Spent a lot of time thinking about social media or planned your use of social media?

3. Tried to cut down on the use of social media without success?

4. Used social media so much that it has a negative impact on your job/studies?

5. Used social media in order to forget about personal problems?

6. Became restless of troubled if you have been prohibited from using social media?

Scoring

All items are rated on a 1 ("never") to 5 ("always") scale.

Appendix III

COVID-19 Pandemic Anxiety Scale (COVID - 19 PAS -10)

Instructions: Please read the statements carefully and select the most suitable option that applies to you since the pandemic (coronavirus/COVID-19) started spreading in the country:

0- 01 - 02 - 03 -

Did not apply to me at all

Applied to me to some degree, or some of the time

Applied to me to a considerable degree or a good part of the time Applied to me very much or most of the time

1. I become anxious after watching or hearing pandemic (Coronavirus) related news and updates.

2. I am scared of suffering a painful death due to the pandemic (COVID-19).

3. I am afraid to go to the market for buying essentials because I think I'll contact the disease (coronavirus).

4. Lockdowns produce a sense of fear in me.

5. I have become fearful of interacting with strangers.

6. If I notice an abnormality in my body, I worry it might be a symptom of the pandemic disease (COVID-19).

7. In recent times, I often feel fatigued and powerless.

8. Due to heightened tension, I have been making a lot of silly mistakes.

9. Often my arms and legs feel heavy.

10. I often feel a sense of breathlessness

Scoring

The total score on the scale can be obtained by summing all the scores obtained on the 10 items. The scale consists of two factors namely 'Fear and Somatic Concerns'. Items 1 to 6 measure 'Fear' and item number 7 to 10 measure Somatic Concerns'. Higher scores on the scale indicate higher COVID-19 anxiety. Maximum score on the scale can be 30 and minimum 0.

Appendix IV

Academic Self-Efficacy Scale (ASES)

Items

How often you can do the following things?

1. Concentrate on college subjects

2. Do a good job on all my classwork if I have enough time

3. Learn the class material, even if it is hard

4. Figure out how to do the hardest classwork

5. Remember things from class and books

6. Motivate myself to do college work

Scoring

The response options were almost never (coded 1), sometimes (coded 2), and almost always (coded 3).

Appendix V

Participant Information Sheet

You are being invited to take part in a research study for my final year project. Before deciding whether to take part, please take the time to read this document, which explains why the research is being done and what it would involve for you. If you have any questions about the information provided, please do not hesitate to contact me using the details at the end of this sheet.

What is this study about?

My name is Ruby Stafford and I am a final year student in the BA in Psychology programme at National College of Ireland. As part of our degree we must carry out an independent

research project. The overall aim of my project is to examine the factors influencing academic procrastination in college students attending college during the COVID-19 pandemic. This project is being supervised by Dr. April Hargreaves.

What will taking part in the study involve?

If you decide to take part in this research, you will be asked to take part in an online questionnaire, consisting of a series of very short scales in relation to your social media usage, COVID-19 related anxiety, your academic procrastination behaviours, and your perceived academic self-efficacy, for example, participants will be asked to rate how well statements such as "I am not very good at meeting academic deadlines" and "I become anxious when watching or hearing pandemic (Coronavirus) related news and updates" apply to them, or rate how often in the last three months they have felt an urge to use social media more. The scales contain brief rating scoring, for example rating how often you do things in relation to social media usage, procrastination behaviours, and self-efficacy. As well as rating which option most applies to you regarding COVID-19 related anxiety. You will not be put at any ethical risk while taking part in this study, however you will have the option to remove yourself from the study at any time before you submit the form, in the unlikely event that the material becomes distressing for you. You are required to answer all questions in the survey.

Who can take part?

You can take part in this study if you are aged 18-25 and are currently a student attending college during the COVID-19 pandemic. You cannot take part in this study if you are under the age of 18, over the age of 25, or if you are not currently a student.

Do I have to take part?

Participation in this study is completely voluntary and you have the right to refuse to participate, a decision not to take part will have no consequences for you. If you do decide to take part, you may decide to withdraw from the research study at any time before submitting the form, without explanation. You have the right to not submit the form if you change your mind while taking part in the study. Participants are asked to answer every question in the survey, and if doing so causes the participant to become uncomfortable, they are asked to withdraw from the study. Once you have submitted your form, it will not be possible to withdraw your data from the study, because the questionnaire is anonymous and individual responses cannot be identified. 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. This questionnaire includes items asking about your social media usage, academic procrastination levels, self-efficacy levels, and COVID-19 related anxiety levels. There is a small risk that these questions may cause some individuals upset or distress. If you feel that these questions may cause you to experience an undue level of distress, you should not take part in the study.

What are the possible risks and benefits of taking part?

There are no direct benefits to you for taking part in this research. However, the information gathered will contribute to research that helps us to understand the relationship between regular social media usage and academic procrastination levels of students during the COVID-19 pandemic.

There is a small risk that some of the questions contained within this survey may cause minor distress for some participants. If you experience this, you are free to discontinue participation and exit the questionnaire.

Will taking part be confidential and what will happen to my data?

The questionnaire is anonymous, it is not possible to identify a participant based on their responses to the questionnaire. All data collected for the study will be treated in the strictest confidence. Only the researcher and academic supervisor will have access to the data collected. Responses to the questionnaire will be stored securely in a password protected/encrypted file on the researcher's computer. Data will be retained for 5 years in accordance with the NCI data retention policy.

What will happen to the results of the study?

The results of this study will be presented in my final year dissertation, which will be submitted to National College of Ireland.

Who should you contact for further information?

For further information, you can contact myself, Ruby Stafford, X19391603@student.ncirl.ie, or the supervisor of this research, Dr. April Hargreaves, April.Hargreaves@ncirl.ie

Appendix VI

Participant Consent Form

In agreeing to participate in this research I understand the following:

- I am 18-25 years old.

- I am a student currently attending college during the COVID-19 pandemic.

- If I have any concerns about participation, I understand that I may refuse to participate or withdraw at any stage before submitting the form.

- This research is being conducted by Ruby Stafford, an undergraduate student at the School of Business, National College of Ireland.

- I have been informed as to the general nature of the study and agree voluntarily to participate.

- 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.

- All data from the study will be treated confidentially. The data from all participants will be compiled, analysed, and submitted in a report to the Psychology Department in the School of Business. No participant's data will be identified by name at any stage of the data analysis or in the final report.

<div align="center">Appendix VII</div>

Debriefing Sheet

Thank you for taking part in this research, your participation is greatly appreciated.

 Based on previous research, this study expects that students who have higher levels of academic procrastination, may have higher levels of social media addiction, COVID-19 related anxiety, and lower levels of academic self-efficacy. Previous research suggests that male students have higher levels of academic procrastination levels. Therefore, it is expected that higher academic procrastination levels will be found in male participants. Of course, I will need to conduct statistical analysis in order to find out if expectations match reality!

Support Services

If you found yourself becoming distressed due to the nature of the questions in this study, there are a number of resources you can turn to for help:

1. the HSE website for advice about counselling and support (www2.hse.ie)

2. miming.org for those directly affected by COVID-19, and for information about low self-efficacy.

3. for free 24/7 support, text HELLO to 50808

4. spinout.ie for information about procrastination and social media addiction.
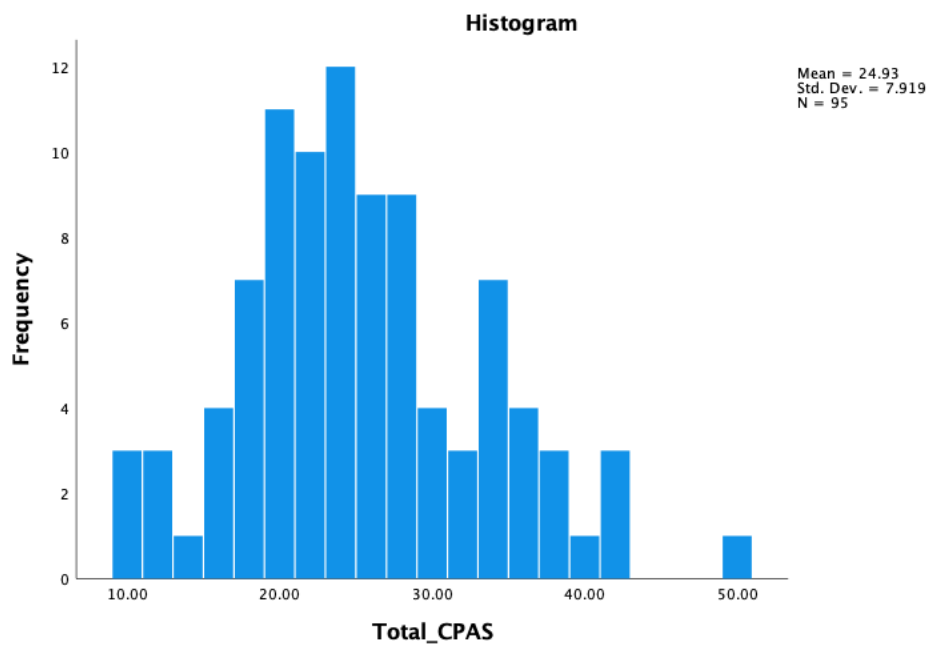
Appendix VIII

Histogram for academic procrastination
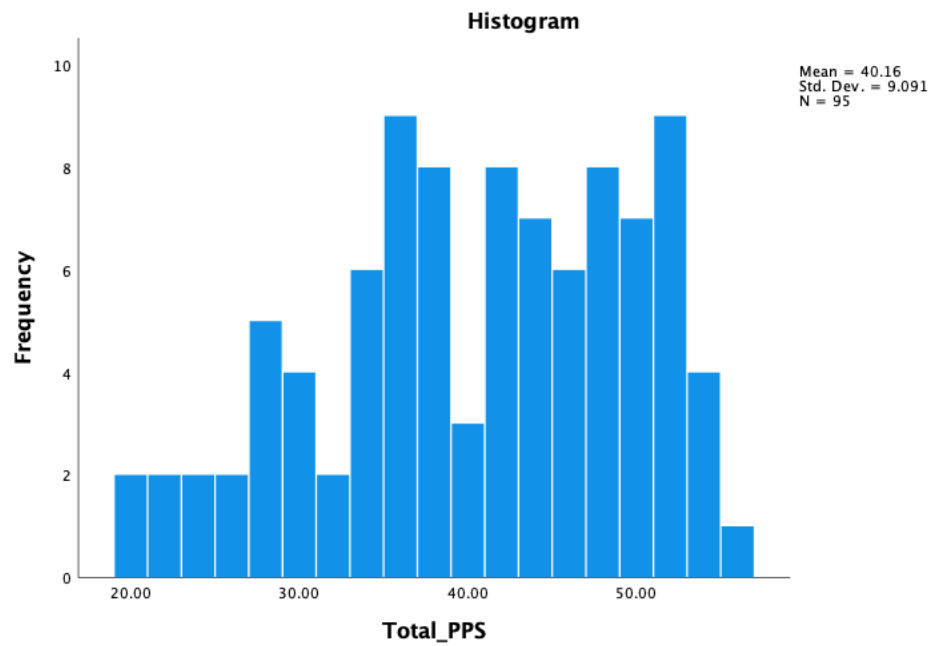
Histogram for social media addiction
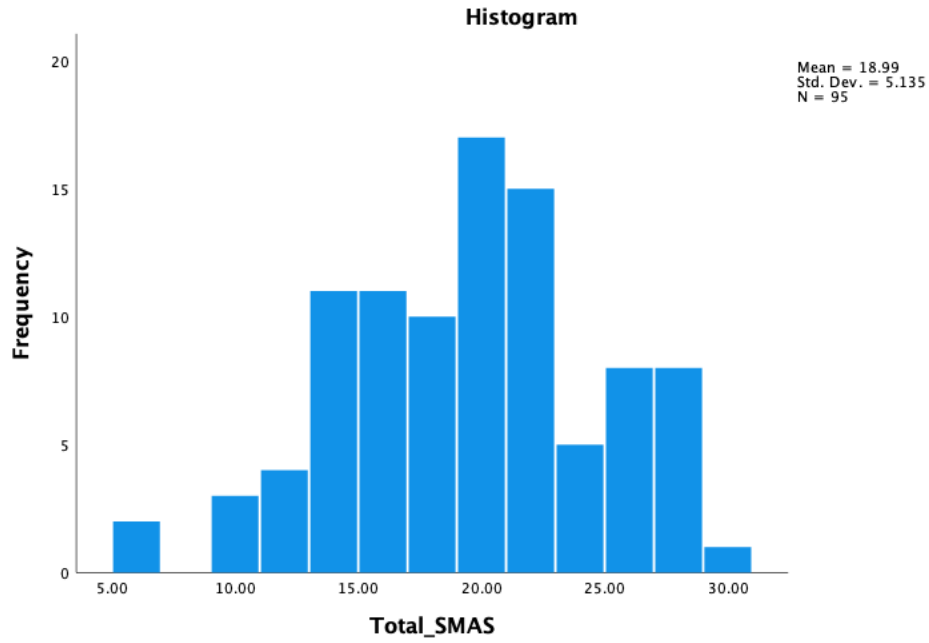
Histogram for COVID-19 anxiety

Histogram for academic self-efficacy

Histogram

Mean = 12.73
Std. Dev. = 2.679
N = 95