From “Just One More Scroll” to “Just One More Semester”: Exploring the Relationship Between Social Media Addiction, Academic Procrastination, and GPA in College Students

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Dedication

Ali and Rain, thank you for being my steady source of guidance, strength, and encouragement. Your patience, support, and belief in me have helped me through every stage of this project and my education. This work belongs to you as much as it does to me. **YOU ARE THE SUN!!**

Mom, I love you.

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Table of Contents

List of Figures

List of Tables

List of Abbreviations

ANOVA – Analysis of Variance

APS-S – Academic Procrastination Scale – Short Form

BSMAS – Bergen Social Media Addiction Scale

95% CI – 95% Confidence Interval

df - degree of freedom

ERP – Event-Related Potential

F – F statistic (ANOVA / model utility test)

GAD-7 – Generalized Anxiety Disorder–7

Cum. GPA – Cumulative Grade Point Average

M – Mean

MLR – Multiple Linear Regression

N – Sample size

p – p value (probability value)

r – Pearson's correlation coefficient

R – Multiple correlation coefficient

R^2 – Coefficient of Determination

SD – Standard Deviation

SE – Standard Error

SEM – Standard Error of the Mean

t – t statistic (t test)

Abstract

College students frequently use social media, and problematic use has been linked to poorer academic performance, higher anxiety, and lower GPA. Less is known about how social media addiction relates to academic procrastination, anxiety, and GPA, or whether these patterns differ by sex. This study tested these associations and examined potential sex differences in a sample of college students. Eighty‑four traditional‑age undergraduates who reported regular social media use and identified as male or female completed the Academic Procrastination Scale–Short Form (APS‑S), Bergen Social Media Addiction Scale (BSMAS), Generalized Anxiety Disorder‑7 (GAD‑7) scale, and brief academic performance questions. Pearson correlations assessed bivariate relationships, and multiple linear regressions tested main effects and sex interactions. Procrastination was positively associated with both anxiety and social media addiction and was modestly but significantly negatively associated with GPA. Social media addiction was positively related to anxiety and procrastination, but was not significantly related to GPA and did not uniquely predict GPA or anxiety in regression models. No sex interactions were significant. Overall, procrastination was more consistently related to GPA than social media addiction. In contrast, social media addiction was more clearly associated with anxiety than with grades. These findings highlight academic procrastination as a stronger predictor of GPA than social media addiction, suggesting that social media addiction is more closely tied to anxiety than to grades.

Chapter 1: Background & Related Works

1.1 Introduction

This study explores how addiction-like social media habits are linked to college students' academic procrastination, anxiety, and performance. It focuses on problematic, hard-to-control social media use rather than just on the amount of time spent online. The research examines whether students with more addiction-like behaviors, such as compulsive checking behavior, also experience more procrastination, greater anxiety, and worse academic results, such as lower GPA, feeling behind in coursework, and submitting assignments late. Additionally, it investigates whether these relationships vary between male and female students.

Although social media use is widespread, it remains unclear how problematic and persistent social media habits relate to key academic outcomes, such as delaying schoolwork or underperforming on assignments, courses, or exams. If this connection is confirmed, it would suggest that students with more addictive social media use are also more prone to postponing assignments and relying on last-minute efforts.

Additionally, this study examines whether students with lower academic performance (e.g., lower GPA) report higher levels of social media addiction and more frequent compulsive phone and social media application checking. Overall, the goal is to examine how social media addiction, compulsive checking, academic procrastination, and academic performance are correlated in a college population.

1.2 Social Media Addiction and Problematic Use

Social media is a common part of daily life for many people, but for some users, it can become hard to control and cause problems. When this happens, researchers often refer to it as social media addiction or problematic social media use. This kind of use is generally seen as a

type of behavioral addiction because it does not involve a substance like medication or alcohol, but it still involves strong urges or needs, loss of control, and negative effects in important areas of life (Amirthalingam & Khera, 2024; Montag et al., 2024). For instance, people might feel a constant urge to check social media, spend a lot of time on it, and keep using it even when they know it affects their academic performance, sleep, or relationships. Past research with children, adolescents, and young adults shows that problematic social media use is quite common and is linked to issues with mood, anxiety, and daily functioning (Montag et al., 2024; Shannon et al., 2022). Shannon and colleagues (2022), in their review of 18 studies with 9,269 participants, found three correlations of low to moderate strength using Pearson's correlations between social media use and depression (r = .273), anxiety (r = .348), and stress (r = .313). These findings indicate that increased problematic social media use is linked to poorer mental health in adolescents and young adults.

Researchers have described social media addiction by identifying traits similar to those seen in other types of addiction. These traits include salience, which means persistent preoccupation with social media and viewing it as the most important activity; tolerance, indicating the growing need to use social media more over time to get the same effect; mood modification, or using social media to improve negative emotions; withdrawal, marked by feelings of restlessness, discomfort, or distress when unable to access social media; conflict, involving difficulties in academic, work, or personal relationships due to social media use; and relapse, which is returning to excessive use after trying to cut down (Amirthalingam & Khera, 2024). When several of these traits occur together and cause significant problems, social media use may be considered addictive or problematic rather than just excessive.

Shannon et al. (2022) argued that problematic social media use may be more important to

study than simply the amount of time spent on social media because addiction-like symptoms such as withdrawal, conflict, and loss of control are more strongly linked to negative mental health outcomes. At the same time, some writers have warned that it is easy to overuse the word "addiction" when talking about social media. Anderson and Wood (2025) argue that many people overestimate how many users are truly addicted, which can lead to confusion and unnecessary concern. They stress that high usage alone does not always mean addiction; instead, addiction should involve loss of control and clear harm to someone's life. In light of concerns that high social media use is sometimes labeled "addiction" without clear evidence of harm.

To study social media addiction consistently, researchers have developed standardized questionnaires that assess these thoughts and behaviors. One of the most widely used tools is the Bergen Social Media Addiction Scale (BSMAS). This scale asks individuals to rate how often they experience six core addiction-like symptoms related to social media: salience, tolerance, mood modification, withdrawal, conflict, and relapse (Zarate et al., 2023). For example, items ask whether the person spends a lot of time thinking about social media, uses it to forget personal problems, or continues to use it even when it harms school or other activities. Recent psychometric research using factor analysis and item response theory has demonstrated that the BSMAS is a reliable and valid measure of problematic social media use among adolescents and young adults (Zarate et al., 2023). Other tools, such as the Social Networking Addiction Scale, have also been created to capture similar behavioral patterns on social networking sites (Shahnawaz & Rehman, 2020).

1.3 Problematic Smartphone Use, Sleep, and Emotional Well-Being

University students are among the top users of smartphones and social media, frequently checking their phones throughout the day, including during classes, lunch breaks, and while

studying (Amez & Baert, 2020; Shannon et al., 2022). Research shows that excessive or problematic social media use is linked to attention issues, increased anxiety, poor time management, and possibly sleep disturbances (Amirthalingam & Khera, 2024; Arness & Ollis, 2022). While there is extensive research on social media use overall, few studies have explored the connections between social media addiction, compulsive checking, academic procrastination, and academic performance, especially among college students. Students who are addicted to social media are prone to frequent checking, which may undermine their academic performance.

Beyond attentional and academic outcomes, problematic smartphone and social media use have been linked to broader indicators of mental health and sleep disruption. Demirci et al. (2015) found that higher severity of smartphone use among university students was associated with poorer sleep quality and higher levels of depression and anxiety. Similarly, systematic reviews by Elhai et al. (2017) and Keles et al. (2020) concluded that problematic smartphone and social media use show small to moderate positive associations with symptoms of depression, anxiety, and psychological distress in adolescents and young adults. These findings suggest that heavy or dysregulated smartphone and social media use may be part of a broader pattern of emotional dysregulation and impaired self-care (e.g., disrupted sleep), which, in turn, could indirectly affect students' capacity to manage academic demands. In the present study, these broader mental health concerns are examined more narrowly through self-reported anxiety symptoms on the GAD-7, allowing us to test whether higher levels of addiction-like social media use are associated with greater anxiety in a college sample.

In one study, Kim et al. (2016) found that when participants received smartphone push notifications. Their attention and performance were disrupted, especially among those who reported high levels of smartphone overuse. Understanding push notifications is crucial because

they may be a primary trigger of compulsive checking behavior. In their event-related potential (ERP) study, Kim et al. (2016) showed that receiving push notifications during a cognitive task made it harder for participants to stay focused, particularly for heavy smartphone users. These findings suggest that constant phone alerts can make it more difficult for students to concentrate, potentially contributing to compulsive checking and academic difficulties.

1.4 Social Media Addiction and Academic Procrastination

Academic procrastination is generally defined as the voluntary delay of important academic tasks, such as starting assignments, preparing for exams, or completing readings, even when students are aware that such delays may result in negative outcomes (McCloskey, 2011; McCloskey, 2023). College students who procrastinate often report cramming the night before tests, submitting work just before the deadline, and delaying studying until the end of the semester, rather than managing their time effectively throughout the course. From a broader theoretical standpoint, procrastination is viewed as a self‑regulation issue that reflects difficulties in resisting tempting alternatives, managing negative emotions, and maintaining goal‑oriented effort over time.

Empirical research has started to explore these patterns more directly by evaluating both problematic social media or smartphone use and procrastination among student samples. Studies involving college and university students generally show that higher levels of problematic or addictive technology use are positively linked to increased procrastination and related self-regulation issues. For example, Przepiorka, Blachnio, and Diaz‑Morales (2016) found that problematic Facebook use was positively associated with procrastination among university students, suggesting that excessive engagement with social networking sites may delay the completion of important tasks. Likewise, Rozgonjuk and Elhai (2019) reported that problematic

smartphone use was significantly connected to higher procrastination scores in undergraduates, even after controlling for self-control and anxiety. Collectively, these results suggest that problematic social media and smartphone use may be strongly associated with a tendency to delay academic tasks.

1.5 Social Media Use, Academic Performance, and Task Outcomes

In modern college settings, social media platforms and smartphone apps constantly offer quick, low-effort alternatives to academic work that are immediately rewarding. Previous research has shown that problematic or frequent use of social media and smartphones is linked to attention issues, time-management struggles, and frequent phone-checking behaviors (Amez & Baert, 2020; Arness & Ollis, 2022; Oulasvirta et al., 2012). For instance, Amez and Baert (2020) reviewed studies connecting heavy smartphone use to lower academic achievement, while Arness and Ollis (2022) found that problematic social media use was associated with attention dysregulation and strong motives to use social media for distraction. These results suggest that students with stronger urges to check social media and who use it habitually throughout the day may find it especially hard to stay focused on schoolwork and to start or maintain effort on challenging tasks. In this way, social media can serve as a convenient form of academic avoidance: when students feel bored, stressed, or overwhelmed by assignments, opening social media lets them temporarily escape the demands of their coursework.

College students frequently use smartphones and social media throughout the day, often in ways that overlap with their academic activities. For example, Lepp, Barkley, and Karpinski (2014) found that undergraduates reported using their cell phones for several hours each day across various contexts, including during class and while studying, with heavy use being common rather than rare. They also found that higher daily cell phone use was associated with

lower self-reported GPA among college students. Junco (2012) similarly reported that students engage in Facebook activities such as chatting, posting updates, and browsing friends' content multiple times daily, even when they are supposed to be working on coursework. Kirschner and Karpinski (2010) reported that Facebook users generally had lower GPAs and studied fewer hours per week than non-users. In a study by Amez and Baert (2020), the authors concluded that numerous empirical studies report negative associations between heavy smartphone use and measures such as GPA, study hours, and exam scores. However, the effect sizes are usually small to moderate. These findings suggest that for many college students, social media and smartphone use are integrated into daily routines and are easily accessible during lectures, study sessions, and homework. Academic tasks must compete with ongoing digital communication. When students spend a lot of time and attention on phones and social media, they may have fewer cognitive and time resources available for consistent academic work, which can lead to lower grades and a greater likelihood of being behind in their coursework. There is a possibility that students' phone use can constitute multitasking, which can distract them academically.

Research on multitasking shows that social media use can negatively affect academic outcomes day to day. Junco and Cotten (2012) found that using Facebook and texting during class and studying was associated with lower GPAs, suggesting that dividing attention between coursework and digital communication hampers learning. In an observational study of media-induced task switching, Rosen, Carrier, and Cheever (2013) asked students to study for 15 minutes with access to Facebook and texting; those who checked their phones often took longer and scored lower on a later test than students who stayed focused. Additional research indicates that frequent smartphone notifications can increase inattention and disrupt cognitive control (Kim et al., 2016; Kushlev et al., 2016). Overall, these findings indicate that social media and

smartphone use may negatively impact academic performance by encouraging multitasking, reducing sustained attention, and increasing frequent task switching, thereby lowering the quality and efficiency of academic work. In this study, these concepts are examined indirectly by linking addiction-like social media use (BSMAS scores) with students' self-reported academic performance, including GPA range, satisfaction with recent progress, perceived delays in coursework, and how often students submit assignments on time.

Notably, much of this research has conceptualized technology use in terms of frequency or duration (e.g., daily hours of smartphone or Facebook use) rather than addiction-like symptoms such as withdrawal, conflict, or loss of control. As Shannon et al. (2022) and others have argued, these symptom-based indicators may be more directly tied to negative outcomes than raw usage time alone. By focusing on BSMAS scores as a measure of problematic, difficult-to-control social media use, the present study extends prior work by asking whether addiction-like use is specifically related to procrastination, anxiety, and academic performance in college students.

1.6 Gender Differences in Problematic Social Media Use

Although overall rates of problematic smartphone or social media use are often similar for male and female students, several studies suggest that the correlates and patterns of use may differ by gender. In a large sample of Chinese medical undergraduates, Chen et al. (2017) found that approximately one-third of students met criteria for smartphone addiction. That prevalence did not significantly differ between males (30.3%) and females (29.3%); however, the factors associated with addiction varied by gender. Among male students, smartphone addiction was predicted by playing game applications, anxiety, and poor sleep quality. In contrast, among female students, smartphone addiction was predicted by the use of multimedia applications,

social networking services, depression, anxiety, and poor sleep quality (Chen et al., 2017). Based on these findings, Chen et al. (2017) argued that gender-targeted prevention and intervention strategies may be warranted.

These results suggest that even when overall levels of problematic smartphone use are comparable, the psychological and behavioral contexts surrounding it can differ between males and females. For example, female students' addictive use appears more closely linked to social and multimedia activities and to internalizing symptoms such as depression. In contrast, male students' addictive use is more closely tied to gaming and anxiety (Chen et al., 2017). Because social media platforms are central to many activities implicated in problematic use, particularly social networking and multimedia consumption, similar gendered patterns may emerge for social media–specific addiction-like behaviors. Accordingly, associations between social media addiction-like use and academic or emotional outcomes (e.g., procrastination, anxiety, or academic performance) may vary by gender, with certain negative consequences potentially more pronounced for either male or female students.

1.7 Relevance to the Present Study

The literature reviewed above suggests that problematic social media and smartphone use is linked to higher depression, anxiety, and stress, as well as attentional problems and time-management difficulties, and that academic procrastination is generally associated with lower academic performance. Recent work also indicates that although overall levels of problematic smartphone use may be similar for male and female students, the correlates and patterns of use can differ by gender (Chen et al., 2017). Together, these findings raise an important question: when social media use displays addiction-like features, is it meaningfully

related to students' academic procrastination, anxiety, and performance, and do these relationships differ by sex?

Although many studies have documented associations between social media or smartphone use and mental health or academic performance, several important gaps remain. First, much of the existing research relies on simple measures of time spent online rather than validated indicators of addiction-like symptoms, which may be more directly linked to negative outcomes (Shannon et al., 2022; Zarate et al., 2023). Second, relatively few studies have examined social media addiction, academic procrastination, anxiety, and specific academic performance measures (such as GPA, feeling behind in coursework, or completing assignments on time) simultaneously within a single college sample. Third, as highlighted by Chen et al. (2017), potential sex differences in the psychological and behavioral contexts of problematic smartphone use are emerging. Still, it remains unclear whether associations between social media addiction-like behaviors and academic or emotional outcomes differ by sex. Addressing these gaps can help clarify whether addiction-like social media use is genuinely harmful in academic settings and for which groups these effects are most pronounced.

The main goal of this study is to examine how social media addiction, academic procrastination, anxiety, and academic performance are related among college students. Social media addiction is measured using the Bergen Social Media Addiction Scale (BSMAS), academic procrastination with the Academic Procrastination Scale – Short Form (APS-S), and anxiety symptoms with the Generalized Anxiety Disorder-7 (GAD-7). Academic performance is assessed using brief academic performance questions that include cumulative GPA and students' perceptions of their recent academic performance (e.g., feeling behind in coursework, completing assignments on time, and satisfaction with their academic results). A secondary goal

is to explore whether these relationships differ between male and female students, providing initial evidence about possible sex-specific patterns linking social media addiction, procrastination, anxiety, and academic outcomes.

Based on the reviewed literature, the study tests four main hypotheses. Hypothesis 1 focuses on academic procrastination and GPA. Prior work indicates that higher procrastination is typically associated with lower academic performance (Steel, 2007; McCloskey, 2011, 2023). Accordingly, I predicted that higher academic procrastination (higher APS-S scores; more late or last-minute assignments) would be associated with lower GPA. Given limited and mixed evidence regarding sex differences in these associations, I examined whether the procrastination–GPA relationship differed by sex, but treated this moderation as exploratory rather than making a strong directional prediction. Hypothesis 2 centers on social media addiction and its links to GPA and anxiety. Consistent with studies showing that problematic social media and smartphone use is positively related to internalizing symptoms (Demirci et al., 2015; Elhai et al., 2017; Keles et al., 2020; Shannon et al., 2022), I predicted that higher social media addiction (higher BSMAS scores) would be associated with higher anxiety (higher GAD-7 scores). In line with research reporting small negative associations between heavy technology use and academic performance (Amez & Baert, 2020; Kirschner & Karpinski, 2010; Lepp et al., 2014), I also expected that higher BSMAS scores would be modestly associated with lower GPA. Drawing on evidence that the correlates of problematic smartphone use can differ for males and females (Chen et al., 2017), I explored whether the associations between social media addiction and GPA or anxiety varied by sex, again without specifying a big directional difference. Hypothesis 3 addresses the joint role of procrastination and anxiety in academic performance. Because procrastination has been linked to poorer grades (Steel, 2007; McCloskey, 2011, 2023)

and problematic technology use has been linked to anxiety, I expected that students who reported both lower procrastination and lower anxiety would, on average, report higher GPAs than their peers. Given the limited literature on whether this combination of low procrastination and low anxiety is differentially beneficial for male versus female students, I examined sex as a potential moderator of this pattern in an exploratory manner. Hypothesis 4 considers the combined effects of procrastination and social media addiction-like behaviors. Prior work suggests that problematic social media or smartphone use is positively associated with procrastination and other self-regulation difficulties (Przepiorka et al., 2016; Rozgonjuk & Elhai, 2019), raising the possibility that students who are high on both dimensions may be at particular risk. Accordingly, I predicted that students with both high procrastination (high APS-S scores) and high social media addiction (high BSMAS scores) would tend to report lower GPAs and higher anxiety than students low on one or both of these constructs. In light of Chen et al.'s (2017) evidence for gender-specific correlates of problematic smartphone use, I also explored whether this potential "double-risk" pattern differed by sex. Still, I did not make strong directional predictions about which sex would be more affected. Together, these hypotheses allow the present study to extend previous work by using a symptom-based measure of social media addiction, considering academic procrastination and anxiety within the same models, and explicitly testing whether the strength of these associations differs between male and female college students, while keeping sex-difference predictions appropriately cautious and grounded in the existing literature.

Chapter 2: Methodology

2.1 Participants

I recruited 84 college students aged 18–25 who used social media. I primarily recruited participants from Rochester Institute of Technology (RIT) through introductory psychology courses and campus-wide social media posts (e.g., Instagram and Snapchat stories). To be eligible, students had to (a) be currently enrolled at RIT and (b) actively use at least one social media platform regularly (e.g., Instagram, Snapchat, TikTok, or Facebook). I excluded students if they (a) were not between 18 and 25 years old, (b) were not currently enrolled at RIT, (c) reported no or very limited social media use, (d) primarily used social media on desktop rather than mobile devices, or (e) identified as non-binary, because my analyses focused specifically on sex differences between male and female students.

Of the 99 students who began the survey, 84 provided usable data after incomplete responses were excluded. The final sample included 46 males (54.8%) and 38 females (45.2%), with a mean age of 20.46 years (SD = 1.71). Participants represented a range of academic years at RIT. In terms of race/ethnicity, the sample was predominantly White (n = 66, 80.5%), with additional representation from Asian students (including multiracial Asian; 9.8%), Black or African American students (including multiracial Black; 3.6%), American Indian or Alaska Native students (including multiracial American Indian; 2.4%), Middle Eastern or North African students (1.2%), Indian students (1.2%), and Pakistani students (1.2%).

2.2 Design and Materials

I used a correlational survey design to examine associations between social media addiction, academic procrastination, anxiety, and academic performance.

2.2.1 Bergen Social Media Addiction Scale

The materials included four self-report scales. The first scale I used was the Bergen Social Media Addiction Scale (BSMAS), developed by Andreassen et al. (2016). This scale consists of six self-report items, where participants rate how often or rarely they experience salience, tolerance, mood modification, withdrawal symptoms, conflict, and relapse, with "very rarely" scored as 1 and "very often" as 5. See Appendix C for the full scale.

2.2.2 Academic Procrastination Scale

The second scale I used was the Academic Procrastination Scale — Short Form (APS-S; McCloskey, 2011; McCloskey, 2023). This scale includes a 25-item self-report questionnaire where participants rate their academic routines and procrastination-related study habits, with 1 indicating "Strongly disagree" and 5 indicating "Strongly agree." See Appendix B for the full scale.

2.2.3 Generalized Anxiety Disorder-7 Scale

The third scale I used in the survey was the Generalized Anxiety Disorder-7 (GAD-7) scale, developed by Spitzer et al. (2006). It consists of a 7-item self-report questionnaire where participants circle a rating: 0 for "Not at all," 1 for "Several days," 2 for "More than half the days," and 3 for "Nearly every day" for each item. See Appendix D for the full scale.

2.2.4 Academic Performance Questions

I created the final set of questions for this correlational study. These customized items asked participants about their academic performance, such as "In the most recent semester, how satisfied are you with your academic performance?" and "In the most recent semester, how often did you feel you were behind in your coursework?" I also asked about how often they completed

assignments on time and how they perceived their academic performance compared to before they used social media regularly. The complete item list appears in Appendix E.

2.3 Procedure

I recruited participants through social media posts, such as Instagram and Snapchat stories, which briefly described the study, outlined basic eligibility criteria (college students aged 18–25 who used at least one social media platform), and provided a link to an online survey hosted on Google Forms. In these posts, I invited students to participate in a study on social media use and academic experiences and indicated that participation was voluntary and uncompensated.

When potential participants clicked the survey link, the informed consent appeared. This page explained the study's purpose, participation requirements, estimated time commitment, potential risks and benefits, and the voluntary nature of participation. It also described how their information would be protected and informed students that they could skip any question or stop the survey at any time without penalty. Only those who indicated they had read the information and agreed to participate by selecting the "I agree" option were allowed to proceed to the survey; those who did not consent were instructed to close the form and were unable to access the questionnaire items. The survey was anonymous, and I did not collect any identifying information.

After providing consent, participants completed the online questionnaire in a single session. The survey began with basic demographic questions, including age and sex, college enrollment status, year in school, and social media use patterns, to verify eligibility and describe the sample. Participants then completed four self-report measures in the following order: (1) the Academic Procrastination Scale – Short Form (APS-S), (2) the Generalized Anxiety Disorder-7

(GAD-7), (3) the Bergen Social Media Addiction Scale (BSMAS), and (4) the brief set of academic performance questions I developed. On average, the survey took about 7–10 minutes to complete. Participants could skip any item they were uncomfortable answering or exit the survey at any time by closing the browser window.

As participants submitted their responses, the data were automatically recorded in a Google Sheet linked to the Google Form. I then downloaded the dataset and stored it in a secure, shared Google Drive folder accessible only to the research team and the course instructors. No identifying information was attached to the responses. Once data collection was complete, I imported the de-identified dataset into Jamovi for screening and statistical analysis. I retained the data only until all analyses were completed, course requirements were fulfilled, and the project was finalized, after which the file was either deleted or stored in a fully de-identified state.

2.4 Data Analysis Plan

In this between-subjects correlational study, I first analyzed descriptive statistics (mean, standard deviation, 95% confidence interval, number of participants, and standard error of the mean) for all main variables, as well as for age and cumulative GPA. I also computed frequencies and percentages for ordered academic performance variables (such as GPA categories and satisfaction with academic performance) and sex, and means and standard deviations for the continuous scale scores: Bergen Social Media Addiction Scale (BSMAS), Academic Procrastination Scale – Short Form (APS-S), and Generalized Anxiety Disorder-7 (GAD-7). These descriptive results provided an overview of the sample and helped me identify any unusual patterns in the data.

To screen for outliers, I inspected boxplots for each continuous variable (APS-S, BSMAS, GAD-7, and GPA) and noted points falling far outside the typical range. Potential

outliers were retained in the main analyses, and their presence was accounted for when interpreting effect sizes and significance tests. I also examined normal probability plots (NPPs) and Shapiro–Wilk tests for key variables and, where relevant, for regression residuals to evaluate departures from normality. Given the sample size ($N = 84$) and the central limit theorem, I treated small to moderate deviations from normality as acceptable for the parametric tests used, while interpreting marginal findings with additional caution.

Next, I examined two-variable relationships among the main study variables. I calculated Pearson correlation coefficients between social media addiction scores (BSMAS), academic procrastination scores (APS-S), anxiety scores (GAD-7), and academic performance indicators (GPA, coded as an ordered score; satisfaction with academic performance; perceived frequency of being behind in coursework; and how often assignments were completed on time). I also used independent-samples t tests to compare males (coded 0) and females (coded 1) on key continuous variables (BSMAS, APS-S, GAD-7, and GPA) to determine whether there were basic sex differences in social media addiction, procrastination, anxiety, and academic performance.

Finally, I conducted multiple linear regression analyses to test the main hypotheses about how procrastination, social media addiction, anxiety, and sex relate to academic outcomes. In the primary models, the GPA score served as the dependent variable, and APS-S, BSMAS, GAD-7, and sex (0 = females, 1 = males), along with selected interaction terms, were included as predictors. Additional regression models predicted anxiety (GAD-7 scores) from BSMAS scores, APS-S scores, sex, and their interactions. For each regression, I inspected residual plots to assess linearity, homoscedasticity, and normality of residuals, and relied on the independence of observations ensured by the study design. All statistical analyses were carried out primarily in Minitab, which I used to run the multiple linear regressions and associated ANOVA model utility

tests, with a significance level of $p < .05$ used to decide whether to reject or fail to reject the null hypotheses. I also used Jamovi for data screening, including normality tests and visual inspection of graphs (e.g., boxplots and normal probability plots).

Chapter 3: Results

3.1 Overview of Data

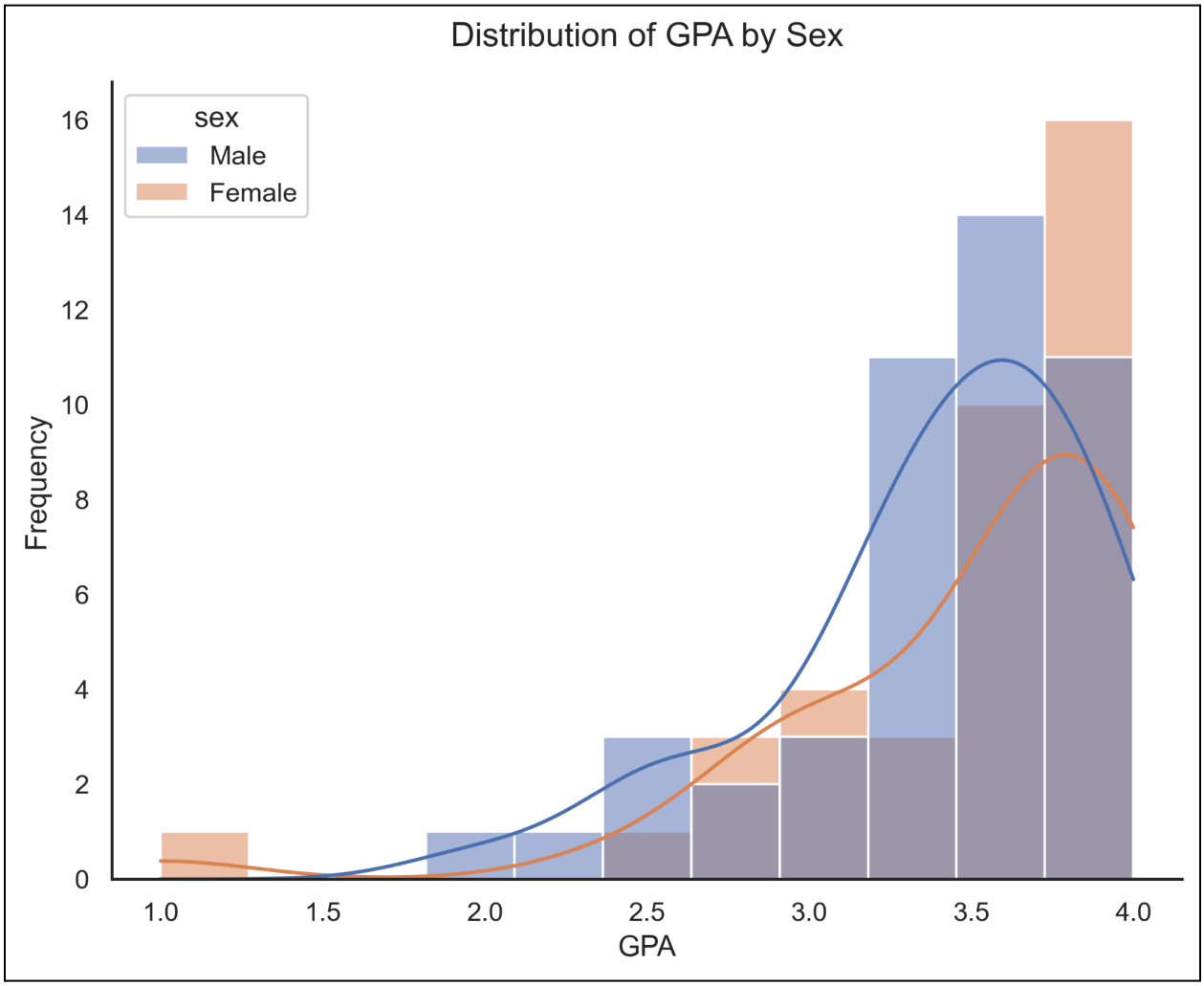
3.1.1 Table 1: Descriptive Statistics, grouped by Sex

Variable	Sex	*N*	*M*	*SD*	*SEM*	Median	95% CI
Age	Female	38	20.21	1.527	0.2478	20	[19.71, 20.71]
	Male	46	20.67	1.814	0.2675	20	[20.14, 21.21]
Cum. GPA	Female	38	3.49	0.593	0.0963	3.7	[3.29, 3.68]
	Male	46	3.40	0.484	0.0713	3.5	[3.25, 3.54]
APS-S	Female	38	76.00	14.268	2.3145	78	[71.31, 80.69]
	Male	46	73.15	12.689	1.8709	74	[69.38, 76.92]
GAD-7	Female	38	11.16	6.078	0.9861	11	[9.16, 13.16]
	Male	46	6.39	4.805	0.7085	5	[4.96, 7.82]
BSMAS	Female	38	16.42	5.340	0.8663	16.5	[14.67, 18.18]
	Male	46	15.48	4.589	0.6765	15.5	[14.12, 16.84]

Note: Cum. GPA = Cumulative GPA, BSMAS = Bergen Social Media Addiction Scale, GAD-7 = Generalized Anxiety Disorder 7-item, APS-S = Academic Procrastination Scale - Short Form. The CI of the mean assumes that the sample means follow a t-distribution with N - 1 degrees of freedom.

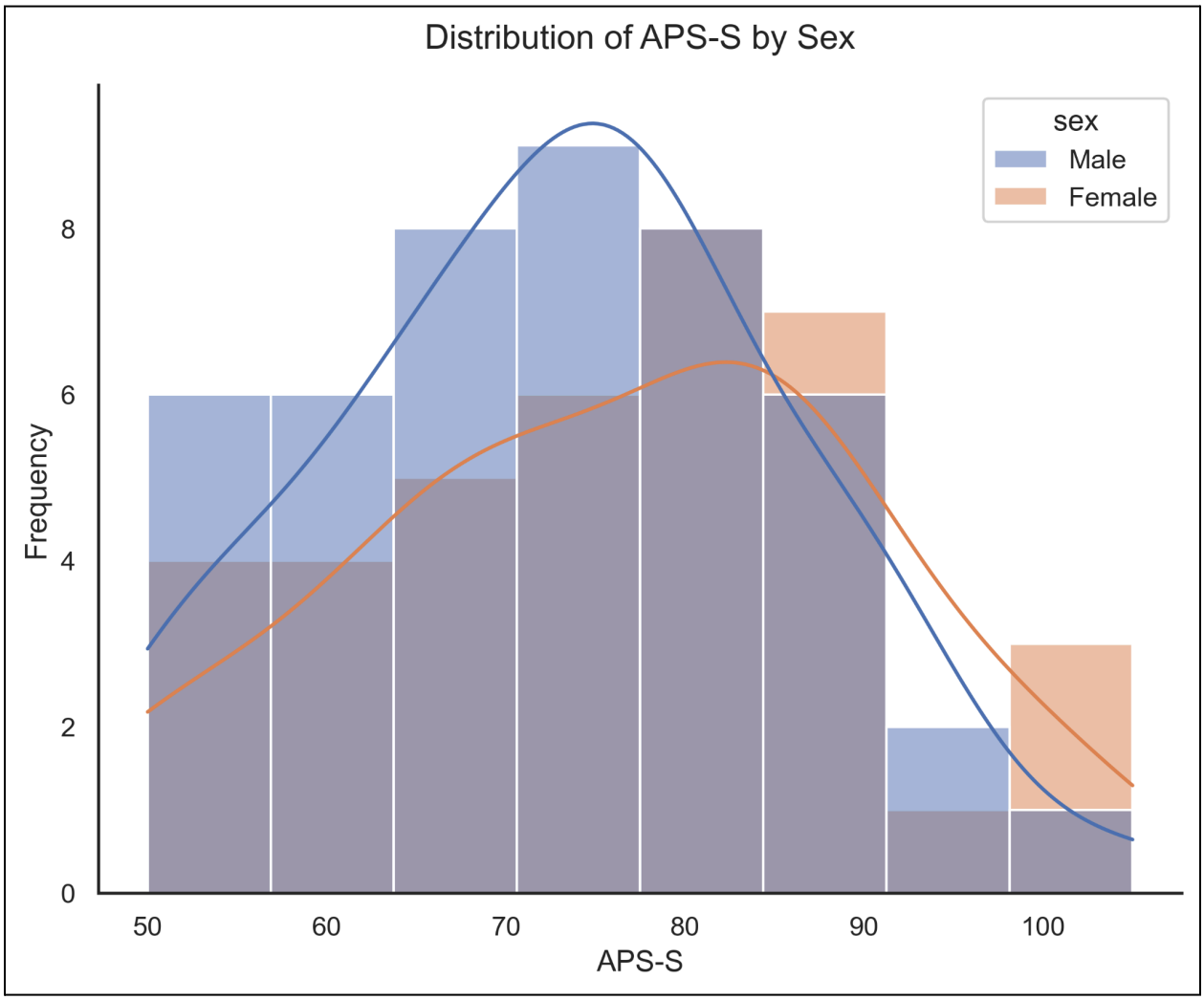
Table 1 presents descriptive statistics for all variables broken down by sex. Overall, male and female students had similar ages and cumulative GPAs. Female students tended to report marginally higher GAD-7 anxiety scores than male students. Nonetheless, sex differences in social media addiction (BSMAS) and academic procrastination (APS-S) were small.

3.1.2 Figure 1: Cumulative GPA Distribution by Sex (Blue = Male, Orange = Female)



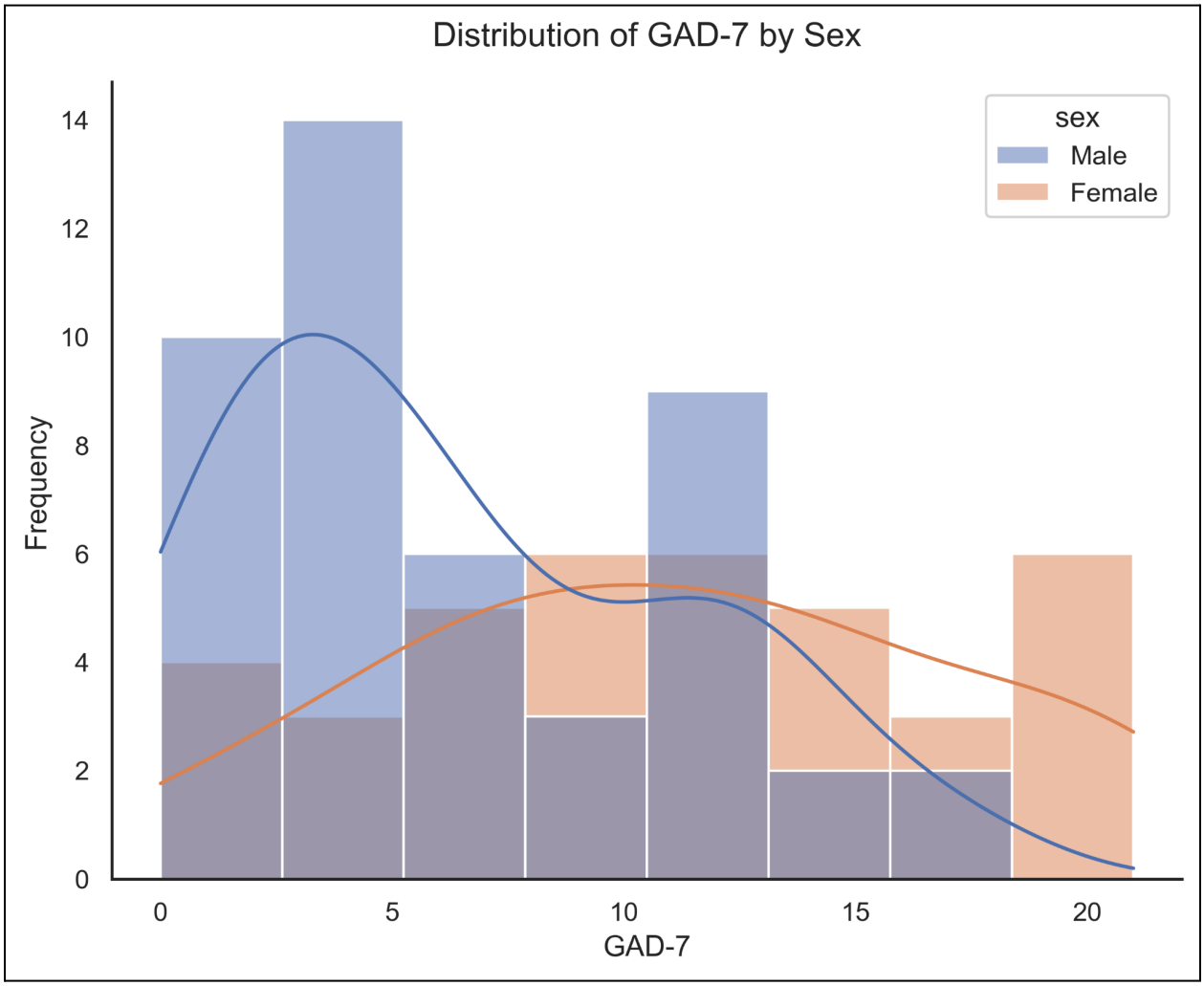
Note: The figure illustrates the cumulative GPA distributions for male and female participants, showing a peak in the highest GPA range and a negatively skewed distribution. Although it was hypothesized that males would have higher cumulative GPAs, the statistical analysis found no significant difference between the sexes in this sample.

3.1.3 Figure 2: APS-S Distribution by Sex



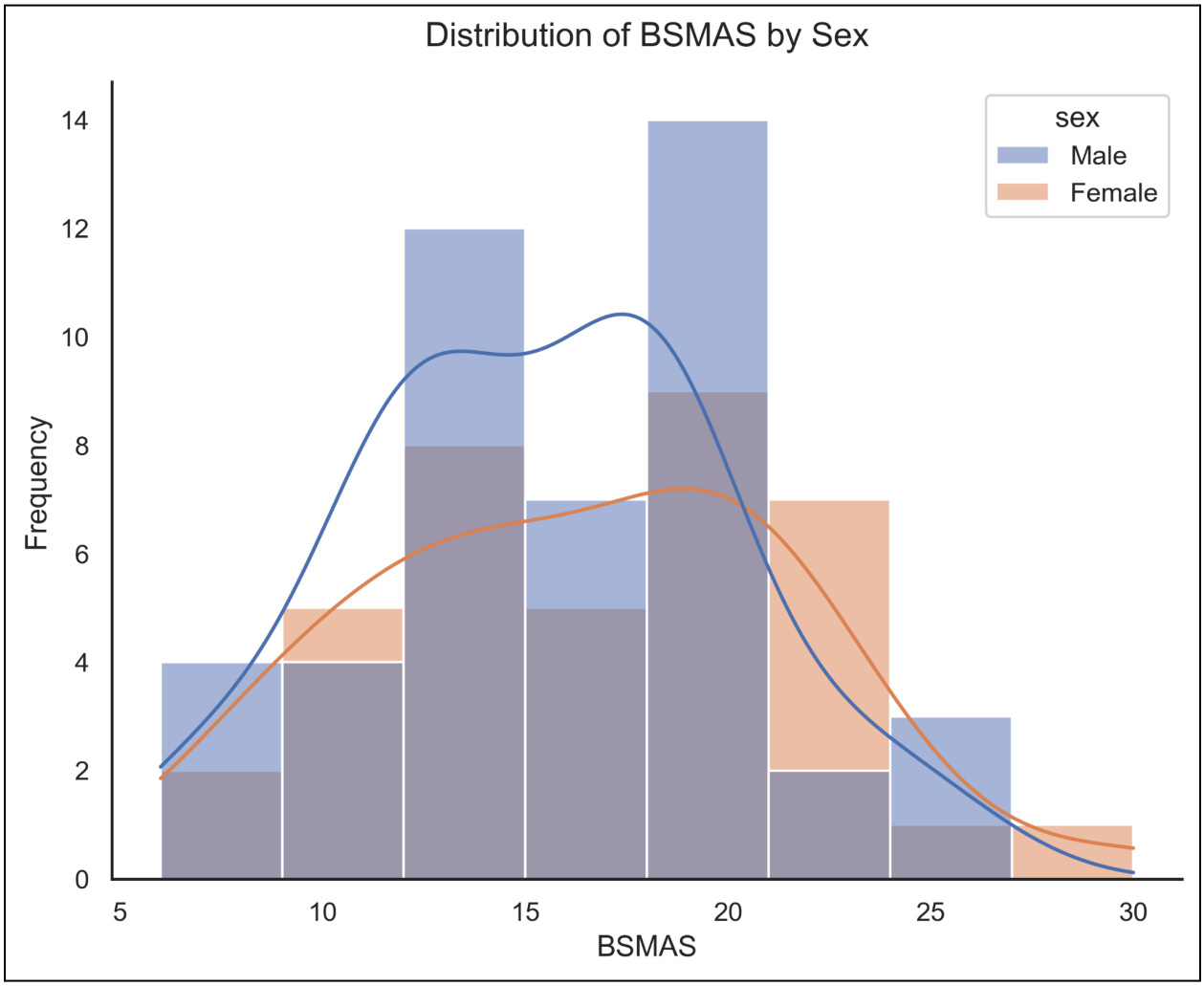
Note: This figure illustrates the self-reported levels of academic procrastination among the study's male and female participants. The overall difference between the sexes regarding their procrastination scores was considered small within this sample. The plotted distribution shows that female students tended to report slightly higher levels of academic procrastination than male students.

3.1.4 Figure 3: GAD-7 Distribution by Sex



Note: This figure illustrates the distribution of Generalized Anxiety Disorder–7 (GAD-7) scores for male and female participants. The center of the distribution for female students is notably higher, indicating they reported greater anxiety compared to male students. The distribution of scores for female students also shows greater variability. Regarding shape, the male students' distribution is skewed to the right, while the female students' distribution is approximately symmetrical.

3.1.5 Figure 4: BSMAS Distribution by Sex



Note: This figure illustrates the distribution of Bergen Social Media Addiction Scale (BSMAS) scores for male and female participants. The center of the distribution for female students is slightly higher than for male students, although the overall difference between the sexes in social media addiction is small. The distribution of scores for female students shows slightly greater variability (spread). The distributions for both male and female students are approximately symmetrical.

3.1.6 Table 2: Correlation Table Among Key Variables

		Cumulative GPA	Age	APS-S Total	GAD-7 Total
Cum. GPA	Pearson's *r*	—			
	p-value	—			
Age	Pearson's *r*	0.043	—		
	p-value	.700	—		
APS-S	Pearson's *r*	-0.301**	-0.187	—	
	p-value	.005	.088	—	
GAD-7	Pearson's *r*	-0.162	-0.145	0.326**	—
	p-value	.142	.188	.003	—
BSMAS	Pearson's *r*	-0.092	0.007	0.453***	0.244*
	p-value	.404	.951	< .001	.026

** p < .05, ** p < .01, *** p < .001*

3.1.7 Figure 5: Matrix Plot Among Key Variables, using Python

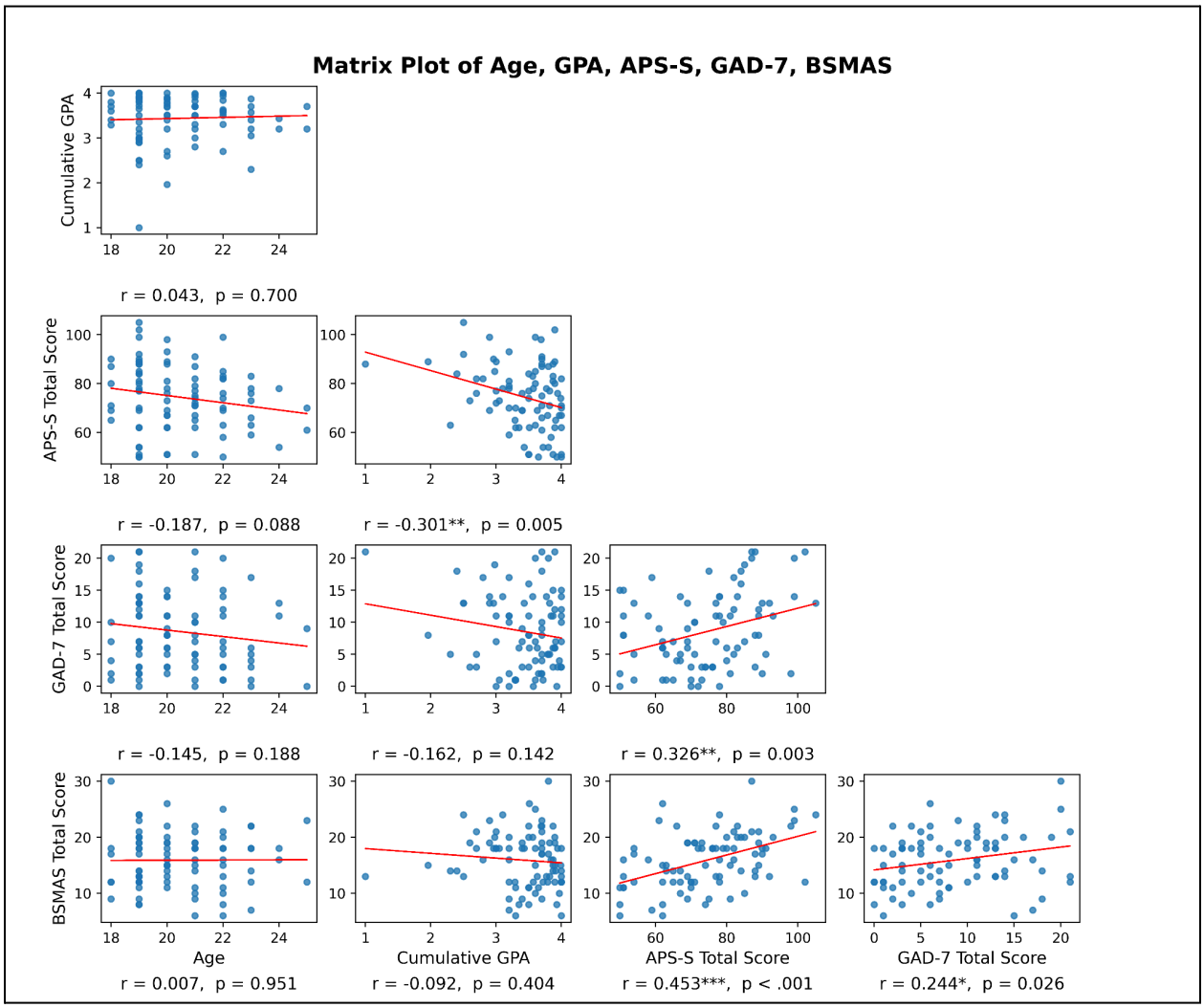


Table 2 and Figure 5 illustrate the relationships among students' cumulative GPA, age, academic procrastination (APS-S), anxiety (GAD-7), and social media addiction (BSMAS) based on Pearson correlation analyses. Academic procrastination scores were significantly and negatively associated with GPA, $r(82) = -.30$, $p = .005$, indicating that students who procrastinate more tend to have lower GPAs. In contrast, GPA was not significantly correlated with age, $r(82) = .04$, $p = .700$, anxiety, $r(82) = -.16$, $p = .142$, or social media addiction, $r(82) = -.09$, $p = .404$.

Academic procrastination showed a weak, non-significant relationship with age, $r(82) = -.19$, $p = .088$, suggesting that procrastination levels were fairly similar across age groups. However, academic procrastination was positively and significantly related to both anxiety, $r(82) = .33$, $p = .003$, and social media addiction, $r(82) = .45$, $p < .001$, indicating that students who procrastinate more also tend to report higher anxiety and more problematic social media use. In addition, social media addiction was significantly and positively related to anxiety, $r(82) = .24$, $p = .026$, indicating that higher levels of problematic social media use are linked to higher anxiety. Social media addiction was not related to age, $r(82) = .01$, $p = .951$, providing no evidence of differences in problematic social media use across age groups.

3.2 Hypothesis 1 Results

3.2.1 Lower APS-S → higher GPA, regardless of sex

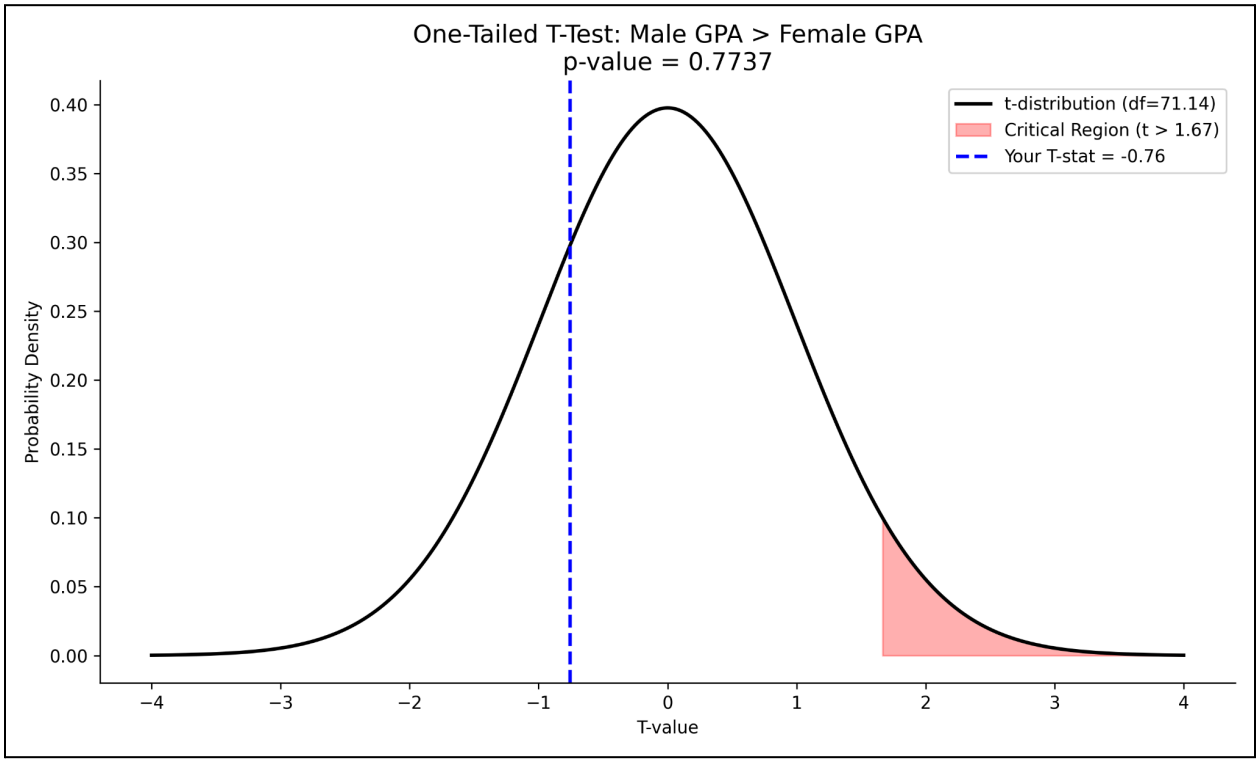
To test the hypothesis that lower academic procrastination is associated with higher grade point averages among all participants, I conducted a Pearson correlation analysis between APS-S scores and cumulative GPA. Academic procrastination demonstrated a weak-to-moderate negative relationship with GPA, $r(82) = -.30$, $p = .005$, indicating that students who procrastinate less tend to have higher GPAs.

3.2.2 Table 3: Independent Samples T-test in Cumulative GPA by Sex

Variable	*df*	*p*	*M Diff. (SE Diff.)*	*t*(71.1)	*95% CI Mean Difference*
Cum. GPA	71.1	0.774	0.090 (0.120)	0.755	[-Inf, 0.290]

Note. Cum. GPA = cumulative grade point average. Mean difference = male − female. H_a: $\mu_{Male} > \mu_{Female}$. Shapiro–Wilk W = .85, p < .001. Three outliers were identified.

3.2.3 Figure 6: T-Distribution of Comparing Males' GPAs vs Females' GPAs



Hypothesis 1B predicted that male students would have higher cumulative GPAs than female students. Descriptive statistics showed that female students (n = 38) had a mean GPA of 3.49 (SD = 0.59), whereas male students (n = 46) had a mean GPA of 3.40 (SD = 0.48). A Shapiro–Wilk test indicated that GPA scores deviated from normality (W = 0.85, p < .001). However, boxplots revealed only three mild outliers (one female at GPA = 1.0 and two males at GPAs ≈ 2.0 and 2.7), and each group included more than 30 participants (N = 84 total), so I considered Welch's t-test to be robust to these violations. Welch's independent-samples t test showed no significant GPA difference favoring males, t(71.1) = 0.76, p = .226, with a mean difference of 0.09 grade points (male − female; SE = 0.12) and a 95% confidence interval ranging from −∞ to 0.290. Because the confidence interval includes zero and the p-value exceeds

the significance level of .05, I concluded that there is no evidence that males have higher GPAs than females in this sample. Thus, Hypothesis 1B was not supported. See Figure 6.

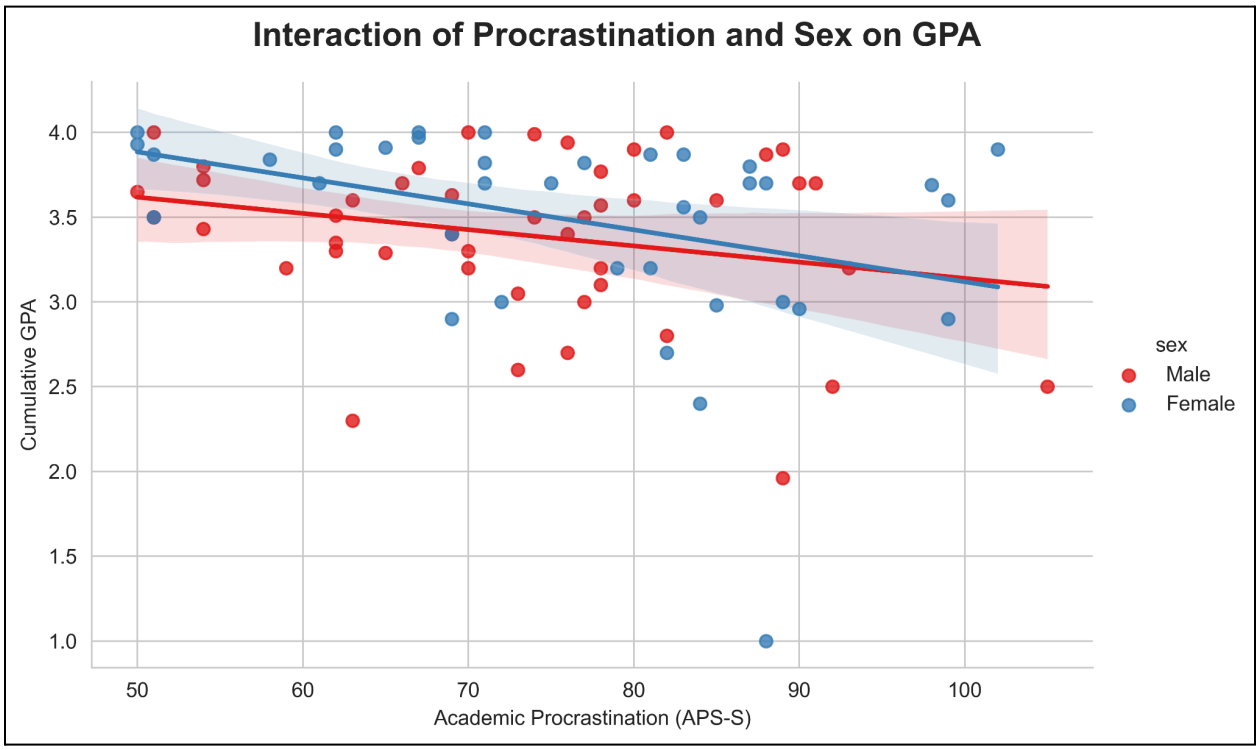
3.2.4 Table 4: Multiple linear regression model predicting GPA from academic procrastination, gender, and their interaction

Predictor	β	SE_β	95% CI	$t(80)$	p
Constant (Male)	4.65	0.458	[3.74, 5.56]	10.16	< .001
APS-S Total Score	-0.015	0.006	[-0.027, -0.004]	-2.59	.011
Gender	-0.55	0.641	[-1.83, 0.72]	-0.87	.390
APS-S Total Score × Gender	0.006	0.008	[-0.011, 0.023]	0.68	.499

Note. $N = 84$. $R^2 = .11$, $R^2_{adj} = .076$, $F(3, 80) = 3.28$, $p = .025$. Gender coded 0 = female, 1 = male. A higher APS-S Total Score indicates greater academic procrastination.

Regression Equation: GPA = 4.65 − 0.015·APS − 0.55·G + 0.006·(APS·G).

3.2.4 Figure 7: Interaction Plot of Procrastination and Sex by GPA



For Hypothesis 1C, I used a multiple linear regression model to predict my participants' cumulative GPA from their academic procrastination (APS-S Total Score), gender (0 = female, 1 = male), and the interaction between these variables (APS-S × gender). The overall model was statistically significant, $F(3, 80) = 3.28$, $p = .025$. It explained about 11% of the variance in GPA ($R^2 = .11$, $R^2_{adj} = .08$). This indicates that, as a set, procrastination, gender, and their interaction provided a small improvement in predicting GPA compared to a model with no predictors.

In this model, academic procrastination emerged as a unique predictor of GPA. When I controlled for gender and the interaction term, each 1-point increase in APS-S Total Score was associated with an average decrease of about 0.015 GPA points, $\beta = -0.015$, $SE\beta = 0.006$, $t(80) = -2.59$, $p = .011$, 95% CI [−0.027, −0.004]. In practice, this means that students in my sample who reported more procrastination generally had slightly lower GPAs, and this negative

association was statistically significant. In contrast, the main effect of gender was not significant, $\beta = -0.55$, $SE\beta = 0.64$, $t(80) = -0.87$, $p = .390$, 95% CI [−1.83, 0.72], so I did not find strong evidence that males and females differed in GPA after I accounted for procrastination and the interaction.

The APS‑S × gender interaction term was also not significant, $\beta = 0.006$, $SE\beta = 0.008$, $t(80) = 0.68$, $p = .499$, 95% CI [−0.011, 0.023], indicating that the negative relationship between procrastination and GPA was similar for males and females in my sample. Thus, I concluded that Hypothesis 1C was only partially supported: higher procrastination was associated with lower overall GPA, but the strength of this relationship did not differ reliably by gender.

3.3 Hypothesis 2 Results

3.3.1 BSMAS → GPA

I examined the association between social media addiction (BSMAS Total Score) and cumulative GPA using a Pearson correlation to determine whether higher addiction‑like social media use was linked to lower grades. The correlation was not statistically significant, $r(82) = -.09$, $p = .404$, indicating that, in this sample, students with higher social media addiction scores did not reliably differ in GPA from those with lower scores.

3.3.2 BSMAS → Anxiety

To evaluate H2b, I calculated a Pearson correlation between social media addiction (BSMAS Total Score) and anxiety symptoms (GAD‑7 Total Score). The results showed a small‑to‑moderate positive correlation, $r(82) = .24$, $p = .026$, indicating that students in my sample with higher social media addiction levels tended to report more anxiety symptoms. This

finding supports H2b and is consistent with my expectation that problematic social media use would be linked to higher anxiety among college students.

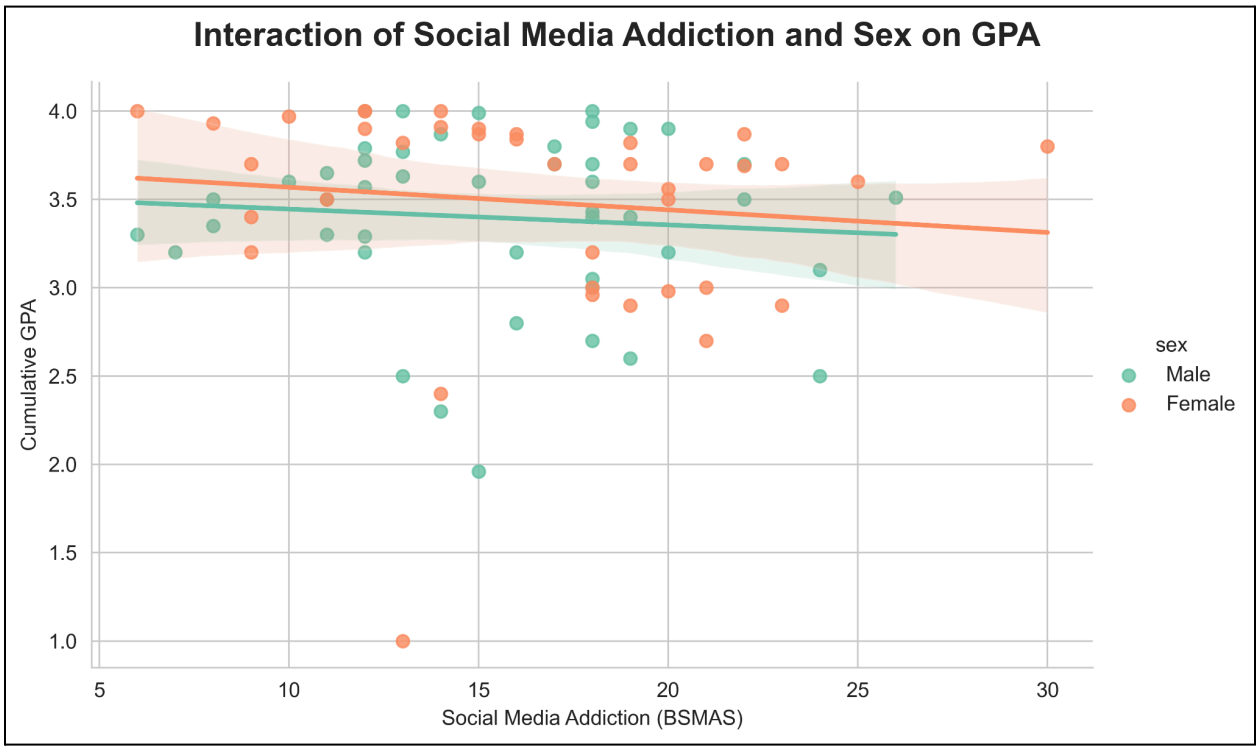
3.3.3 Table 5: Multiple linear regression model predicting cumulative GPA from social media addiction, gender, and their interaction

Predictor	β	SE_{β}	95% CI	$t(80)$	p
Constant (GPA)	3.69658	0.287	[3.126, 4.267]	12.899	< .001
BSMAS Total Score	-0.01279	0.017	[-0.046, 0.020]	-0.770	.444
Gender	-0.16206	0.403	[-0.963, 0.639]	-0.402	.688
BSMAS Total Score × Gender	-0.00384	0.024	[-0.044, 0.052]	-0.159	.874

Note. $N = 84$. $R^2 = .0176$, $R^2_{adj} = -.0192$, $F(3, 80) = 0.479$, $p = .698$. Gender coded 0 = female, 1 = male. A higher BSMAS Total Score indicates greater social media addiction.

Regression Equation = GPA = 3.69658 − 0.01279·BSMAS − 0.16206·G + 0.00384·(BSMAS·G)

3.3.4 Figure 8: Interaction Plot on BSMAS and Sex, on GPA



For Hypothesis 2C, I fitted a multiple linear regression model to predict my participants' cumulative GPA from their social media addiction (BSMAS Total Score), gender (0 = female, 1 = male), and the interaction between these variables (BSMAS × gender) to test whether the association between social media addiction and GPA differed by gender. The overall model was not statistically significant, $F(3, 80) = 0.48$, $p = .698$, and explained only about 2% of the variance in GPA ($R^2 = .02$, $R^2_{adj} = -.02$). This indicates that, as a group, these predictors did not provide a statistically useful improvement in predicting GPA compared to a model with no predictors.

Consistent with this, none of the individual predictors made a statistically reliable unique contribution to GPA. Social media addiction was not a significant unique predictor of GPA, $\beta = -0.013$, $SE = 0.017$, $t(80) = -0.77$, $p = .444$, 95% CI [−0.046, 0.020]. In practical terms, this

coefficient suggests that for every 1-point increase in BSMAS score, the predicted GPA decreases by about 0.01 grade points on average. However, because the p-value is greater than .05 and the confidence interval includes 0, this small negative association is not statistically significant. The main effect of gender was also not significant, $\beta = -0.16$, $SE = 0.40$, $t(80) = -0.40$, $p = .688$, 95% CI [−0.96, 0.64], indicating no clear evidence that males and females differed in GPA after I controlled for BSMAS scores and their interaction.

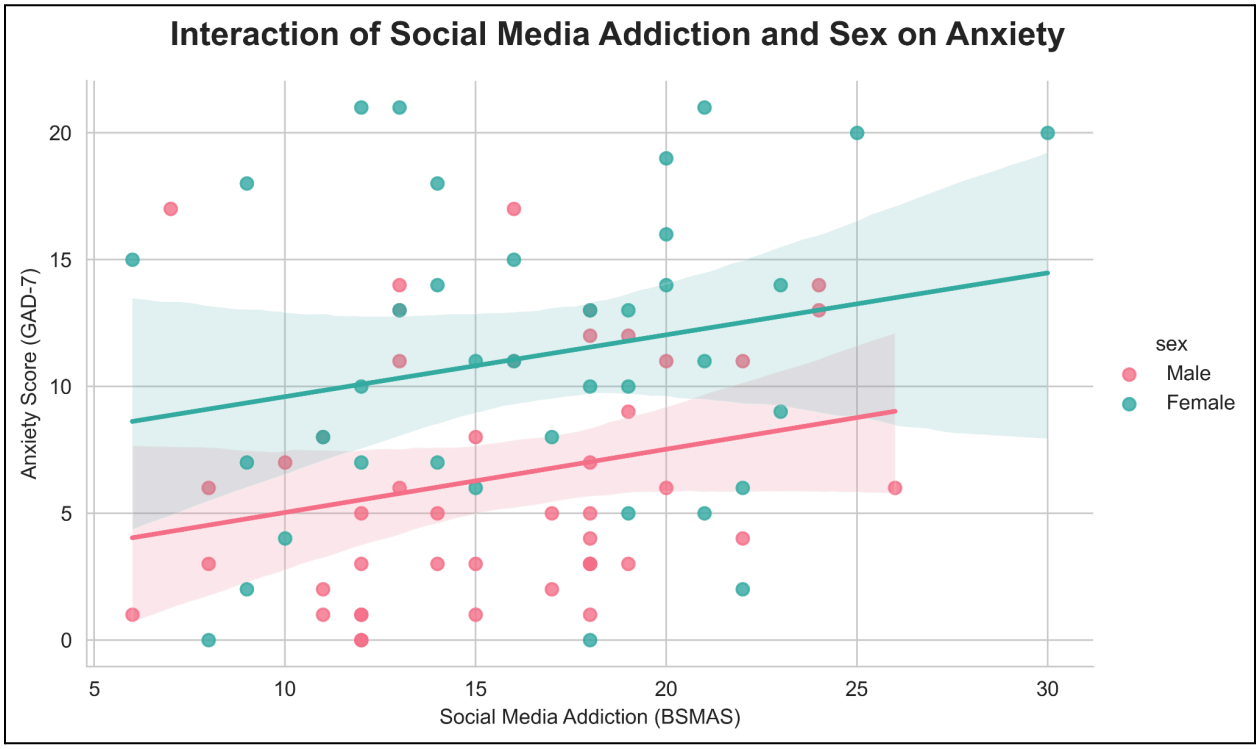
The BSMAS × gender interaction term was likewise not significant, $\beta = -0.004$, $SE = 0.024$, $t(80) = -0.16$, $p = .874$, 95% CI [−0.044, 0.052]. This indicates that the (non-significant) slope relating social media addiction to GPA did not change meaningfully across males and females; in other words, the association between BSMAS scores and GPA was essentially the same for both genders in my sample. Thus, Hypothesis 2C was not supported: higher social media addiction scores were not reliably related to GPA, and this null pattern was similar for male and female students.

3.3.5 Table 6: Multiple linear regression model predicting anxiety from social media addiction, gender, and their interaction

Predictor	*β*	*SE β*	95% CI	*t*(80)	*p*
Constant (GAD-7)	7.15132	2.837	[1.5059, 12.797]	2.5209	.014
BSMAS Total Score	0.24399	0.164	[-0.0834, 0.571]	1.4833	.142
Gender	-4.62177	3.986	[-0.963, 0.639]	-1.1595	.250
BSMAS Total Score × Gender	-0.00551	0.239	[-0.044, 0.052]	-0.0230	.982

Note. N = 84. $R = .45$, $R^2 = .21$, $R^2_{adj} = .18$, $F(3, 80) = 6.94$, $p < .001$. Gender coded 0 = female, 1 = male. A higher BSMAS Total Score indicates greater social media addiction. Regression Equation: GAD-7 = 7.15 + 0.24·BSMAS − 4.62·G − 0.01·(BSMAS·G)

3.3.6 Figure 9: Interaction Plot on BSMAS and Sex, on GAD-7



For Hypothesis 2D, I fitted a multiple linear regression model to predict anxiety symptoms (GAD-7 Total Score) from social media addiction (BSMAS Total Score), sex (0 = female, 1 = male), and their interaction (BSMAS × sex). The overall model was statistically significant, $F(3, 80) = 6.94$, $p < .001$, and explained about 21% of the variance in anxiety symptoms ($R^2 = .21$, $R^2_{adj} = .18$). This indicates that, taken together, social media addiction, sex, and their interaction provided a statistically useful improvement in predicting anxiety compared to a model with no predictors.

However, none of the individual predictors made a statistically reliable unique contribution once the others were included. Social media addiction was not a significant unique predictor of anxiety, $\beta = 0.24$, $SE = 0.16$, $t(80) = 1.48$, $p = .142$, 95% CI [−0.08, 0.57]. In practical terms, this coefficient suggests that for every 1-point increase in BSMAS, the predicted GAD-7 score increases by about 0.24 points on average. Still, this positive association is not statistically significant because the p-value exceeds .05 and the confidence interval includes 0. The main effect of sex was also not significant, $\beta = -4.62$, $SE = 3.99$, $t(80) = -1.16$, $p = .250$, 95% CI [−12.50, 3.26], suggesting no clear evidence that males and females differed in anxiety levels after I controlled for BSMAS scores and their interaction.

The BSMAS × sex interaction term was likewise not significant, $\beta = -0.01$, $SE = 0.24$, $t(80) = -0.02$, $p = .982$, 95% CI [−0.49, 0.48]. This indicates that the slope relating social media addiction to anxiety did not change meaningfully across males and females; in other words, the association between BSMAS scores and GAD-7 scores was essentially the same for both sexes in my sample. Thus, Hypothesis 2D was not supported: there was no statistically reliable evidence that sex moderated the relationship between social media addiction and anxiety symptoms in this sample.

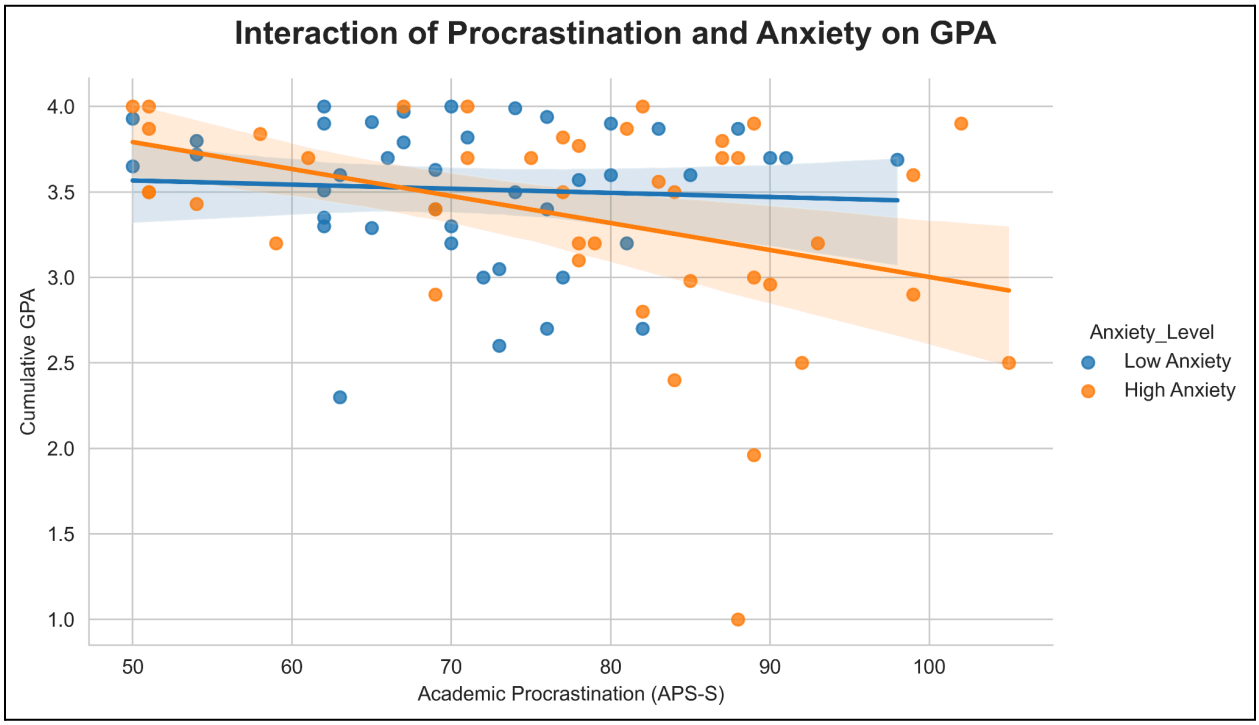
3.4 Hypothesis 3 Results

3.4.1 Table 7: Multiple linear regression model predicting cumulative GPA from academic procrastination, anxiety, and their interaction

Predictor	*β*	*SE β*	95% CI	*t*(80)	*p*
Constant (GPA)	3.864	0.611	[2.648, 5.080]	6.323	< .001
APS-S	-0.005	0.008	[-0.022, 0.012]	-0.599	.551
GAD-7	0.042	0.057	[-0.071, 0.155]	0.742	.460
APS-S × GAD-7	-0.001	0.001	[-0.002, 0.001]	-0.870	.387

Note. $N = 84$. $R = .32$, $R^2 = .10$, $R^2_{adj} = .07$, $F(3, 80) = 3.09$, $p = .032$. Higher APS-S scores indicate greater academic procrastination, and higher GAD-7 scores indicate more severe anxiety symptoms. Regression equation: GPA = 3.86 − 0.005·APS-S + 0.042·GAD-7 − 0.001·(APS-S × GAD-7).

3.4.2 Figure 10: Interaction Plot on Procrastination and Anxiety, on GPA



For Hypothesis 3a, I fitted a multiple linear regression model to predict cumulative GPA from academic procrastination (APS-S Total Score), anxiety symptoms (GAD-7 Total Score), and their interaction (APS-S × GAD-7). The overall model was statistically significant, $F(3, 80) = 3.09$, $p = .032$, and explained about 10% of the variance in GPA ($R^2 = .10$, $R^2_{adj} = .07$), indicating that, as a group, procrastination, anxiety, and their interaction provided a small but statistically useful improvement in predicting GPA compared to a model with no predictors.

However, none of the individual predictors showed a statistically reliable effect on GPA once the others were included. Academic procrastination was not a significant unique predictor of GPA, $\beta = -0.005$, $SE = 0.008$, $t(80) = -0.60$, $p = .551$, 95% CI [−0.022, 0.012]. In practical terms, this coefficient suggests that for every 1-point increase in APS-S, the predicted GPA decreases by about 0.005 grade points on average. Still, this small negative association is not statistically reliable because the p-value is greater than .05 and the confidence interval includes 0. Anxiety symptoms also did not significantly predict GPA, $\beta = 0.042$, $SE = 0.057$, $t(80) = 0.74$, $p = .460$, 95% CI [−0.071, 0.155], meaning that, holding procrastination and the interaction constant, changes in GAD-7 scores were not clearly associated with higher or lower GPA.

The APS-S × GAD-7 interaction term was likewise not significant, $\beta = -0.001$, $SE = 0.001$, $t(80) = -0.87$, $p = .387$, 95% CI [−0.002, 0.001]. This indicates that the slope relating procrastination to GPA did not change meaningfully across anxiety levels; in other words, the association between procrastination and GPA was not influenced by students' anxiety levels in my sample. Thus, Hypothesis 3a was not supported: no statistically reliable evidence was found that having both low procrastination and low anxiety was associated with particularly high GPAs in this sample.

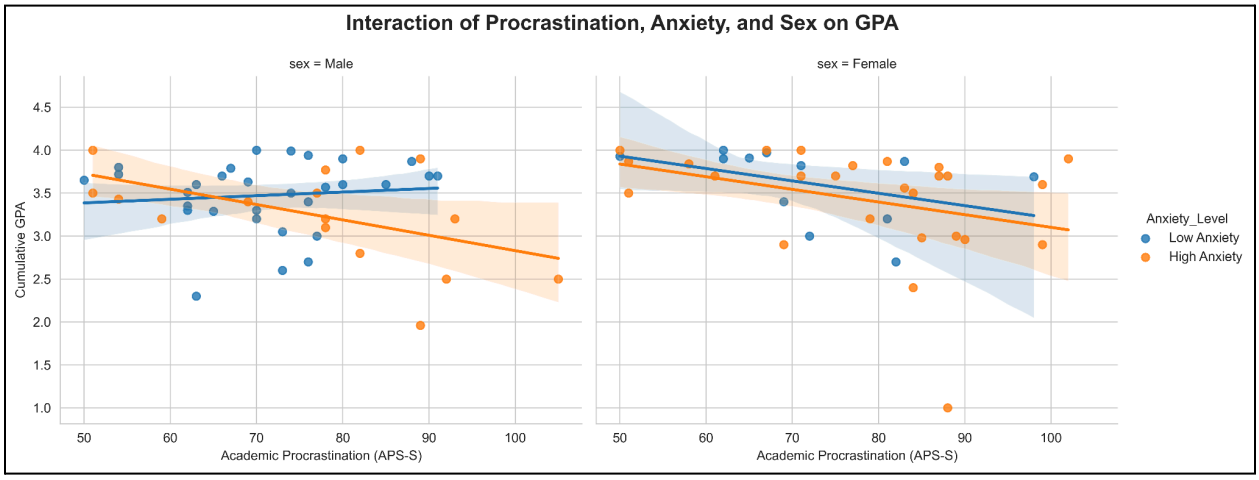
3.4.3 Table 8: Multiple linear regression model, predicting cumulative GPA from academic procrastination, anxiety, gender, and their interaction

Predictor	*β*	SE *β*	95% CI	*t*(80)	*p*
Constant	4.59006	0.96243	[2.67231, 6.50691]	4.7692	< .001
APS-S	-0.01295	0.01274	[-0.03833, 0.01243]	-1.0162	.313
GAD-7	-0.00622	0.07995	[-0.16544, 0.15301]	-0.0777	.938
Sex	-1.47240	1.30939	[-4.08027, 1.13547]	-1.1245	.264
APS-S x GAD-7	-5.69e-5	9.85e-4	[-0.00202, 0.00190]	-0.0578	.954
APS-S x Sex	-0.01835	0.01779	[-0.01709, 0.05378]	1.0313	.306
GAD-7 x Sex	0.11523	0.12624	[-0.13619, 0.36665]	0.9128	.364
APS-S x GAD-7 x Sex	-0.00163	0.00165	[-0.00491, 0.00165]	-0.9911	.325

Note. $N = 84$. $R = .38$, $R^2 = .14$, $R^2_{adj} = .06$, $F(7, 76) = 1.80$, $p = .099$. Higher APS-S scores indicate greater academic procrastination, and higher GAD-7 scores indicate more severe anxiety symptoms. Sex was coded 0 = Female and 1 = Male (Male – Female).

Regression Equation: GPA = 4.59006 − 0.01295·(APS-S) − 0.00622·(GAD-7) − 1.47240·(Sex) − 0.0000569·(APS-S × GAD-7) + 0.01835·(APS-S × Sex) + 0.11523·(GAD-7 × Sex) − 0.00163·(APS-S × GAD-7 × Sex)

3.4.4 Figure 11: Interaction Plot on Procrastination and Anxiety, and Sex on GPA



For Hypothesis 3b, I developed a multiple linear regression model to predict cumulative GPA from academic procrastination (APS-S Total Score), anxiety symptoms (GAD-7 Total Score), gender (0 = female, 1 = male), and their two-way and three-way interaction terms (APS-S × GAD-7, APS-S × gender, GAD-7 × gender, and APS-S × GAD-7 × gender). The overall model was not statistically significant, $F(7, 76) = 1.80$, $p = .099$, and explained approximately 14% of the variance in GPA ($R^2 = .14$, $R^2_{adj} = .06$), suggesting that, taken together, these predictors did not reliably account for GPA differences.

After controlling for the other predictors and interactions, academic procrastination did not significantly predict GPA, $\beta = -0.01295$, $SE = 0.01274$, $t(76) = -1.02$, $p = .313$, 95% CI [−0.03833, 0.01243], indicating no clear link between higher APS-S scores and lower GPA in this model. Anxiety symptoms also did not significantly predict GPA, $\beta = -0.00622$, $SE = 0.07995$, $t(76) = -0.08$, $p = .938$, 95% CI [−0.16544, 0.15301], suggesting that GAD-7 scores were not clearly associated with GPA after I accounted for procrastination, gender, and their interactions. Gender was likewise not a significant predictor, $\beta = -1.47$, $SE = 1.31$, $t(76) = -1.12$,

p = .264, 95% CI [−4.08, 1.14], showing no significant overall GPA difference between males and females at the reference levels of the continuous predictors.

None of the interaction terms was statistically significant. The APS-S × GAD-7 interaction was not significant, $\beta \approx 0.00$, $SE \approx 0.001$, $t(76) = -0.06$, p = .954, 95% CI [−0.00202, 0.00190], indicating that the association between procrastination and GPA did not vary meaningfully across anxiety levels. The APS-S × gender interaction, $\beta = 0.01835$, $SE = 0.01779$, $t(76) = 1.03$, p = .306, 95% CI [−0.01709, 0.05378], and the GAD-7 × gender interaction, $\beta = 0.11523$, $SE = 0.12624$, $t(76) = 0.91$, p = .364, 95% CI [−0.13619, 0.36665], were also non-significant, suggesting that the effects of procrastination and anxiety on GPA did not differ reliably by gender at the two-way level.

Critically, the three-way interaction central to Hypothesis 3b, APS-S × GAD-7 × gender, was not significant, $\beta = -0.00163$, $SE = 0.00165$, $t(76) = -0.99$, p = .325, 95% CI [−0.00491, 0.00165]. This indicates that the combined effect of procrastination and anxiety on GPA did not differ significantly between males and females. Therefore, Hypothesis 3b was not supported: the data did not show that low procrastination together with low anxiety was especially beneficial for males' GPAs relative to females' GPAs.

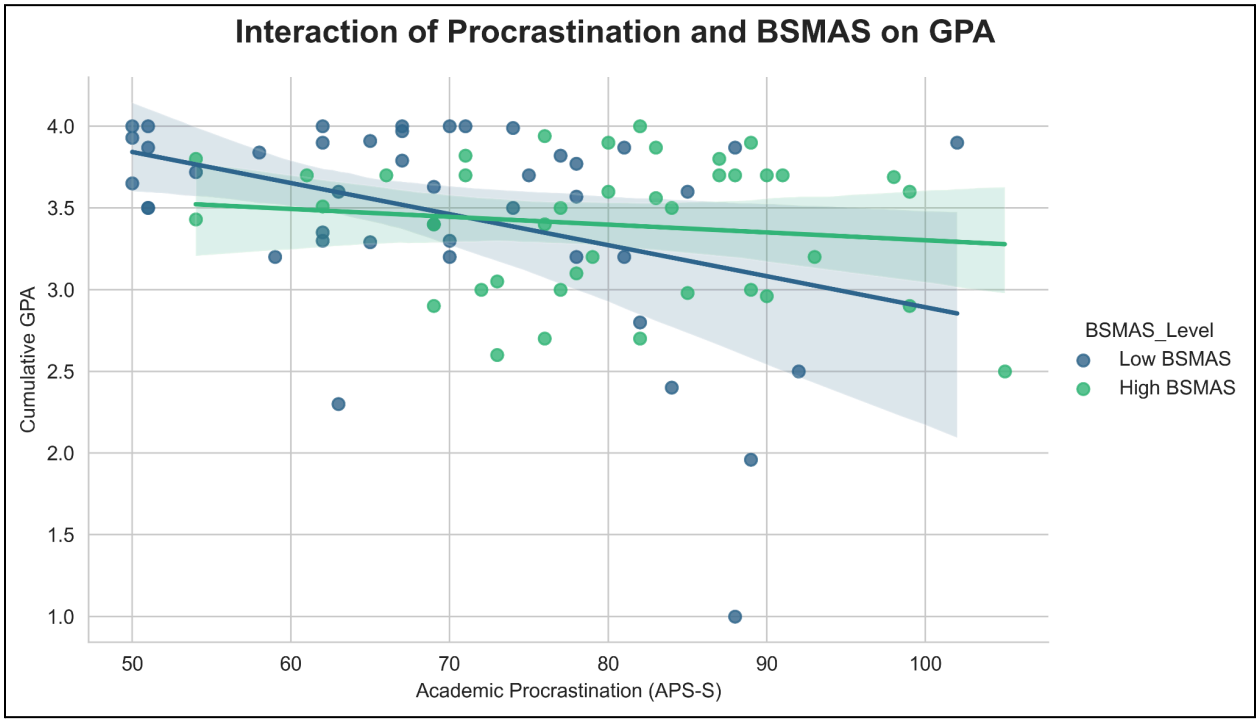
3.5 Hypothesis 4 Results

3.5.1 Table 9: Multiple linear regression model predicting cumulative GPA from academic procrastination and social media addiction, and their interaction

Predictor	*β*	*SE β*	95% CI	*t*(80)	*p*
Constant (GPA)	4.8466	0.9893	[2.87790, 6.81539]	4.899	< .001
APS-S	-0.0204	0.0138	[-0.04781, 0.00694]	-1.485	.141
BSMAS	-0.286	0.0617	[-0.15129, 0.09411]	-0.464	.644
APS-S × BSMAS	4.66e-4	8.12e-4	[-0.00115, 0.00208]	0.575	.567

Note. $N = 84$. $R = .31$, $R^2 = .0970$, $R^2_{adj} = .0631$, $F(3, 80) = 2.86$, $p = .042$.

3.5.2 Figure 12: Interaction of Procrastination and Social Media Addiction on GPA



For Hypothesis 4a, I fitted a multiple linear regression model to predict cumulative GPA from academic procrastination (APS-S Total Score), social media addiction (BSMAS Total Score), and their interaction (APS-S × BSMAS). The overall model was statistically significant, $F(3, 80) = 2.86$, $p = .042$, and explained about 10% of the variance in GPA ($R^2 = .10$, $R^2_{adj} = .06$), indicating that, taken together, procrastination, social media addiction, and their interaction provided a small but statistically useful improvement in predicting GPA compared to a model with no predictors.

However, none of the individual predictors showed a statistically reliable unique effect on GPA. Academic procrastination was not a significant predictor of GPA, $\beta = -0.020$, $SE = 0.014$, $t(80) = -1.49$, $p = .141$, 95% CI [−0.048, 0.007]. In practical terms, this coefficient suggests that for every 1-point increase in APS-S, the predicted GPA decreases by about 0.02 grade points on average. Still, this small negative association is not statistically significant because the p-value exceeds .05 and the confidence interval includes 0. Social media addiction was also not a significant unique predictor of GPA, $\beta = -0.029$, $SE = 0.062$, $t(80) = -0.46$, $p = .644$, 95% CI [−0.151, 0.094], meaning that, holding procrastination and the interaction constant, changes in BSMAS scores were not clearly associated with higher or lower GPA.

The APS-S × BSMAS interaction term was likewise not significant, $\beta = 0.00047$, $SE = 0.00081$, $t(80) = 0.58$, $p = .567$, 95% CI [−0.00115, 0.00208]. This indicates that the slope relating procrastination to GPA did not change meaningfully across levels of social media addiction. In other words, students who were high in both procrastination and social media addiction did not have especially low GPAs compared with other combinations of these variables. Thus, Hypothesis 4a was not supported: no statistically reliable evidence was found

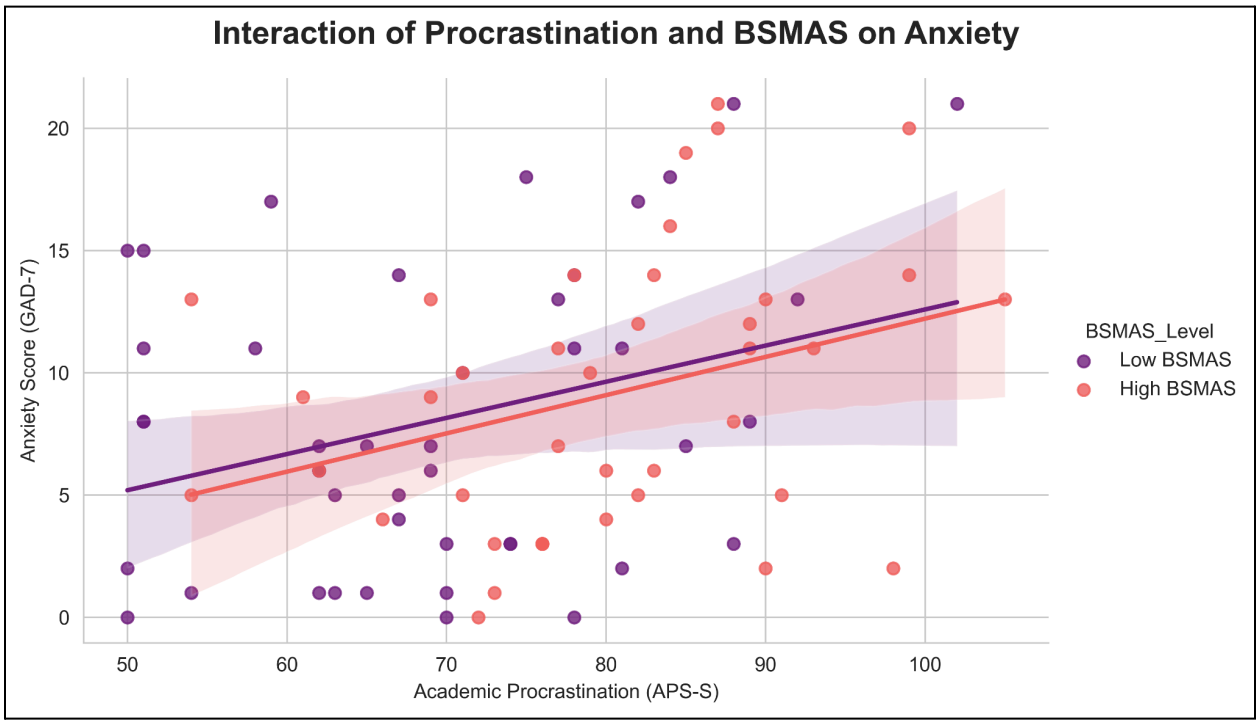
that having both high procrastination and high social media addiction was associated with particularly low cumulative GPA in this sample.

3.5.3 Table 10: Multiple linear regression model predicting anxiety from academic procrastination and social media addiction, and their interaction

Predictor	β	SE β	95% CI	$t(80)$	p
Constant (GAD-7)	7.93959	10.69899	[-13.35209, 29.2313]	0.742	.460
APS-S	-0.02655	0.14877	[-0.32262, 0.2695]	-0.178	.859
BSMAS	-0.53508	0.66680	[-1.86206, 0.7919]	-0.802	.425
APS-S × BSMAS	0.00914	0.00878	[-0.00833, 0.0266]	1.042	.301

Note. $N = 84$. $R = .36$, $R^2 = .129$, $R^2_{adj} = 0.0967$, $F(3, 80) = 3.96$, $p = .011$.

3.5.4 Figure 13: Interaction Plot of Procrastination and BSMAS on Anxiety



For Hypothesis 4b, I performed a multiple linear regression to predict anxiety symptoms (GAD-7 Total Score) from academic procrastination (APS-S Total Score), social media addiction (BSMAS Total Score), and their interaction (APS-S × BSMAS). The model was statistically significant, $F(3, 80) = 3.96$, $p = .011$, and explained about 13% of the variance in anxiety symptoms ($R^2 = .13$, $R^2_{adj} = .10$). This indicates that, taken together, procrastination, social media addiction, and their interaction provided a modest but statistically useful improvement in predicting anxiety compared to a model with no predictors.

However, none of the individual predictors showed a statistically significant unique contribution once the others were included. Academic procrastination was not a significant predictor of anxiety, $\beta = -0.027$, $SE = 0.149$, $t(80) = -0.18$, $p = .859$, 95% CI [−0.323, 0.270]. In practical terms, this coefficient suggests that a 1-point increase in APS-S corresponds to an average change of only about −0.03 points in the GAD-7 score. Because the p-value is well above .05 and the confidence interval includes 0, this association is not statistically significant. Social media addiction was also not a significant predictor of anxiety, $\beta = -0.535$, $SE = 0.667$, $t(80) = -0.80$, $p = .425$, 95% CI [−1.86, 0.79], indicating that, after controlling for procrastination and the interaction term, changes in BSMAS scores were not clearly associated with higher or lower GAD-7 scores.

The APS-S × BSMAS interaction was likewise not significant, $\beta = 0.0091$, $SE = 0.0088$, $t(80) = 1.04$, $p = .301$, 95% CI [−0.0083, 0.0266]. This suggests that the relationship between procrastination and anxiety did not change meaningfully across levels of social media addiction; in other words, the association between APS-S and GAD-7 scores was essentially the same for students with lower versus higher BSMAS scores. Consequently, Hypothesis 4b was not supported because there was no statistically reliable evidence that students with both high

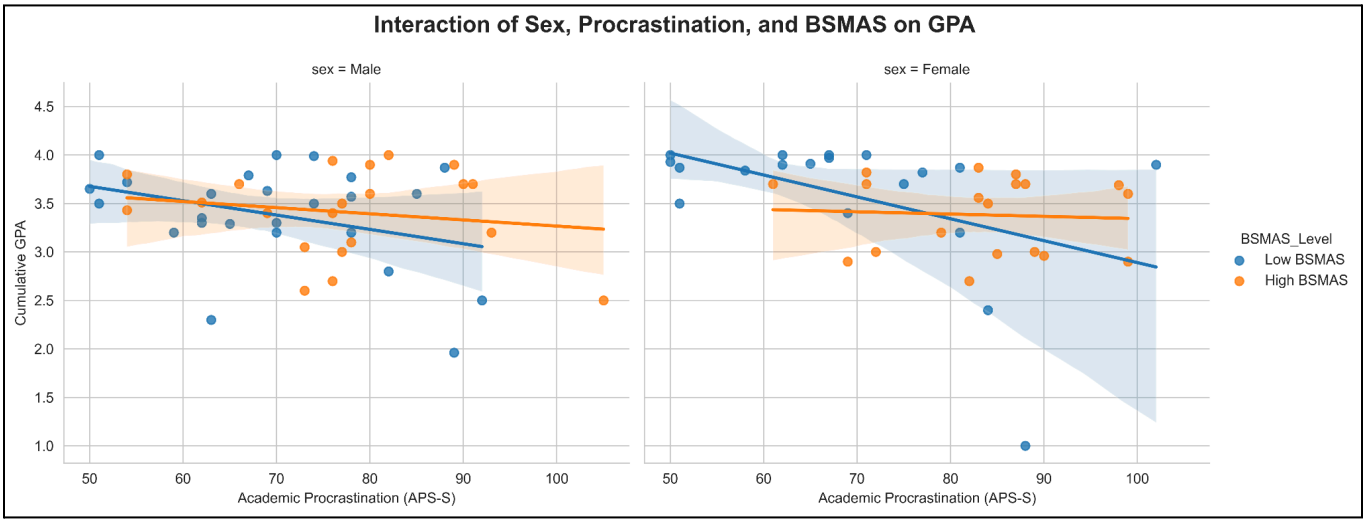
procrastination and high social media addiction experienced especially elevated anxiety symptoms in this sample.

3.5.5 Table 11: Multiple linear regression model predicting GPA from sex, academic procrastination, and social media addiction, and their interaction

Predictor	*β*	*SE*	95% CI	*t*(80)	*p*
Constant (GPA)	5.94971	1.34204	[3.27681, 8.62261]	4.433	< .001
APS-S	-0.03506	0.01814	[-0.07119, 0.00108]	-1.932	.057
BSMAS	-0.07744	0.08690	[-0.25052, 0.09564]	-0.891	.376
Sex	-2.85813	2.05890	[-6.95878, 1.24252]	-1.388	.169
APS-S * BSMAS	0.00115	0.00109	[-0.00103, 0.00332]	1.047	.298
APS-S * Sex	0.03968	0.02882	[-0.01773, 0.09708]	1.377	.173
BSMAS * Sex	0.14135	0.12910	[-0.11577, 0.39847]	1.095	.277
APS-S * BSMAS * Sex	-0.00203	0.00172	[-0.00545, 0.00139]	-1.184	.240

Note. $N = 84$. Overall model fit: $R = .36$, $R^2 = .13$, $R^2_{adj} = .05$, $F(7, 76) = 1.65$, $p = .136$.

3.5.6 Figure 14: Interaction Plot of Sex, Procrastination and BSMAS, on GPA



For Hypothesis 4c, I conducted a multiple linear regression to predict my participants' cumulative GPA from their academic procrastination (APS-S Total Score), social media addiction (BSMAS Total Score), sex (0 = female, 1 = male), and all two-way and three-way interaction terms (APS-S × BSMAS, APS-S × sex, BSMAS × sex, and APS-S × BSMAS × sex). The overall model did not significantly predict GPA, $R = .36$, $R^2 = .13$, $R^2_{adj} = .05$, $F(7, 76) = 1.65$, $p = .136$, indicating that although these predictors together explained about 13% of the variance in GPA, the model was not statistically significant at the $p < .05$ level.

Consistent with the non-significant overall model, none of the individual predictors or interaction terms showed a reliable association with GPA at the $p < .05$ threshold. Academic procrastination exhibited a near-significant negative trend with GPA, $\beta = -0.04$, $SE = 0.02$, $t(80) = -1.93$, $p = .057$, 95% CI [−0.07, 0.00], implying that students in my sample who procrastinate more tend to have slightly lower GPAs. However, this effect was not statistically significant after I accounted for the other variables. Social media addiction was not a significant predictor of GPA, $\beta = -0.08$, $SE = 0.09$, $t(80) = -0.89$, $p = .376$, 95% CI [−0.25, 0.10], indicating no clear association between higher BSMAS scores and GPA in this model. Sex also did not significantly predict GPA, $\beta = -2.86$, $SE = 2.06$, $t(80) = -1.39$, $p = .169$, 95% CI [−6.96, 1.24], suggesting no reliable difference in GPA between males and females at the levels of the other predictors.

None of the interaction terms reached significance. The APS-S × BSMAS interaction was not significant, $\beta = 0.001$, $SE = 0.001$, $t(80) = 1.05$, $p = .298$, 95% CI [−0.001, 0.003], indicating that the relationship between procrastination and GPA did not change meaningfully across levels of social media addiction in my sample. The APS-S × sex interaction, $\beta = 0.04$, $SE = 0.03$, $t(80) = 1.38$, $p = .173$, 95% CI [−0.02, 0.10], and the BSMAS × sex interaction, $\beta = 0.14$, $SE = 0.13$, $t(80) = 1.10$, $p = .277$, 95% CI [−0.12, 0.40], were also non-significant, suggesting that the

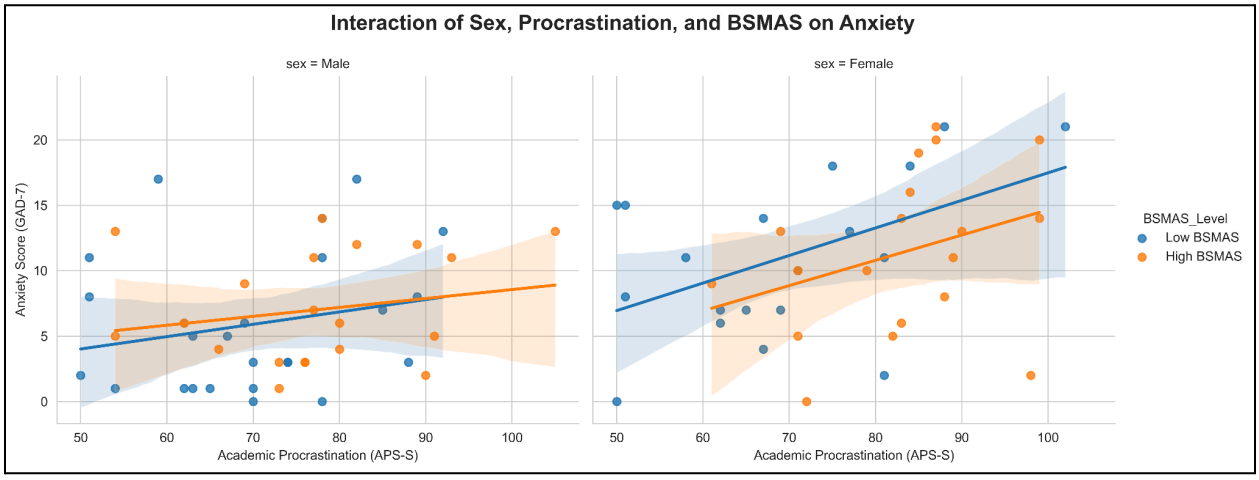
effects of procrastination and social media addiction on GPA did not differ reliably between males and females at the two-way level. Finally, the three-way interaction central to Hypothesis 4c, APS-S × BSMAS × sex, was not significant, $\beta = -0.002$, $SE = 0.002$, $t(80) = -1.18$, $p = .240$, 95% CI [−0.005, 0.001]. This indicates that the combined effect of high procrastination and high social media addiction on GPA did not differ significantly between male and female students in my sample. Therefore, I concluded that Hypothesis 4c was not supported.

3.5.7 Table 12: Multiple linear regression predicting anxiety from sex, academic procrastination, and social media addiction, and their interaction

Predictor	*β*	*SE*	95% CI	*t*(80)	*p*
Constant (Anxiety)	-0.60757	13.5117	[-27.5184, 26.3033]	-0.04497	.964
APS-S	0.14851	0.1827	[-0.2153, 0.5123]	0.81298	.419
BSMAS	-0.00781	0.8749	[-1.7504, 1.7348]	-0.00893	.993
Sex	16.85975	20.7291	[-24.4257, 58.1452]	0.81334	.419
APS-S * BSMAS	0.00047	0.0110	[-0.0215, 0.0224]	0.04288	.966
APS-S * Sex	-0.33425	0.2902	[-0.9122, 0.2437]	-1.15182	.253
BSMAS * Sex	-0.89795	1.2998	[-3.4866, 1.6907]	-0.69086	.492
APS-S * BSMAS * Sex	-0.01491	0.0173	[-0.0195, 0.0493]	0.86313	.391

Note. N = 84. Overall model fit: $R = .524$, $R^2 = .274$, $R^2_{adj} = .208$, $F(7, 76) = 4.11$, $p = < .001$.

3.5.8 Figure 15: Interaction Plot of Sex, Procrastination, BSMAS, on Anxiety



For Hypothesis 4d, I conducted a multiple linear regression to predict my participants' anxiety scores from their academic procrastination (APS-S Total Score), social media addiction

(BSMAS Total Score), sex (0 = female, 1 = male), and all two-way and three-way interaction terms (APS-S × BSMAS, APS-S × sex, BSMAS × sex, and APS-S × BSMAS × sex). The overall model significantly predicted anxiety, $R = .52$, $R^2 = .27$, $R^2_{adj} = .21$, $F(7, 76) = 4.11$, $p < .001$, indicating that these predictors together explained about 27% of the variance in anxiety and that the model was statistically significant at the $p < .05$ level.

Despite the significant overall model, none of the individual predictors or interaction terms showed a reliable association with anxiety at the $p < .05$ threshold. Academic procrastination was not a significant predictor of anxiety, $\beta = 0.15$, $SE = 0.18$, $t(80) = 0.81$, $p = .419$, 95% CI [−0.22, 0.51], implying that students in my sample who procrastinate more did not differ reliably in anxiety after I accounted for the other variables. Social media addiction was also not a significant predictor of anxiety, $\beta = -0.01$, $SE = 0.87$, $t(80) = -0.01$, $p = .993$, 95% CI [−1.75, 1.73], indicating no clear association between higher BSMAS scores and anxiety in this model. Sex likewise did not significantly predict anxiety, $\beta = 16.86$, $SE = 20.73$, $t(80) = 0.81$, $p = .419$, 95% CI [−24.43, 58.15], suggesting no reliable difference in anxiety between males and females at the levels of the other predictors.

None of the interaction terms reached significance. The APS-S × BSMAS interaction was not significant, $\beta = 0.00$, $SE = 0.01$, $t(80) = 0.04$, $p = .966$, 95% CI [−0.02, 0.02], indicating that the relationship between procrastination and anxiety did not change meaningfully across levels of social media addiction in my sample. The APS-S × sex interaction, $\beta = -0.33$, $SE = 0.29$, $t(80) = -1.15$, $p = .253$, 95% CI [−0.91, 0.24], and the BSMAS × sex interaction, $\beta = -0.90$, $SE = 1.30$, $t(80) = -0.69$, $p = .492$, 95% CI [−3.49, 1.69], were also non-significant, suggesting that the effects of procrastination and social media addiction on anxiety did not differ reliably

between males and females at the two-way level. Finally, the three-way interaction central to Hypothesis 4d, APS-S × BSMAS × sex, was not significant, $\beta = -0.01$, $SE = 0.02$, $t(80) = 0.86$, $p = .391$, 95% CI [−0.02, 0.05]. This indicates that the combined effect of high procrastination and high social media addiction on anxiety did not differ significantly between male and female students in my sample. Therefore, I concluded that Hypothesis 4d was not supported.

Chapter 4: Discussion

4.1 Overview of the Study and Main Findings

This study aimed to find out how social media addiction, academic procrastination, and anxiety are connected to college students' academic performance, and whether these links differ between male and female students. To answer these questions, I used the Academic Procrastination Scale – Short Form (APS-S), the Generalized Anxiety Disorder-7 (GAD-7), the Bergen Social Media Addiction Scale (BSMAS), and a short set of academic performance questions I created.

In general, students who procrastinated more had lower GPAs. Social media addiction was more strongly linked to higher anxiety and more procrastination than to GPA. Most of the expected differences between males and females, such as stronger patterns for one sex or for students high in both procrastination and social media addiction, were not found in this sample.

4.2 Procrastination and Academic Performance

I expected that students who procrastinate less would have higher GPAs, that males would have higher GPAs than females, and that procrastination would affect females' GPAs more than males' (Hypothesis 1). The results only partly supported these ideas. Procrastination scores were clearly associated with lower GPAs, indicating that students who procrastinated more tended to have lower grades. However, there was no significant difference in GPA between males and females, and the link between procrastination and GPA was similar across both groups.

These findings are consistent with past research showing that procrastination is a common self-regulation problem that can harm academic performance. For example, Steel's (2007) meta-analysis concluded that students who procrastinate more tend to have poorer

academic outcomes, although the effects are often small to moderate. The Academic Procrastination Scale – Short Form (APS-S; McCloskey, 2011, 2023), which I used in this study, was developed within this broader literature linking procrastination to delayed work and reduced academic success, and my results fit this pattern.

There are a few reasons why the effects might have been small and why sex differences did not show up. Many students in this group may have kept their grades up even if they procrastinated, perhaps by working well under pressure or using good study habits. Male and female students at this university might also face similar academic challenges and supports, leading to similar GPAs even if they procrastinate differently. Also, many participants were in the early years of college, when GPAs can change as students adjust, which might weaken the link between procrastination and long-term performance. Finally, the sample size may have been too small to spot subtle sex differences in how procrastination affects GPA (see Limitations).

4.3 Social Media Addiction, Anxiety, and Academic Performance

I thought that social media addiction would be clearly connected to both academic performance and emotional well-being, and that these connections would differ by sex (Hypothesis 2). More specifically, I predicted that students with higher BSMAS scores would have lower GPAs and more anxiety, and that these negative links would be stronger for one sex than the other.

The results only partly supported these expectations. Social media addiction scores were not clearly linked to GPA, either in simple correlations or in the regression model with BSMAS scores, sex, and their interaction. Students with higher BSMAS scores did not consistently have higher or lower GPAs than those with lower scores.

On the other hand, social media addiction was more clearly linked to anxiety. BSMAS scores were positively related to GAD-7 scores, meaning students who reported more addiction-like social media use also reported more anxiety. This matches earlier research showing that problematic social media or smartphone use is linked to higher depression, anxiety, and distress in young people (Demirci et al., 2015; Elhai et al., 2017; Keles et al., 2020; Shannon et al., 2022). However, in the regression model that included BSMAS scores, sex, and their interaction, social media addiction was not a strong unique predictor, and the interaction was not significant. So, in this sample, the link between social media addiction and anxiety was real but small, and it did not differ much between males and females.

The lack of a clear link between social media addiction and GPA is different from earlier studies that found heavy technology use is often tied to lower academic performance. Previous research has shown that greater cell phone or social media use is usually associated with lower GPA and less study time (Amez & Baert, 2020; Kirschner & Karpinski, 2010; Lepp et al., 2014). One reason for this difference could be that earlier studies focused on how much time students spent on their phones or multitasking, while this study used a symptom-based measure of addiction-like social media use. Time spent multitasking during coursework might directly harm grades more than the broader symptoms measured by the BSMAS. Also, GPA depends on many factors beyond social media use, such as students' preparation, course difficulty, grading, and academic support. Some students might also make up for bad social media habits by working efficiently at other times or getting extra help, which could weaken the link between BSMAS scores and GPA.

Since this study was correlational, it is hard to tell if social media addiction causes higher anxiety, if anxious students use social media to cope, or if both influence each other over time

(see Limitations). Overall, these findings suggest that, in this sample, addiction-like social media use was more closely linked to students' anxiety than to their GPAs.

4.4 Combined Effects of Procrastination, Anxiety, and Social Media Addiction

I also looked at how procrastination and anxiety together predicted GPA (Hypothesis 3), and whether having both high procrastination and high social media addiction would be especially harmful for GPA and anxiety, especially for female students (Hypothesis 4). For Hypothesis 3, I thought that students with both low procrastination and low anxiety would have especially high GPAs, and that this would help male students more than female students. These ideas were not supported. In the first regression model, which included procrastination, anxiety, and their interaction as predictors of GPA, the overall model was significant, but none of the individual predictors had a clear, unique effect. Neither procrastination nor anxiety significantly predicted GPA when the other variables were included, and their interaction was not significant. In a second, more complex model that included sex and all possible interactions, the overall model was not significant, and none of the predictors or interactions were significant.

Looking at the bigger picture, these results suggest that the relationship between procrastination, anxiety, and GPA is more complex than just saying that low procrastination and low anxiety always lead to high GPAs. Previous research has shown that procrastination is usually linked to worse academic outcomes (Steel, 2007; McCloskey, 2011, 2023), and that anxiety can sometimes hurt concentration, time management, and test performance. But other studies have found that anxiety does not always have a simple negative effect on grades; for some students, moderate anxiety can help motivate them, while very high anxiety can be overwhelming. The lack of a clear interaction in my study supports the idea that procrastination

and anxiety do not combine in a simple way to affect GPA, and that their effects may depend on factors such as coping skills, study habits, and course demands.

For Hypothesis 4, I thought that having both high academic procrastination and high social media addiction would be especially harmful for students' GPA and anxiety, and that these "double-risk" effects would be stronger for females than males. The results did not support this. In the regression analysis predicting GPA from procrastination, social media addiction, and their interaction, the overall model was significant, but neither the individual predictors nor the interaction had a strong unique effect. Students who were high in both procrastination and social media addiction did not have much lower GPAs than those high in only one or low in both. Similarly, in the model predicting anxiety from procrastination, social media addiction, and their interaction, the predictors together explained some variance, but neither predictor nor their interaction was significant by itself. When I added sex and its interactions to these models, they were no longer statistically useful, and none of the sex interactions were significant. So, my prediction that high procrastination and high social media addiction would lead to especially low GPA and high anxiety, especially for female students, was not supported.

Overall, these findings show that the combined effects of procrastination and social media addiction on GPA and anxiety are more complicated than just saying that having both risk factors always leads to worse outcomes. Previous research has found that problematic social media or smartphone use can be linked to more procrastination, slightly lower academic performance, and higher anxiety (Amez & Baert, 2020; Demirci et al., 2015; Elhai et al., 2017; Lepp et al., 2014; Przepiorka et al., 2016; Rozgonjuk & Elhai, 2019), so it made sense to expect a clear "double-risk" pattern. However, my results did not show a strong combined effect of

these variables on GPA or anxiety, nor did they show that this combination was more harmful for female students.

One reason for these results could be that there were not many students in the sample who were truly high in both procrastination and social media addiction, making it hard to see especially poor outcomes in that group. Also, procrastination and social media addiction might reflect similar traits, like low self-control or high impulsivity, so being high in both may not mean double the risk. The effects of these behaviors might also depend on things like course load, work hours, family responsibilities, and academic support, which were not fully measured in this study (see Limitations). Overall, having both high procrastination and high social media addiction did not lead to a simple or dramatic effect on GPA or anxiety in this sample.

4.5 Sex Differences Across Models

Throughout the study, I predicted that some effects would differ by sex, such as procrastination hurting females' GPAs more than males', or social media addiction having a stronger negative effect on GPA and anxiety for one sex. These predictions were mostly not supported. In most models, the effects of sex were small or not significant, and interactions involving sex were not significant.

There are a few possible reasons for this. One is that, in this sample, the relationships among procrastination, social media addiction, anxiety, and GPA are truly similar for male and female students. Another is that the sample size was too small to detect small interaction effects, especially the more complex ones involving sex. It is also possible that the academic environment at this university, with similar course requirements, grading, and support, reduces sex-based differences in academic outcomes.

4.6 Limitations

There are several limitations to keep in mind when looking at these findings. First, all participants were students at one university (RIT), and the final sample comprised 84 traditional-age undergraduates who regularly used social media and identified as male or female. Most were White, with few students from other backgrounds. Because participants were recruited through psychology classes and social media posts, the sample may include more students who are academically engaged, comfortable with online surveys, or active on social media. So, these results may not apply to students at other schools, older or non-traditional students, non-binary or gender-diverse students, or young adults who rarely use social media.

Second, all main variables were measured using self-report Likert-type scales, including the APS-S, BSMAS, GAD-7, and a short set of academic performance questions I created. Self-reported GPA and students' ratings of how often they felt behind, finished assignments on time, or felt satisfied with their academic performance may not perfectly reflect actual grades or daily academic behavior. Self-report data can also be affected by response biases. Some participants seemed to repeat similar answers, which could be due to agreeing with everything, always picking extreme options, or staying in the middle. Survey fatigue or habit may have led some students to answer without thinking, and wanting to look good could have led them to under-report procrastination or anxiety and over-report academic performance. Different interpretations of words like "often" or "behind in coursework" could also add confusion. These issues may have made the real relationships among procrastination, social media addiction, anxiety, and GPA a bit less clear.

Third, the correlational design limits what can be said about causality. Because all variables were measured at a single point in time, it is not possible to determine whether procrastination or addiction-like social media use leads to changes in GPA and anxiety, whether

students who are already more anxious or doing worse in school are more likely to procrastinate and turn to social media, or whether these processes influence each other over time. The modest sample size also reduces statistical power to detect small effects and complex interactions, especially those involving sex, which were central to Hypotheses 3 and 4. Some non-significant interaction terms may reflect truly weak or absent relationships, but it is also possible that the study was not powerful enough to detect subtle moderation effects.

Finally, I did not measure some important personal and contextual factors. I did not collect information on course load, how hard students' majors were, hours spent working at jobs, sleep quality, personality traits such as conscientiousness or impulsivity, coping styles, or the types of academic support students used. These missing variables could affect both self-regulation (procrastination and social media use) and academic or emotional outcomes, making it harder to see the unique effects of procrastination, social media addiction, and anxiety.

Future research could address these limitations by using larger, more diverse samples, tracking students over time, combining validated scales (such as APS-S, BSMAS, and GAD-7) with objective data (such as official GPA and app usage logs), and including additional control variables. These steps would help show when and for which students procrastination, social media addiction, and anxiety are most strongly linked to academic performance.

Chapter 5: Conclusion and Future Directions

Overall, my study examined how social media addiction, academic procrastination, and anxiety relate to college students' academic performance and whether these patterns differ by sex. Using the APS-S, BSMAS, GAD-7, and a short set of academic performance questions, I found that higher procrastination was associated with a slightly lower GPA. In contrast, social media addiction was more clearly associated with higher anxiety and higher procrastination than with GPA itself. Most of my predictions about sex differences and interaction effects, for example, that low procrastination and low anxiety would be especially beneficial for males' GPAs, or that high procrastination together with high social media addiction would be especially harmful for females, were not supported. Taken together, these results suggest that, in my sample, procrastination was a more consistent correlate of small GPA differences than social media addiction, and that addiction-like social media use was more strongly connected to students' anxiety than to their overall grades. I view these findings as important in the real world because they suggest that efforts to support college students' success may need to focus more on everyday self-regulation habits, such as procrastination, and on managing anxiety, rather than assuming that social media use alone will automatically damage their grades.

My findings also point to several useful directions for future research. One important next step is to follow students over time rather than measuring everything at a single point. Longitudinal or diary studies that track procrastination, anxiety, social media use, and academic outcomes across a semester could show how changes in these variables relate to one another and whether any of them predict later changes in GPA. It would also be helpful to examine more closely how and why students use social media. For example, comparing students who mainly use social media for school-related purposes (such as group chats and class updates) with those

who mostly use it for entertainment or to avoid schoolwork could help determine when heavy social media use is most strongly associated with academic problems and when it might be relatively harmless.

In future work, I also plan to include a broader range of students and more detailed measures. Repeating similar studies with larger, more diverse samples, for example, at community colleges, highly selective universities, or in graduate and professional programs, would help determine whether the same patterns hold across settings and age groups. Including non-binary and gender-diverse students would provide a fuller picture of how sex and gender may relate to these variables. Finally, adding measures of course load, major difficulty, work hours, sleep quality, personality traits, coping styles, and access to academic support, along with objective data such as institutional GPA and app-usage logs, would make it easier to see how procrastination, social media addiction, and anxiety fit into the bigger picture of students' academic and emotional lives. Together, these steps can build on my study by showing more clearly when and for whom these factors matter most for academic performance.

References

Amez, S., & Baert, S. (2020). Smartphone use and academic performance: A literature review. *International Journal of Educational Research*, *103*(101618), 101618. https://doi.org/10.1016/j.ijer.2020.101618

Amirthalingam, J., & Khera, A. (2024). Understanding social media addiction: A deep dive. *Cureus*, *16*(10), e72499. https://doi.org/10.7759/cureus.72499

Anderson, I. A., & Wood, W. (2025). Overestimates of social media addiction are common but costly. *Scientific Reports*, *15*(1), 39388. https://doi.org/10.1038/s41598-025-27053-2

Andreassen, C. S., Pallesen, S., & Griffiths, M. D. (2017). The relationship between addictive use of social media, narcissism, and self-esteem: Findings from a large national survey. *Addictive Behaviors*, *64*, 287–293. https://doi.org/10.1016/j.addbeh.2016.03.006

Arness, D. C., & Ollis, T. (2022). A mixed-methods study of problematic social media use, attention dysregulation, and social media use motives. *Current Psychology (New Brunswick, N.J.)*, 1–20. https://doi.org/10.1007/s12144-022-03472-6

Chen, B., Liu, F., Ding, S., Ying, X., Wang, L., & Wen, Y. (2017). Gender differences in factors associated with smartphone addiction: a cross-sectional study among medical college students. *BMC Psychiatry*, *17*(1), 341. https://doi.org/10.1186/s12888-017-1503-z

Demirci, K., Akgönül, M., & Akpinar, A. (2015). Relationship of smartphone use severity with sleep quality, depression, and anxiety in university students. *Journal of Behavioral Addictions*, *4*(2), 85–92. https://doi.org/10.1556/2006.4.2015.010

Elhai, J. D., Dvorak, R. D., Levine, J. C., & Hall, B. J. (2017). Problematic smartphone use: A conceptual overview and systematic review of relations with anxiety and depression

psychopathology. *Journal of Affective Disorders*, *207*, 251–259. https://doi.org/10.1016/j.jad.2016.08.030

Elhai, J. D., Levine, J. C., Dvorak, R. D., & Hall, B. J. (2017). Non-social features of smartphone use are most related to depression, anxiety, and problematic smartphone use. *Computers in Human Behavior*, *69*, 75–82. https://doi.org/10.1016/j.chb.2016.12.023

Junco, R. (2012). The relationship between frequency of Facebook use, participation in Facebook activities, and student engagement. *Computers & Education*, *58*(1), 162–171. https://doi.org/10.1016/j.compedu.2011.08.004

Junco, R., & Cotten, S. R. (2012). No A 4 U: The relationship between multitasking and academic performance. *Computers & Education*, *59*(2), 505–514. https://doi.org/10.1016/j.compedu.2011.12.023

Keles, B., McCrae, N., & Grealish, A. (2020). A systematic review: the influence of social media on depression, anxiety and psychological distress in adolescents. *International Journal of Adolescence and Youth*, *25*(1), 79–93. https://doi.org/10.1080/02673843.2019.1590851

Kim, S.-K., Kim, S.-Y., & Kang, H.-B. (2016). An analysis of the effects of smartphone push notifications on task performance with regard to smartphone overuse using ERP. *Computational Intelligence and Neuroscience*, *2016*, 5718580. https://doi.org/10.1155/2016/5718580

Kirschner, P. A., & Karpinski, A. C. (2010). Facebook® and academic performance. *Computers in Human Behavior*, *26*(6), 1237–1245. https://doi.org/10.1016/j.chb.2010.03.024

Kushlev, K., Proulx, J., & Dunn, E. W. (2016). Silence your phones: Smartphone notifications increase inattention and hyperactivity symptoms. *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*, 1011–1020.

Lepp, A., Barkley, J. E., & Karpinski, A. C. (2014). The relationship between cell phone use, academic performance, anxiety, and Satisfaction with Life in college students. *Computers in Human Behavior*, *31*, 343–350. https://doi.org/10.1016/j.chb.2013.10.049

McCloskey, J. (2011). *Finally, my thesis on academic procrastination*. University of Texas at Arlington.

McCloskey, J. D. (2023). Academic procrastination scale--short form [Data set]. In *PsycTESTS Dataset*. American Psychological Association (APA).

Montag, C., Demetrovics, Z., Elhai, J. D., Grant, D., Koning, I., Rumpf, H.-J., Spada, M., Throuvala, M., & van den Eijnden, R. (2024). Problematic social media use in childhood and adolescence. *Addictive Behaviors*, *153*(107980), 107980. https://doi.org/10.1016/j.addbeh.2024.107980

Oulasvirta, A., Rattenbury, T., Ma, L., & Raita, E. (2012). Habits make smartphone use more pervasive. *Personal and Ubiquitous Computing*, *16*(1), 105–114. https://doi.org/10.1007/s00779-011-0412-2

Pielot, M., Church, K., & de Oliveira, R. (2014). An in-situ study of mobile phone notifications. *Proceedings of the 16th International Conference on Human-Computer Interaction with Mobile Devices & Services*.

Pielot, M., & Rello, L. (2017). Productive, anxious, lonely: 24 Hours without push notifications. *Proceedings of the 19th International Conference on Human-Computer Interaction with Mobile Devices and Services*.

Przepiorka, A., Błachnio, A., & Díaz-Morales, J. F. (2016). Problematic Facebook use and procrastination. *Computers in Human Behavior*, *65*, 59–64. https://doi.org/10.1016/j.chb.2016.08.022

Rosen, L. D., Mark Carrier, L., & Cheever, N. A. (2013). Facebook and texting made me do it: Media-induced task-switching while studying. *Computers in Human Behavior*, *29*(3), 948–958. https://doi.org/10.1016/j.chb.2012.12.001

Shahnawaz, M. G., & Rehman, U. (2020). Social networking addiction scale. *Cogent Psychology*, *7*(1), 1832032. https://doi.org/10.1080/23311908.2020.1832032

Shannon, H., Bush, K., Villeneuve, P. J., Hellemans, K. G., & Guimond, S. (2022). Problematic social media use in adolescents and young adults: Systematic review and meta-analysis. *JMIR Mental Health*, *9*(4), e33450. https://doi.org/10.2196/33450

Spitzer, R. L., Kroenke, K., Williams, J. B. W., & Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder: the GAD-7: The GAD-7. *Archives of Internal Medicine*, *166*(10), 1092–1097. https://doi.org/10.1001/archinte.166.10.1092

Steel, P. (2007). The nature of procrastination: a meta-analytic and theoretical review of quintessential self-regulatory failure. *Psychological Bulletin*, *133*(1), 65–94. https://doi.org/10.1037/0033-2909.133.1.65

Upshaw, J. D., Shields, G. S., Judah, M. R., & Zabelina, D. L. (2024). Electrophysiological effects of smartphone notifications on cognitive control following a brief mindfulness induction. *Biological Psychology*, *185*(108725), 108725. https://doi.org/10.1016/j.biopsycho.2023.108725

Upshaw, J. D., Stevens, C. E., Jr, G., G., & Zabelina, D. L. (2022). The hidden cost of a smartphone: The effects of smartphone notifications on cognitive control from a behavioral and electrophysiological perspective. *PloS One*, *17*(11), e0277220. https://doi.org/10.1371/journal.pone.0277220

Zarate, D., Hobson, B. A., March, E., Griffiths, M. D., & Stavropoulos, V. (2023). Psychometric properties of the Bergen Social Media Addiction Scale: An analysis using item response theory. *Addictive Behaviors Reports*, *17*(100473), 100473. https://doi.org/10.1016/j.abrep.2022.100473

Appendix A: Informed Consent

Rochester Institute of Technology

INFORMED CONSENT

Title of Study: Social Media Addiction

Principal Investigators: Joshua Trager, Erik Menchaca, Renny Lin, Faith Lam

Faculty Advisor: Dr. Allison Fitch, Ph.D.

What are some general things you should know about research studies?

We invite you to take part in a research study. Your participation in this study is voluntary. You have the right to be a part of this study, to choose not to participate, or to stop participating at any time without penalty. You are not guaranteed any personal benefits from participating in this study. If you don't understand something in this form, it is your right to ask the researcher for clarification or more information. A copy of this consent form will be provided to you. If at any time you have questions about your participation, do not hesitate to contact the researcher(s) named above.

What is the purpose of this study?

The purpose of the research study is to gain a better understanding of personal use of social media and its relationship to individual actions, feelings, and habits. We will analyze how different levels of social media use affect our perceptions. Specifically, we're exploring how social media affects your perception of yourself and your time management.

What will happen if you take part in the study?

Participants in this study will be asked to complete a survey once with [FILL IN] questions and basic demographic information. Some of the questions ask about your behavior around social media, and some ask about your habits as a student at this university. We think the survey should take from 5 to 10 [CHECK] minutes. There are no right or wrong answers. Your participation in this research is voluntary, and it is your choice whether to participate or not. You may choose not to participate or to stop participating at any time without penalty or loss of benefits.

Risks

We don't anticipate any risks to you if you participate, but there may be some we don't know about.

Benefits

Knowledge gained from this study may help work towards making social media addiction less prevalent. There are no direct benefits for you.

Confidentiality

The information in the study records will be kept confidential. We will ensure only people connected with the research see your data. Data will be stored securely on password-protected servers and computers. Only the researchers and their advisor will have access to the data. The results will be presented together, and demographic data will only be used to describe the group of people who provided information. None of your individual responses will ever be presented alone. The results of the study will be shared only for academic purposes and may be presented at conferences or in journal articles. In rare instances, there may be safety or compliance issues that arise and require authorized representatives of Rochester Institute of Technology, including members of the Human Subjects Research Office (HSRO) or Institutional Review Board (IRB), or federal officials to access research records that identify you by name.

Future Use of Information

Your data, even if identifying information is removed, will not be used or distributed for future research.

Compensation

Participants will not receive compensation.

What if you have questions about this study?

If you have questions at any time about the study or the procedures, you may contact the Principal Investigator. If you have other questions, please contact the Human Subjects Research Office at hmfsrs@rit.edu.

Appendix B: Academic Procrastination Scale -- Short Form Questionnaire

The following questions assess your student habits and routines. Please answer the following as they apply to yourself.

How much do you, yourself, agree with the following statements? (Scored on a 1 to 5 scale where 1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly agree.

1. I usually allocate my time to review and proofread my work.
2. I put off projects until the last minute.
3. I have found myself waiting until the day before to start a big project.
4. I know I should work on my schoolwork, but I just don't do it.
5. When working on schoolwork, I usually get distracted by other things.
6. I waste a lot of time on unimportant things.
7. I get distracted by other, more fun things when I am supposed to work on schoolwork.
8. I concentrate on schoolwork instead of distractions.
9. I can’t focus on school work or projects for more than an hour until I get distracted.
10. My attention span for schoolwork is very short.
11. Tests are meant to be studied for just the night before.
12. I feel prepared well in advance for most tests.
13. “Cramming” and last-minute studying are the best ways that I study for a big test.
14. I allocate time, so I don't have “cram” at the end of the semester.
15. I only study the night before exams.

16. If an assignment is due at midnight, I will work on it until 11:59.

17. When given an assignment, I usually put it away and forget about it until it is almost due.

18. Friends usually distract me from my schoolwork.

19. I find myself talking to friends or family instead of working on schoolwork.

20. On the weekends, I make plans to do homework and projects, but I get distracted and hang out with friends.

21. I tend to put off things for the next day.

22. I don’t spend much time studying school material until the end of the semester.

23. I frequently find myself putting important deadlines off.

24. If I don’t understand something, I’ll usually wait until the night before a test to figure it out.

25. I read the textbook and look over notes before coming to class and listening to a lecture or a teacher.

Appendix C: Bergen Social Media Addiction Scale - Questionnaire

Please rate the frequency of your social media behaviors on the following scale:

1: Very rarely,

2: Rarely,

3: Sometimes,

4: Often,

5: Very often

Salience

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

Tolerance

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

Mood modification

3. Used social media to forget about personal problems?

Relapse

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

Withdrawal

5. Become restless or troubled if you have been prohibited from using social media?

Conflict:

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

Appendix D: Generalized Anxiety Disorder - 7 Scale -- Questionnaire

Over the last 2 weeks, how often have you been bothered by the following problems?

0: Not at all, 1: Several days, 2: More than half the days, 3: Nearly every day

1. Feeling nervous, anxious, or on edge

0: Not at all	1: Several days	2: More than half the days	3: Nearly every day

2. Not being able to stop or control worrying

0: Not at all	1: Several days	2: More than half the days	3: Nearly every day

3. Worrying too much about different things

0: Not at all	1: Several days	2: More than half the days	3: Nearly every day

4. Trouble relaxing

0: Not at all	1: Several days	2: More than half the days	3: Nearly every day

5. Being so restless that it is hard to sit still

0: Not at all	1: Several days	2: More than half the days	3: Nearly every day

6. Becoming easily annoyed or irritable

0: Not at all	1: Several days	2: More than half the days	3: Nearly every day

7. Feeling afraid as if something awful might happen

0: Not at all	1: Several days	2: More than half the days	3: Nearly every day

Total Score: ___ = Add columns ___ + ___ + ___

If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

Not difficult at all ___ Somewhat difficult ___ Very difficult ___ Extremely difficult ___

Appendix E: Academic Performance Questions

- What is your current GPA?
  - Open-ended written response
- In the most recent semester, how satisfied are you with your academic performance?
  - Very dissatisfied
  - Dissatisfied
  - Neutral
  - Satisfied
  - Very satisfied
- In the most recent semester, how often did you feel you were behind in your coursework?
  - Never
  - Very rarely
  - Rarely
  - Sometimes
  - Always
  - Very always
- How often do you complete assignments on time?”
  - 1 = Never
  - 2 = Rarely
  - 3 = Sometimes
  - 4 = Often
  - 5 = Always

- Compared to before you used social media regularly, how would you describe your current academic performance?”
    - Much worse
    - Somewhat worse
    - About the same
    - Somewhat better
    - Much better