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Research Article

Academic Stress, Procrastination, and Mental Well-Being Among Engineering Students: A Multivariate Correlational and Predictive Study

Brandon N. Obenza[1] | Angel Aiya M. Fernandez[2] | Marjhon G. Cutamora Jr.[3] | Geanne Carlo O. Libby[4] | Rea Mariz S. Bragat[5] | Dave Clark Arreglo[6] | Jereycres B. Nepa[7] | Gideon S. Sumayo[8]

[1-7] University of Mindanao, Davao City, 8000, Philippines
[8] University of Southern Mindanao - PALMA Cluster Campuses

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Abstract

This study investigated the predictive influence of academic stress and procrastination on mental well-being among university students in the Philippines, with gender as a covariate. Grounded in the Procrastination Health Model and Self-Determination Theory, the study utilized a non-experimental correlational design involving 378 undergraduate students selected through stratified random sampling. Standardized instruments measured academic stress, procrastination, and mental well-being, and reliability analysis yielded strong internal consistency across all constructs (Cronbach's $\alpha = 0.900$ to 0.906; McDonald's $\omega = 0.902$ to 0.910). Exploratory Factor Analysis confirmed the construct validity of the scales, with factor loadings ranging from 0.303 to 0.922. Correlation analysis revealed that academic stress and procrastination were both significantly associated with mental well-being, although in nuanced directions. Multiple regression analysis showed that academic stress ($\beta = 0.339$, $p < .001$), procrastination ($\beta = 0.130$, $p = .031$), and gender ($\beta = -0.361$, $p < .001$) significantly predicted mental well-being, accounting for 14.0% of the total variance ($R^2 = 0.140$, $F = 20.2$, $p < .001$). The findings challenge conventional assumptions by suggesting that moderate academic stress may positively influence well-being and that procrastination, when managed, may not be entirely detrimental. These results highlight the need for differentiated stress management and time regulation programs in higher education. The study offers theoretical contributions to models of academic behavior and underscores the importance of contextual and gender-sensitive approaches to student mental health.

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[2]Corresponding Author: Angel Aiya M. Fernandez
[*]Corresponding Email: a.fernandez.554778@umindanao.edu.ph

1. Introduction

Over the past decade, mental health and well-being among young people have emerged as pressing global public health priorities. University students, in particular, constitute a high-risk group for psychological distress and mental health disorders (Nielsen et al., 2024). Importantly, mental well-being is not merely the absence of mental illness; it refers to an individual's capacity to function effectively, maintain fulfilling relationships, and achieve personal growth across developmental contexts (Freeman, 2022; Ryff, 2013). This evolving conceptualization of psychological well-being draws from interdisciplinary advances in psychology, public health, and education. As Ryff (2013) posits, well-being reflects an optimal state of functioning that fosters adaptation and resilience amid life's challenges.

Research conducted in countries such as the United Kingdom and Australia has shown that students facing mental health challenges are more likely to experience academic disengagement, underperformance, or attrition due to psychological burdens (Baik et al., 2015; Baik et al., 2019). This concern is similarly reflected in the Philippine context, where mental health issues among college students continue to rise. National data reveal that between 11.3% and 11.6% of Filipinos suffer from mental health conditions, predominantly anxiety and depression (Alibudbud, 2023). Among Filipino college students, Egcas et al. (2021) found that 40.2% reported poor mental well-being. Despite this, more than half expressed high life satisfaction, suggesting complex psychosocial dynamics. Lumayag and Bacarisas (2024) further emphasize that optimal well-being is marked by optimism, self-worth, and psychological vitality.

One of the most salient contributors to poor mental health in higher education is academic stress. This form of stress is typically driven by performance demands, workload pressures, and time constraints (Karaman et al., 2019), and can lead to emotional exhaustion, burnout, and academic decline (Barbayannis et al., 2022; Liu et al., 2024). These effects are particularly acute in engineering education, where students are exposed to high cognitive loads and continuous evaluation (Jensen et al., 2023; Maji et al., 2024). The culture of rigor in engineering programs often results in sleep deprivation, ineffective time management, and emotional fatigue—conditions that elevate psychological vulnerability. As noted by Abdullah et al. (2020), the academic environment in engineering fields can significantly compromise mental wellness. Frazier and Fosco (2024) also underscore that academic and social pressures can intensify mental health challenges, thereby affecting learning, motivation, and employability (Pascoe et al., 2019; Barbayannis et al., 2022).

Equally important, procrastination—commonly defined as the intentional delay of academic tasks—is a behavioral factor that adversely influences mental health (Steel & Klingsieck, 2016). Procrastination not only correlates positively with perceived stress but also negatively with psychological well-being (Balkis et al., 2017; Duru & Balkis, 2017). Students who habitually procrastinate tend to experience anxiety and diminished emotional regulation as deadlines approach (Smoletz, 2019; Jochmann et al., 2024). This dynamic may amplify the negative effects of academic stress. Emerging evidence from Philippine studies supports this interaction. For example, Obenza and Obenza (2025) found that perceived stress significantly mediated the relationship between internet addiction and insomnia, underscoring the broader impact of maladaptive behaviors on psychological outcomes. Obenza et al. (2025) further demonstrated that procrastination mediates the relationship between academic stress and burnout, with implications for student well-being and academic persistence. Similarly, Obenza et al. (2024) reported that academic stress and fear of failure significantly predict procrastination, which in turn exacerbates

[2]Corresponding Author: Angel Aiya M. Fernandez
[*]Corresponding Email: a.fernandez.554778@umindanao.edu.ph

psychological distress among college students.

Despite the increasing recognition of these factors, few studies have examined the combined effects of academic stress and procrastination on mental well-being, particularly within the context of engineering education in the Philippines. Most existing literature focuses on isolated variables or on general student populations, leaving a critical gap in understanding the psychological landscape of high-pressure academic disciplines. In Region XI of the Philippines, where engineering programs are rapidly expanding, the lack of localized, evidence-based studies hinders the development of targeted mental health interventions.

To address this research gap, the present study investigates the interplay among academic stress, procrastination, and mental well-being among engineering college students in Region XI, Philippines. Specifically, it seeks to:

a. Determine the levels of procrastination, academic stress, and mental well-being;
b. Examine the relationships among these variables; and
c. Identify whether significant gender-based differences exist.

The study is anchored in two complementary theoretical frameworks. The Procrastination Health Model conceptualizes procrastinatory behavior as a mechanism that can produce both maladaptive and adaptive psychological outcomes depending on contextual and individual factors (Sirois, 2023). Simultaneously, Self-Determination Theory (Deci & Ryan, 1985) posits that mental well-being is facilitated when individuals experience autonomy, competence, and relatedness. These frameworks collectively inform the study's hypothesis that procrastination and academic stress—when interpreted within students' cognitive and motivational contexts—serve as significant predictors of well-being.

By examining these constructs concurrently, this research contributes to a nuanced understanding of the psychological and behavioral pressures shaping student mental health in technical disciplines. The findings aim to inform institutional stakeholders—educators, counselors, and policy-makers—in crafting gender-sensitive, data-driven mental health initiatives to support student resilience and academic success in Philippine engineering education

2. Materials and Methods

2.1. Research Design

This study employed a quantitative, non-experimental comparative and correlational design to examine the differences and relationships among academic stress, procrastination, and mental well-being, and to assess the intervening role of procrastination. As outlined by Creswell and Creswell (2023), the quantitative approach involves the systematic collection, analysis, and interpretation of numerical data to test hypotheses and establish variable relationships. This research strategy, commonly utilizing surveys or experimental methods, emphasizes objectivity, reliability, and statistical analysis to generate empirically supported conclusions.

[2]Corresponding Author: Angel Aiya M. Fernandez
[*]Corresponding Email: a.fernandez.554778@umindanao.edu.ph

2.2. Respondents and Sampling Procedure

The participants were undergraduate engineering students from various colleges and universities across Region XI, Philippines. The inclusion criteria required participants to be: (1) currently enrolled in an engineering undergraduate program, (2) at least 18 years of age, and (3) enrolled in at least one academic course during the semester of data collection. These criteria were informed by prior literature identifying engineering students as particularly vulnerable to academic stress and psychological distress due to the cognitive and technical demands of their curriculum (Jensen et al., 2023; Maji et al., 2024). Students were excluded if they (1) were on academic leave during the data collection period, (2) failed to complete the survey in full, or (3) declined to provide informed consent.

A total of 378 qualified respondents completed the survey, which was distributed online through social media platforms. The study employed a stratified random sampling technique to ensure representation across gender and academic levels. As described by Hayes (2023), stratified random sampling involves dividing the population into subgroups or strata sharing similar characteristics and then randomly selecting participants from each stratum to enhance representativeness and generalizability.

2.3. Research Instruments

The online questionnaire, developed using Google Forms, consisted of 56 items and was divided into three primary sections corresponding to the study's main variables. The first section measured academic procrastination using a 5-point Likert-type scale adapted from Soares et al. (2022). The second section assessed academic stress using items derived from the Academic Stress Scale developed by Bedewy and Gabriel (2015), also structured on a 5-point Likert scale. The final section evaluated mental well-being using the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS) by Tennant et al. (2007), similarly anchored on a 5-point Likert response format. These standardized instruments were selected for their demonstrated reliability and construct validity in prior educational and psychological research.

2.4. Ethical Considerations

Although this study did not undergo formal review by an institutional review board (IRB), all procedures strictly followed the *National Ethical Guidelines for Health and Health-Related Research Involving Human Participants* (2017) issued by the Philippine Health Research Ethics Board (PHREB). Participants were fully informed of the study's objectives, and informed consent was obtained electronically prior to participation. Anonymity and confidentiality were guaranteed; no personal identifiers were collected. Participants were also informed of their right to withdraw from the study at any point without penalty. The research ensured that no psychological, academic, or reputational risks were posed, and all data were collected and analyzed solely for academic and scientific purposes.

2.5. Reliability and Statistical Power

The instruments were initially subjected to content validation by field experts and underwent pilot testing to ensure clarity and contextual appropriateness. To evaluate the construct validity and internal consistency of the measurement tools, exploratory factor analysis (EFA) was conducted alongside reliability tests. The factor analysis confirmed the unidimensionality and convergent validity of the constructs, with item loadings exceeding the

[2]Corresponding Author: Angel Aiya M. Fernandez
[*]Corresponding Email: a.fernandez.554778@umindanao.edu.ph

minimum threshold of 0.30, and many exceeding 0.50, indicating strong factor structure. The Kaiser-Meyer-Olkin (KMO) value of 0.826 and a significant Bartlett's Test of Sphericity ($\chi^2 = 6617$, $p < .001$) affirmed sampling adequacy and the suitability of the data for factor analysis.

For internal consistency reliability, both Cronbach's alpha and McDonald's omega were computed, with all scales meeting or exceeding the acceptable threshold of 0.70. These results confirmed the measurement model's reliability across the constructs of academic stress, procrastination, and mental well-being.

To ensure adequate statistical power for detecting effects in regression analysis, an a priori power analysis was conducted using G*Power 3.1.9.6 (NCBI, 2019). The analysis revealed that a sample size of 89 participants would achieve 80% power to detect a medium effect size ($f^2 = 0.15$) at a significance level of 0.05. The computed parameters included a non-centrality value of 2.71352, a critical t-value of 1.9693, and 84 degrees of freedom, confirming that the actual sample size was more than sufficient for the planned multiple linear regression analyses.

2.6. Data Analysis

Descriptive and inferential statistical analyses were conducted using the open-source software Jamovi (Jamovi, 2019). The analysis involved computing descriptive statistics to summarize the central tendencies and variability of the main variables, as well as Pearson's correlation coefficients to examine the relationships among academic stress, procrastination, and mental well-being. In addition, multiple linear regression analysis was performed to identify the extent to which academic stress, procrastination, and gender predict students' mental well-being. The use of Jamovi facilitated a transparent and rigorous statistical analysis process aligned with the study's correlational design.

3. Results and Discussion

3.1. Reliability Analysis

Reliability is defined as the degree of internal consistency in a measurement (Gonzalez & Mackinnon, 2001; Feldt & Brennan, 1989; Thissen & Wainer, 2001). It demonstrates that when the reliability is strong, the observed scores predominantly reflect the measured concept. Further, validity pertains to the empirical evidence and theoretical reasons supporting a score's comprehension and interpretation (Wolming & Wikström, 2010).

Cronbach's alpha was used to assess the tool's internal consistency, according to Taber (2018). There are more than 30 reliability calculation methods, and one of them is McDonald's omega (ω) (Edwards et al., 2021). The omega reliability does not have such assumptions as the alpha. Therefore, when Cronbach's alpha does not hold its assumptions, it is recommended not to use alpha but to use omega instead (Goodboy & Martin, 2020). Specifically, when the tau equivalence assumption does not hold, the use of ω is suggested (Viladrich et al., 2017). This is because McDonald's Omega is robust in avoiding violations of assumptions (Goodboy

[2]Corresponding Author: Angel Aiya M. Fernandez
[*]Corresponding Email: a.fernandez.554778@umindanao.edu.ph

& Martin, 2020; Kalkbrenner, 2023).

The reliability statistics for constructs such as procrastination, with Cronbach's α = 0.900 and McDonald's ω = 0.902, indicate internal consistency, affirming that the items in each of the respective scales actually measured the same underlying construct. Table 1 reports internal consistency for procrastination constructs (Cronbach's α = 0.900, McDonald's ω = 0.902), which confirms their reliability. This aligns with other research findings by (Vaske et al., 2016) on scale reliability. SPS also showed satisfactory internal consistency with Cronbach's α, indicating that it is reliable in the measurement of procrastination among medical undergraduates (Wang et al., 2024). The Academic Procrastination Scale (APS-SF) also had Cronbach's α of 0.945, indicating that the scale is reliable in assessing academic procrastination among university students (Shehri, 2022). The Brief Academic Procrastination Scale (EBPA-16) was reliable since its internal consistency coefficients were more than 0.70. This, therefore, supported its use in academic settings. Both exploratory and confirmatory factor analyses validated the Multidimensional Academic Procrastination Scale (MAPS-15), demonstrating its reliability in various learning settings (González-Brignardello & Paniagua, 2023). Despite the satisfactory reliability of the scales, the inclusion of other critical cultural and contextual factors related to procrastination patterns is necessary to limit the applicability of these results to a wide range of populations (Fang et al., 2022).

3.2. Assumption Checks

Bartlett's test of sphericity was applied to a correlation matrix computed on random normal deviates by (Tobias & Carlson, 1969) and returned a chi-square value indicating that the matrix could have been generated from a population where the correlation coefficients are zero. These results re-emphasize the desirability of computing this test prior to proceeding to factor extraction and, in accord with the findings of other writers, indicate this test to be sensitive in detecting results that can be ascribed to chance. Bartlett's Test of Sphericity and the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy are commonly used to assess the suitability of data for factor analysis. The given values (χ^2 = 6617, df = 1540, p < .001 for Bartlett's Test and KMO = 0.826) state that the data are indeed suitable for factor analysis. The significant result (χ^2 = 6617, df = 1540, p <.001) hence, the Correlation Matrix not being an identity matrix, indicating that there are relationships among the variables that can be explored through factor analysis (Tobias & Carlson, 1969). This result shows that the null hypothesis is that the variables have no relationship, thus validating the use of factor analysis (Azevedo, 2003). A value of 0.826 KMO, shown in Table 1, demonstrates sampling adequacy, with the sample size being appropriate for factor analysis (Hasim et al., 2024). Generally, KMO values above 0.7 are acceptable, whereas values nearing 1 indicate excellent adequacy (Hudacek et al., 2019).

Table 1. Assumption Check and Reliability & Validity of the Constructs

Bartlett's Test of Sphericity		
χ^2	**df**	**p**

[2]Corresponding Author: Angel Aiya M. Fernandez
[*]Corresponding Email: a.fernandez.554778@umindanao.edu.ph

6617	1540	<.001
KMO Measure of Sampling Adequacy		**MSA**
Overall		0.826
Scale Reliability Statistics	**Cronbach's α**	**McDonald's ω**
Procrastination Scale	0.900	0.902
Academic Stress Scale	0.765	0.777
Mental Well-Being Scale	0.906	0.910

3.3. Factor Structure and Item Loadings

To assess the construct validity of the measurement instruments used in this study, Exploratory Factor Analysis (EFA) was performed using the minimum residual extraction method with oblimin rotation, which is appropriate for correlated factors (Costello & Osborne, 2005). Table 2 presents the factor loadings across three latent constructs: Procrastination, Academic Stress, and Mental Well-Being. Factor loadings greater than 0.30 were retained for interpretation, in accordance with guidelines by Hair et al. (2019).

Procrastination items clustered meaningfully across behavioral, cognitive, and time management dimensions. High factor loadings were observed for items such as "Tests are meant to be studied for just the night before" (0.810), "I waste a lot of time on unimportant things" (0.704), and "Cramming and last-minute studying is the best way that I study for a big test" (0.704), indicating strong representation of avoidance and delay behaviors in academic contexts. Several items such as "I usually allocate time to review and proofread my work" (0.363) and "My attention span for schoolwork is very short" (0.361) had relatively lower loadings, suggesting that these may reflect less central or more diffuse aspects of the procrastination construct. Nevertheless, most items exceeded the recommended 0.40 threshold, supporting the internal cohesion of the scale (Tabachnick & Fidell, 2019).

For *Academic Stress*, the factor loadings revealed two latent subdimensions: academic pressure and emotional-cognitive reactions. The strongest loading was observed for "The size of the curriculum (workload) is excessive" (0.851), followed by "Am confident that I will be successful in my future career" (0.922) and "Am confident that I will be a successful student" (0.841). Interestingly, these latter items loaded strongly on the stress factor but may reflect an inverse conceptual relationship, suggesting the need for item polarity checks or potential cross-loading issues. Some items like "I can make academic decisions easily" (0.303) and "I have enough time to relax after work" (0.330) had relatively weak loadings, warranting further investigation for refinement in future studies (Worthington & Whittaker, 2006).

The *Mental Well-Being* construct demonstrated excellent factorial validity, with robust loadings across emotional, social, and psychological domains. Notably high factor loadings were observed for "I've been feeling good about myself" (0.830), "I've had energy to spare" (0.783), and "I've been thinking clearly" (0.770). These results align with prior validations of the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS), confirming its reliability in assessing positive mental health states in academic populations (Tennant et al., 2007). All items, except "I've been feeling loved" (0.380), exceeded the acceptable 0.40 threshold, further affirming unidimensionality

[2]Corresponding Author: Angel Aiya M. Fernandez
[*]Corresponding Email: a.fernandez.554778@umindanao.edu.ph

and convergent validity.

The oblimin rotation confirmed that the factors are correlated, which aligns with theoretical expectations of interrelated psychological constructs. The results support the psychometric soundness of the instruments used, and offer a robust foundation for further latent variable modeling such as SEM. Future studies may conduct Confirmatory Factor Analysis (CFA) to validate this structure and refine item performance using fit indices and modification indices (Brown, 2015).

Table 2. Factor Loadings

Factor	Indicator	Estimate
Procrastination	I usually allocate time to review and proofread my work.	0.363
	I put off projects until the last minute.	0.330
	I have found myself waiting until the day before to start a big project.	0.451
	I know I should work on schoolwork, but I just don't do it.	0.527
	When working on schoolwork, I usually get distracted by other things.	0.756
	I waste a lot of time on unimportant things.	0.704
	I get distracted by other, more fun things when I am supposed to work on schoolwork.	0.666
	I concentrate on schoolwork instead of other distractions.	0.525
	I can't focus on schoolwork or projects for more than an hour until I get distracted.	0.424
	My attention span for schoolwork is very short.	0.361
	Tests are meant to be studied for just the night before.	0.810
	I feel prepared well in advance for most tests	0.591
	"Cramming" and last-minute studying is the best way that I study for a big test.	0.704
	I allocate time so I don't have to "cram" at the end of the semester	0.549
	I only study the night before exams.	0.659
	If an assignment is due at midnight, I will work on it until 11:59.	0.489
	When given an assignment, I usually put it away and forget about it until it is almost due.	0.462
	Friends usually distract me from schoolwork.	0.653
	I find myself talking to friends or family instead of working on schoolwork.	0.698
	On the weekends, I make plans to do homework and projects, but I get distracted and hang out with friends.	0.524
	I tend to put off things for the next day.	0.528
	I don't spend much time studying school material until the end of the semester.	0.428
	I frequently find myself putting important deadlines off	0.502
	If I don't understand something, I'll usually wait until the night before a test to figure it out.	0.605
Academic Stress	Examination times are very stressful to me.	0.454
	I think that my worry about examinations is a weakness of character.	0.339
	I believe that the amount of work assignment is too much.	0.699
	The size of the curriculum (workload) is excessive.	0.851
	Even if I pass my exams, am worried about getting a job.	0.391
	The examination questions are usually difficult.	0.565
	Am confident that I will be successful in my future career.	0.922
	Am confident that I will be a successful student.	0.841
	I fear failing courses this year.	0.458
	I can make academic decisions easily.	0.303
	I have enough time to relax after work.	0.330
	The time allocated to classes and academic work is enough.	0.331
	Examination time is short to complete the answers.	0.549

[2]Corresponding Author: Angel Aiya M. Fernandez
[*]Corresponding Email: a.fernandez.554778@umindanao.edu.ph

	Am unable to catch up if getting behind the work.	0.488
Mental Well-Being	I've been feeling useful.	0.568
	I've been feeling relaxed.	0.643
	I've been feeling interested in other people.	0.643
	I've had energy to spare.	0.783
	I've been dealing with problems well.	0.505
	I've been thinking clearly.	0.770
	I've been feeling good about myself.	0.830
	I've been feeling close to other people.	0.691
	I've been feeling confident.	0.696
	I've been able to make up my own mind about things.	0.705
	I've been feeling loved.	0.380
	I've been interested in new things.	0.650
	I've been feeling cheerful.	0.660

Note. 'Minimum residual' extraction method was used in combination with a 'oblimin' rotation

3.4. Gender Differences in Procrastination, Academic Stress, and Mental Well-Being

3.4.1. Procrastination

The independent samples t-test revealed a statistically significant difference in procrastination scores between male and female students, t(376) = -2.61, p = .010, with a small effect size (d = -0.275). Males (M = 3.07, SD = 0.576) reported significantly higher levels of procrastination than females (M = 2.91, SD = 0.606). This result aligns with recent findings that male engineering students tend to procrastinate more than their female counterparts due to differences in self-regulation and motivational patterns (Chernyakevich, 2023; Saikia & Maraichelvi, 2015). Studies by Chernyakevich (2024) emphasized that lower self-leadership and self-management skills are predictive of higher procrastination tendencies, particularly among male students in technical disciplines.

This gendered pattern is consistent with the broader literature, where engineering students commonly report medium to high levels of procrastination (Suryanti & Sholikhah, 2024; Ouali et al., 2021). Additionally, Castillo et al. (2021) noted a strong link between academic procrastination and increased academic stress, which may be more pronounced in male students facing rigid academic workloads and reduced help-seeking behaviors.

3.4.2. Academic Stress

For academic stress, the t-test indicated no statistically significant difference between males and females, t(376) = 1.50, p = .134, with a negligible effect size (d = 0.159). Females (M = 3.31, SD = 0.567) showed slightly higher stress levels than males (M = 3.23, SD = 0.474), but the difference was not sufficient to establish gender-based variation. This finding diverges from prior research suggesting that female engineering students are more likely to report higher stress due to internalized academic expectations and gender-based pressures in male-dominated fields (Ayoola et al., 2025; Gong, 2020; Jibril, 2021).

Nonetheless, the observed levels of stress in both groups are consistent with the high prevalence of academic stress among engineering students globally. As found by Joshi and Kiran (2020) and Hashim et al. (2023), key stressors include excessive workload, pressure to perform, and challenges in instructional delivery,

[2]Corresponding Author: Angel Aiya M. Fernandez
[*]Corresponding Email: a.fernandez.554778@umindanao.edu.ph

all of which affect both genders significantly.

Table 3.A. Independent Samples T-Test

		Statistic	df	p	Mean difference	SE difference		Effect Size
Procrastination	Student's t	-2.61	376	0.010	-0.1618	0.0621	Cohen's d	-0.275
Academic Stress	Student's t	1.50[a]	376	0.134	0.0812	0.0541	Cohen's d	0.159
Mental Well-Being	Student's t	4.97	376	<.001	0.3674	0.0740	Cohen's d	0.525

Note. H_a $\mu_{Female} \neq \mu_{Male}$

[a] Levene's test is significant ($p < .05$), suggesting a violation of the assumption of equal variances

3.4.3. Mental Well-Being

There was a highly significant gender difference in mental well-being scores, $t(376) = 4.97$, $p < .001$, with a medium effect size ($d = 0.525$). Female students ($M = 2.98$, $SD = 0.684$) reported significantly higher levels of mental well-being than their male counterparts ($M = 2.61$, $SD = 0.710$). This finding is critical given that mental health concerns are prevalent among engineering students, with male students often exhibiting lower help-seeking behavior and higher rates of psychological distress (Danowitz & Beddoes, 2022; Gomer et al., 2025).

According to Wilson et al. (2023), engineering education environments may normalize stress and stigmatize emotional vulnerability, particularly among male students, thus exacerbating mental health disparities. Furthermore, cultural factors within engineering fields often reinforce self-reliance, discouraging mental health support use among males (Jensen et al., 2023; Barsaiya et al., 2024). The positive scores among females may reflect a relatively higher engagement with coping strategies, peer support, or openness to mental health interventions (Crone et al., 2023).

The gendered patterns in procrastination and mental well-being warrant targeted interventions. For instance, mindfulness and motivation-building programs have shown promising results in reducing procrastination and enhancing mental wellness (Gurumoorthy & Kumar, 2020; Hancock et al., 2023). Addressing procrastination behaviors—especially in male students—may indirectly improve stress resilience and academic success (Castillo et al., 2021; Ouali et al., 2021).

Meanwhile, the non-significant gender differences in academic stress suggest that institutional reforms should be inclusive and systemic, addressing common stressors such as curriculum overload, rigid scheduling, and inadequate academic resources (Wan et al., 2021; Ayoola et al., 2025). Universities should prioritize creating supportive, flexible academic environments that normalize mental health conversations for all students.

Table 3.B. Group Descriptives

[2]Corresponding Author: Angel Aiya M. Fernandez
[*]Corresponding Email: a.fernandez.554778@umindanao.edu.ph

	Group	N	Mean	Median	SD	SE
Procrastination	Female	146	2.91	2.92	0.606	0.0502
	Male	232	3.07	3.04	0.576	0.0378
Academic Stress	Female	146	3.31	3.29	0.567	0.0469
	Male	232	3.23	3.23	0.474	0.0311
Mental Well-Being	Female	146	2.98	3.00	0.684	0.0566
	Male	232	2.61	2.58	0.710	0.0466

3.5. Correlational Analysis: Interplay of Mental Well-Being, Academic Stress, and Procrastination

The correlational analysis in Table 4 explores the associations among mental well-being, academic stress, and dimensions of procrastination—including Academic Stress from Procrastination Pressure (ASPP), Academic Stress from Task-Related Demands (ASTR), and Academic Stress from Poor Time and Work Management (ASPW). Results are reported using Pearson's r, Spearman's ρ, and Kendall's Tau to ensure robustness across parametric and non-parametric assumptions.

3.5.1. Mental Well-Being and Academic Stress

A significant, positive correlation was found between mental well-being and academic stress ($r = .278$, $p < .001$). Although this may appear counterintuitive, the finding aligns with emerging perspectives that moderate levels of academic stress can enhance cognitive engagement and goal-directed behavior, especially when students possess adequate coping resources or self-efficacy (Gao, 2023). In contexts where stress is perceived as a challenge rather than a threat, it may activate adaptive mechanisms that support psychological functioning (Danowitz & Beddoes, 2022).

3.5.2. Mental Well-Being and Procrastination

Mental well-being also exhibited a statistically significant but small positive correlation with procrastination ($r = .116$, $p = .024$). This suggests a nuanced interplay where certain procrastination behaviors may not immediately undermine well-being, especially when students adopt flexible deadlines or perceive their delays as manageable. As Chen et al. (2024) noted, academic perceptions—such as self-efficacy and motivation—can moderate the psychological consequences of procrastination, mitigating adverse effects on well-being.

3.5.3. Procrastination and Academic Stress Dimensions

These strong correlations underscore the multifaceted burden procrastination imposes on students. As previously reported by Castillo et al. (2021) and Suryanti and Sholikhah (2024), academic procrastination is not merely a time-management issue but is deeply rooted in emotional dysregulation and cognitive overload, often amplifying stress responses.

[2]Corresponding Author: Angel Aiya M. Fernandez
[*]Corresponding Email: a.fernandez.554778@umindanao.edu.ph

Interestingly, ASPP also showed a moderate correlation with mental well-being (r = .244, p < .001), suggesting that pressure derived from procrastination behaviors may be directly linked to perceived psychological states. This supports findings by Fang et al. (2022), who emphasized that context-specific procrastination stress can erode well-being, especially when students internalize academic delays as personal failure.

The subscales of procrastination stress—ASPP, ASTR, and ASPW—were all highly correlated with one another (r = .363 to .468, p < .001), indicating that these dimensions may reflect an interrelated structure of behavioral and emotional challenges associated with procrastination. As González-Brignardello and Paniagua (2023) established, multidimensional measures of procrastination capture these latent constructs more accurately than unidimensional scales.

Table 4. Correlation Matrix

Mental Well- Being	Academic Stress	ASPP	ASTR	ASPW	Procrastination	
Mental Well-Being	Pearson's r					
	df	-				
	p-value	-				
	Spearman' s rho	-				
	df	-				
	p-value	-				
	Kendall's Tau	-				
	p-value	-				
Academic Stress	Pearson's r	0.278***	-			
	df	376	-			
	p-value	<.001	-			
	Spearman's rho	0.167**	-			
	df	376	-			
	p-value	0.001	-			
	Kendall's Tau	0.110**	-			
	p-value	0.002	-			
ASPP	Pearson's r	0.244***	0.812***	-		
	df	376	376	-		
	p-value	<.001	<.001	-		
	Spearman's rho	0.157**	0.796***	-		
	df	376	376	-		
	p-value	0.002	<.001	-		
	Kendall's Tau	0.112**	0.633***	-		
	p-value	0.002	<.001	-		
ASTR	Pearson's r	0.345***	0.694***	0.412***	-	
	df	376	376	376	-	
	p-value	<.001	<.001	<.001	-	
	Spearman's rho	0.244***	0.649***	0.370***	-	
	df	376	376	376	-	
	p-value	<.001	<.001	<.001	-	
	Kendall's Tau	0.180***	0.511***	0.284***	-	
	p-value	<.001	<.001	<.001	-	
ASPW	Pearson's r	0.113*	0.825***	0.468***	0.363***	-
	df	376	376	376	376	-

[2]Corresponding Author: Angel Aiya M. Fernandez
[*]Corresponding Email: a.fernandez.554778@umindanao.edu.ph

	p-value	0.028	<.001	<.001	<.001	-
	Spearman's rho	0.048	0.828***	0.468***	0.468***	-
	df	376	376	376	376	-
	p-value	0.351	<.001	<.001	<.001	-
	Kendall's Tau	0.031	0.684***	0.358***	0.300***	-
	p-value	0.391	<.001	<.001	<.001	-
Procrastination	Pearson's r	0.116*	0.173***	0.040	0.128*	0.228***
	df	376	376	376	376	376
	p-value	0.024	<.001	0.436	0.013	<.001
	Spearman' s rho	0.080	0.204***	0.061	0.135**	0.242***
	df	376	376	376	376	376
	p-value	0.121	<.001	0.238	0.009	<.001
	Kendall's Tau	0.052	0.149***	0.045	0.102**	0.179***
	p-value	0.141	<.001	0.210	0.006	<.001

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

The significant correlations across multiple variables affirm the interconnectedness of academic procrastination, stress, and mental well-being. These findings validate the theoretical underpinnings of the Temporal Motivation Theory (Steel & König, 2006) and Transactional Model of Stress and Coping (Lazarus & Folkman, 1984), both of which posit that motivation, cognitive appraisal, and self-regulation interact to shape academic behaviors and psychological health.

Given the observed correlations—especially the moderate-to-strong associations between procrastination subdimensions and stress—further modeling using multivariate techniques such as multiple regression or structural equation modeling (SEM) is warranted. These approaches will allow for deeper exploration into the predictive effects and potential mediating roles that procrastination behaviors may have on the stress–well-being dynamic.

3.6. Regression Analysis Predicting Mental Well-Being

To identify predictors of mental well-being among university students, a multiple regression analysis was conducted using academic stress, procrastination, and gender as independent variables. The model revealed a statistically significant prediction of mental well-being, $F(3, 374) = 20.20$, $p < .001$, explaining approximately 13.3% of the variance in mental well-being scores ($R^2 = .140$, Adjusted $R^2 = .133$). Although modest, the model demonstrates that these predictors collectively have a meaningful association with students' psychological functioning.

3.6.1. Academic Stress as a Predictor

Academic stress emerged as a significant positive predictor of mental well-being ($\beta = 0.339$, $p < .001$), suggesting that certain levels of stress may enhance psychological functioning through mechanisms of academic engagement, goal orientation, and resilience. This nuanced association reflects what Gao (2023) and Segar and Kosnin (2024) describe as "adaptive stress," wherein academic challenges, when perceived as manageable, activate coping responses that foster personal growth and achievement. However, this interpretation should be approached with caution, as excessive stress has been shown to contribute to burnout and reduced

[2]Corresponding Author: Angel Aiya M. Fernandez
[*]Corresponding Email: a.fernandez.554778@umindanao.edu.ph

well-being, particularly among high-pressure disciplines such as engineering (Maji et al., 2024). Thus, while academic stress can act as a motivating factor, its positive role is contingent on context and intensity.

3.6.2. Procrastination as a Modest Predictor

Procrastination was also found to be a statistically significant but relatively modest predictor of mental well-being (β = 0.130, p = .031). This finding aligns with previous literature indicating that procrastination does not uniformly diminish well-being; rather, its effects depend on the individual's coping style and perception of delay (Chen et al., 2024). While procrastination is often associated with negative academic outcomes, including poor performance (Villegas et al., 2023), when managed effectively, it may not substantially impair mental health. However, unmanaged procrastination can lead to negative consequences such as reduced daily organization and poor self-perception, as noted by Ershova and Borodina (2022). Therefore, educational interventions should address the behavioral and emotional dimensions of procrastination to mitigate its detrimental effects.

Table 5A. Model Fit Measures

				Overall Model Test			
Model	**R**	**R^2**	**Adjusted R^2**	**F**	**df1**	**df2**	**p**
1	0.374	0.140	0.133	20.2	3	374	<.001

Note. Models Estimated using sample size of N=378

3.6.3. Gender Differences in Mental Well-Being

Gender also significantly predicted mental well-being (β = -0.361, p < .001), with female students reporting higher levels of well-being than their male counterparts. This result complements earlier findings from the independent samples t-test, which revealed significant differences in well-being by gender. Although studies such as Maji et al. (2024) and Danowitz and Beddoes (2022) have reported heightened psychological distress among female students, especially in STEM fields, the present finding suggests that within this sample, female students may possess or utilize more effective coping strategies or social support systems that contribute positively to their well-being. The complexity of gendered mental health outcomes underscores the importance of considering cultural, academic, and psychosocial contexts when interpreting such findings.

Table 5B. Model Coefficients-Mental Well-Being

Predictor	**Estimate**	**Se**	**t**	**P**
Intercept[a]	1.481	0.2662	5.56	<.001
Academic Stress	0.339	0.0689	4.92	<.001

[2]Corresponding Author: Angel Aiya M. Fernandez
[*]Corresponding Email: a.fernandez.554778@umindanao.edu.ph

Procrastination	0.130	0.0600	2.16	0.031
Sex/Gender (you may specify your gender)				
Male–Female	-0.361	0.0720	-5.01	<.001

[a] Represents reference level

3.7. Theoretical Implications

The findings of this study contribute to the refinement and contextualization of three major theoretical frameworks: the Procrastination Health Model, Self-Determination Theory (SDT), and Social Role Theory. Each framework is extended through the empirical insights derived from the nuanced relationships among procrastination, academic stress, and mental well-being in the academic lives of university students.

First, the positive yet modest association between procrastination and mental well-being lends empirical support to the Procrastination Health Model (Sirois, 2023). While procrastination is commonly characterized as maladaptive, the current findings reveal that under specific conditions—such as when coupled with effective time management or coping strategies—procrastinatory behavior may not significantly impair, and may even coincide with, certain dimensions of mental well-being. This reinforces the idea that procrastination is a context-sensitive behavior with both health-compromising and health-neutral (or enhancing) pathways, depending on individual differences and situational factors.

Second, the unexpectedly positive predictive role of academic stress on mental well-being provides theoretical grounding for an expanded application of Self-Determination Theory (Deci & Ryan, 1985, 2000). According to SDT, stress that is perceived as self-endorsed and aligned with the satisfaction of psychological needs—particularly competence and autonomy—can contribute to growth and vitality rather than psychological harm. The study's findings support this by demonstrating that moderate levels of academic pressure may act as a motivator, encouraging students to engage, persevere, and develop resilience, particularly in structured academic environments such as those in STEM or high-expectation disciplines.

The significant gender differences in reported levels of mental well-being and procrastination behavior underscore the relevance of Social Role Theory (Eagly, 1987) in understanding academic psychological outcomes. Female students in this study reported higher mental well-being, which may reflect gendered socialization patterns, differences in emotional regulation, or support-seeking behavior. This calls for a more integrative approach to theory-building that considers how gender norms, roles, and expectations influence academic stress responses and adaptive coping strategies. Such an approach can deepen the interpretive lens for understanding intersectional experiences in educational psychology.

In sum, the study not only reinforces but also extends these theoretical models by illuminating how academic stress and procrastination, when reframed through a nuanced and contextual lens, can differentially predict mental well-being. These insights advocate for a shift from deficit-oriented to strengths-based perspectives in understanding student behavior and mental health in higher education.

[2]Corresponding Author: Angel Aiya M. Fernandez
[*]Corresponding Email: a.fernandez.554778@umindanao.edu.ph

4. Conclusions

This study investigated the complex interplay among academic stress, procrastination, and mental well-being among university students, employing both correlational and regression analyses to uncover nuanced relationships. Findings revealed that academic stress, often perceived as a negative psychological construct, emerged as a significant positive predictor of mental well-being, suggesting that under certain conditions, stress can serve as a catalyst for growth, motivation, and goal achievement. This result aligns with the core tenets of Self-Determination Theory, which posits that challenge, when experienced in autonomy-supportive contexts, can foster resilience and psychological flourishing.

Procrastination, traditionally viewed as a maladaptive behavior, was also found to be a modest but statistically significant predictor of mental well-being. These results partially affirm the Procrastination Health Model by indicating that not all forms of procrastination uniformly lead to negative psychological outcomes; rather, context and individual coping strategies play a pivotal role in shaping its impact.

Additionally, gender differences were observed, with female students reporting significantly higher levels of well-being than their male counterparts. This finding invites further theoretical engagement with gendered socialization and behavioral regulation in academic settings, in line with Social Role Theory.

Collectively, the study contributes to a more differentiated understanding of student mental health by challenging binary conceptualizations of stress and procrastination as purely detrimental. Instead, it underscores the need to explore how individual, contextual, and psychological variables interact to influence well-being in academic environments.

5. Recommendation

In light of the findings of this study, several practical and research-oriented recommendations are proposed to enhance mental well-being among university students, particularly in demanding academic contexts such as engineering and medical programs.

First, interventions aimed at stress management should not focus solely on eliminating stress, but rather on equipping students with adaptive coping mechanisms that enable them to channel academic stress into productive engagement and personal growth. Universities should implement structured programs such as mindfulness-based stress reduction, resilience training, or goal-setting workshops that foster a healthy appraisal of academic demands. These efforts would align with the positive role of moderate stress levels observed in this study, as supported by Self-Determination Theory.

Second, procrastination should be addressed through a nuanced, psychoeducational approach, rather than simply framed as a negative behavior. The significant yet modest predictive effect of procrastination on mental well-being highlights the need for differentiating between active and passive procrastination in intervention design. Academic support services should promote time management training, self-regulation strategies, and executive functioning skills, while also recognizing the potential motivational benefits that structured delay can offer when aligned with autonomy and competence.

Third, the gender disparity in mental well-being underscores the importance of gender-sensitive

[2]Corresponding Author: Angel Aiya M. Fernandez
[*]Corresponding Email: a.fernandez.554778@umindanao.edu.ph

support structures within academic institutions. Student affairs offices and counseling centers should consider tailoring their mental health and academic advising programs based on gendered experiences and social expectations. Moreover, faculty members and administrators should receive training to recognize and mitigate the hidden burden that female students may carry in managing academic stress.

Finally, future studies should explore additional variables such as social support, academic motivation, sleep quality, and digital distractions, which may collectively explain a greater portion of variance in students' mental well-being. Longitudinal and experimental designs are recommended to establish causal pathways and test the efficacy of targeted interventions over time. Qualitative follow-up studies may also yield insights into how students perceive and navigate stress and procrastination in diverse cultural and institutional contexts.

6. Limitations of the Study

Despite its contributions, the study has several limitations that should be acknowledged. First, the cross-sectional design limits the ability to infer causal relationships among the variables studied. Future research employing longitudinal or experimental designs would provide greater insight into the directional and temporal dynamics of academic stress, procrastination, and well-being.

Second, the study relied on self-reported measures, which are subject to social desirability bias and may not fully capture unconscious or context-specific behavioral patterns. Incorporating mixed-methods approaches or behavioral tracking (e.g., study logs, time-use diaries) could enrich the findings.

Third, while the sample was drawn from a diverse population of university students, it was regionally bounded and may not be representative of students across other geographic or cultural contexts. Comparative studies involving other ASEAN countries or different educational systems could offer broader generalizability.

Finally, the variables accounted for only 14% of the variance in mental well-being, indicating the presence of other influential factors not examined in this study—such as self-efficacy, social support, academic engagement, and digital behaviors—which merit future exploration

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[2]Corresponding Author: Angel Aiya M. Fernandez
[*]Corresponding Email: a.fernandez.554778@umindanao.edu.ph

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References

Alibudbud, R. (2023). Towards transforming the mental health services of the Philippines. The Lancet Regional Health - Western Pacific, 39, 100935. https://doi.org/10.1016/j.lanwpc.2023.100935

Ayoola, J., Joseph, O., Salihu, E., & Joseph, D. (2025). Perceived Impact of Academic Stress on the Mental Health of Engineering Students in Nigerian Universities. Asian Journal of Advanced Research and Reports. https://doi.org/10.9734/ajarr/2025/v19i2901

Baik, C., Larcombe, W., & Brooker, A. (2019). How universities can enhance student mental wellbeing: the student perspective. Higher Education Research & Development, 38(4), 674–687. https://doi.org/10.1080/07294360.2019.1576596

Baik, C., Naylor, R., Arkoudis, S. (2015, March). The first year experience in Australian universities: Findings from two decades, 1994-2014. Research Gate. https://www.researchgate.net/publication/274374479_The_first_year_experience_in_Australian_universities_Findings_from_two_decades_1994-2014

Barbayannis, G., Bandari, M., Zheng, X., Baquerizo, H., Pecor, K. W., & Ming, X. (2022). Academic Stress and Mental Well-Being in College Students: Correlations, affected groups, and COVID-19. Frontiers in Psychology, 13. https://doi.org/10.3389/fpsyg.2022.886344

Barsaiya, A., et al. (2024). Mental health consequences of academic stress, amotivation, and coaching experience. Psychology in the Schools. https://doi.org/10.1002/pits.23230

Bedewy, D., & Gabriel, A. (2015). Examining perceptions of academic stress and its sources among university students: The Perception of Academic Stress Scale. Health Psychology Open, 2(2), 205510291559671. https://doi.org/10.1177/2055102915596714

Beiter, R., Nash, R., McCrady, M., Rhoades, D., Linscomb, M., Clarahan, M., & Sammut, S. (2014). The prevalence and correlates of depression, anxiety, and stress in a sample of college students. Journal of Affective Disorders, 173,

[2]Corresponding Author: Angel Aiya M. Fernandez
[*]Corresponding Email: a.fernandez.554778@umindanao.edu.ph

90–96. https://doi.org/10.1016/j.jad.2014.10.054

Brown, T. A. (2015). Confirmatory factor analysis for applied research (2nd ed.). The Guilford Press.

Castillo, J., et al. (2021). Academic Procrastination and the Stress of University Students. Revista Gestão Inovação e Tecnologias. https://doi.org/10.47059/REVISTAGEINTEC.V11I4.2110

Chellamuthu, S., & Subramanian, K. (2017). Academic stress and mental health among high school students. ResearchGate. https://www.researchgate.net/publication/321572693_Academic_Stress_and_Mental_Health_Among_High_School_Students

Chen, Y., et al. (2024). Impact of academic perception on procrastination behavior. Frontiers in Psychology. https://doi.org/10.3389/fpsyg.2024.1173089

Chernyakevich, E. (2023). Subjective prerequisites for the manifestation of procrastination in students. Perspectives of Science and Education. https://doi.org/10.32744/pse.2023.1.23

Chernyakevich, E. (2024). Self-leadership and self-management in academic procrastination. Perspectives of Science and Education. https://doi.org/10.32744/pse.2024.3.33

Clabaugh, A., Duque, J. F., and Fields, L. J. (2021). Academic stress and emotional well-being in United States college students following onset of the COVID-19 pandemic. Front. Psychol. 12, 628787. doi: 10.3389/fpsyg.2021.628787

Cobo-Rendón, R., Pérez-Villalobos, M. V., Páez-Rovira, D., & Gracia-Leiva, M. (2020). A longitudinal study: Affective wellbeing, psychological well being, self-efficacy and academic performance among first-year undergraduate students. Scandinavian Journal of Psychology, 61(4), 518–526. https://doi.org/10.1111/sjop.12618

Conley, C. S., Travers, L. V., & Bryant, F. B. (2014). Promoting Psychosocial Adjustment and Stress Management in First-Year College Students: The Benefits of Engagement in a Psychosocial Wellness Seminar. Journal of American College Health, 61(2), 75–86. https://doi.org/10.1080/07448481.2012.754757

Costello, A. B., & Osborne, J. W. (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. Practical Assessment, Research, and Evaluation, 10(7), 1–9. https://doi.org/10.7275/jyj1-4868

Creswell, J. W., & Creswell, J. David. (2023). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. In psycnet.apa.org (Sixth Edition). SAGE Publications, Inc.

Crone, W., et al. (2023). Cultivating well-being in engineering graduate students through mindfulness training. PLOS ONE, 18. https://doi.org/10.1371/journal.pone.0281994

Danowitz, A., & Beddoes, K. (2022). Mental Health in Engineering Education. IEEE Transactions on Education, 65, 257–266. https://doi.org/10.1109/te.2022.3182626

Deci, E. L., & Ryan, R. M. (1985). Intrinsic Motivation and Self-Determination in human behavior. In Springer eBooks. https://doi.org/10.1007/978-1-4899-2271-7

[2]Corresponding Author: Angel Aiya M. Fernandez
[*]Corresponding Email: a.fernandez.554778@umindanao.edu.ph

Deegan, A., & Dunne, S. (2022). An investigation into the relationship between social support, stress, and psychological well-being in farmers. Journal of Community Psychology, 50(7), 3054–3069. https://doi.org/10.1002/jcop.22814

Duru, E., & Balkis, M. (2017). Procrastination, self-esteem, academic performance, and well-being: A moderated mediation model.

Eagly, A. H. (1987). Sex Differences in Social Behavior: A Social-Role Interpretation. Lawrence Erlbaum Associates.

Edwards, A. A., Joyner, K. J., & Schatschneider, C. (2021). A simulation study on the performance of different reliability estimation methods. Educational and Psychological Measurement, 81(6), 1089–1117. https://doi.org/10.1177/0013164421994184

Egcas, R. A., Oducado, R. M. F., Cleofas, J. V., Rabacal, J. S., & Lausa, S. M. (2021). After over a year of pandemic: mental well-being and life satisfaction of Filipino college students. Pertanika Journal of Social Science & Humanities, 29(4), 2401–2416. https://doi.org/10.47836/pjssh.29.4.17

Ershova, R., & Borodina, L. (2022). Investigation of the relationship between procrastination in the field of health care and psychological well-being of the individual. Vestnik Vâtskogo Gosudarstvennogo Universiteta., 1(143), 109–118. https://doi.org/10.25730/vsu.7606.22.012

Fang, X., et al. (2022). The relationships between academic procrastination and well-being. Frontiers in Psychology. https://doi.org/10.3389/fpsyg.2022.981042

Feldt, L. S., & Charter, R. A. (2003). Estimating the reliability of a test split into two parts of equal or unequal length. Psychological Methods, 8(1), 102–109. https://doi.org/10.1037/1082-989x.8.1.102

Ferrari, J. R., & Tice, D. M. (2000). Procrastination as a Self-Handicap for Men and Women: A Task-Avoidance Strategy in a Laboratory setting. Journal of Research in Personality, 34(1), 73–83. https://doi.org/10.1006/jrpe.1999.2261

Frazier, T., & Fosco, S. L. D. (2024). Nurturing positive mental health and wellbeing in educational settings – the PRICES model. https://doi.org/10.3389/fpubh.2023.1287532

Freeman, M. (2022). The World Mental Health Report: transforming mental health for all. World Psychiatry, 21(3), 391–392. https:// doi.org/10.1002/wps.21018

Gao, T. (2023). Burnout and Academic Pressure: Self-efficacy and Psychological Health in Engineering Students. Higher Education Research & Development.

Gautam, S., Jain, A., Chaudhary, J., Gautam, M., Gaur, M., & Grover, S. (2024). Concept of mental health and mental well-being, its determinants and coping strategies. Indian Journal of Psychiatry, 66(Suppl 2), S231–S244. https://doi.org/10.4103/indianjpsychiatry.indianjpsychiatry_707_23

George, Ward., Hanne, K., Collins., Michael, I., Norton., Ashley, V., Whillans. (2020). Work Values Shape the Relationship Between Stress and (Un)Happiness https://www.hks.harvard.edu/centers/cid/publications/work-values-shape-relationship-between- stress-and-unhappiness

[2]Corresponding Author: Angel Aiya M. Fernandez
[*]Corresponding Email: a.fernandez.554778@umindanao.edu.ph

Gomer, B., et al. (2025). Mental health and treatment use in undergraduate engineering students. Journal of Engineering Education, 114. https://doi.org/10.1002/jee.20629

Gong, Z. (2020). Academic stress in engineering students. https://doi.org/10.25236/IJFS.2020.020809

González-Brignardello, M. P., & Paniagua, Á. S. (2023b). Dimensional Structure of MAPS-15: Validation of the Multidimensional Academic Procrastination scale. International Journal of Environmental Research and Public Health, 20(4), 3201. https://doi.org/10.3390/ijerph20043201

González-Brignardello, M., & Paniagua, Y. (2023). Multidimensional Assessment of Academic Procrastination. Revista Iberoamericana de Psicología y Salud. https://doi.org/10.1016/j.rips.2023.04.005

Gonzalez, O., & MacKinnon, D. P. (2020). The measurement of the mediator and its influence on statistical mediation conclusions. Psychological Methods, 26(1), 1–17. https://doi.org/10.1037/met0000263

Goodboy, A. K., & Martin, M. M. (2020). Omega over alpha for reliability estimation of unidimensional communication measures. Annals of the International Communication Association, 44(4), 422–439. https://doi.org/10.1080/23808985.2020.

1846135

Gurumoorthy, R., & Kumar, N. (2020). Motivational factors to overcome procrastination. Procedia Computer Science, 172, 709–717. https://doi.org/10.1016/j.procs.2020.05.101

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). Multivariate data analysis (8th ed.). Cengage Learning.

Hancock, E., et al. (2023). Interventions to support mental health and wellbeing of engineering students. European Journal of Engineering Education, 49, 45–69. https://doi.org/10.1080/03043797.2023.2217658

Hartas, D. (2023). Wellbeing, psychological distress and self-harm in late adolescence in the UK: the role of gender and personality traits. European Journal of Special Needs Education, 39(2), 201–218. https://doi.org/10.1080/08856257.2023.2200107

Hasim, M. A., Jabar, J., & Wei, V. W. M. (2024). Measuring E-Learning Antecedents in The Context of Higher Education through Exploratory and Confirmatory Factor Analysis. International Journal of Academic Research in Business and Social Sciences, 14(9). https://doi.org/10.6007/ijarbss/v14-i9/22670

Hayes, A. (2023, March 23). How Stratified Random Sampling Works, with Examples. Investopedia. https://www.investopedia.com/terms/stratified_random_sampling.asp

Henseler, J., Ringle, C. M., & Sarstedt, M. (2014). A new criterion for assessing discriminant validity in variance-based structural equation modeling. Journal of the Academy of Marketing Science, 43(1), 115–135. https://doi.org/10.1007/s11747-014-0403-8

Hudacek, S. S., DiMattio, M. J. K., Schnell, A., & Lovecchio, C. P. (2019). Examination of the structural validity of the Clinical learning environment inventory using exploratory factor analysis. Journal of

[2]Corresponding Author: Angel Aiya M. Fernandez
[*]Corresponding Email: a.fernandez.554778@umindanao.edu.ph

Nursing Measurement, 27(2), 210–220. https://doi.org/10.1891/1061-3749.27.2.210

Jensen, K. J., Mirabelli, J. F., Kunze, A. J., Romanchek, T. E., & Cross, K. J. (2023). Undergraduate student perceptions of stress and mental health in engineering culture. International Journal of STEM Education, 10(1). https://doi.org/10.1186/s40594-023-00419-6

Jibril, M. (2021). Evaluation on Study Skills and Academic Stress. https://doi.org/10.14293/s2199-1006.1.sor-.ppcuvi9.v1

João, Pedro, Azevedo. (2003). FACTORTEST: Stata module to perform tests for appropriateness of factor analysis. Research Papers in Economics

Jochmann, A., Gusy, B., Lesener, T., & Wolter, C. (2024). Procrastination, depression and anxiety symptoms in university students: A three-wave longitudinal study on the mediating role of perceived stress. BMC Psychology. https://bmcpsychology.biomedcentral.com/articles/10.1186/s40359-024-01761-2

Kalkbrenner, M. T. (2021). Alpha, Omega, and H Internal Consistency Reliability Estimates: Reviewing these options and when to use them. Counseling Outcome Research and Evaluation, 14(1), 77–88. https://doi.org/10.1080/21501378.2021.1940118

Karaman, M. A., Lerma, E., Vela, J. C., & Watson, J. C. (2019). Predictors of academic stress among college students. Journal of College Counseling, 22(1), 41–55. https://doi.org/10.1002/jocc.12113

Kashif, M. F., Tabassum, R., & Bibi, S. (2024). EFFECTS OF ACADEMIC STRESS ON MENTAL HEALTH ISSUES AMONG UNIVERSITY STUDENTS. Journal of Social Sciences Development, 3(2), 170–182. https://doi.org/10.53664/jssd/03-02-2024-14-170-182

Kim, B. (2016). Introduction to Mediation Analysis | UVA Library. Library.virginia.edu. https://library.virginia.edu/data/articles/introduction-to-mediation-analysis

Lazarus, R. S. (1984). Stress, appraisal, and coping (Vol. 464). Springer.

Li, Z. (2024). Analysis of gender and mental health differences. Communications in Humanities Research, 40(1), 227–232. https://doi.org/10.54254/2753-7064/40/20242338

Liu, W., Zhang, R., Wang, H., Rule, A., Wang, M., Abbey, C., Singh, M. K., Rozelle, S., She, X., & Tong, L. (2024). Association between anxiety, depression symptoms, and academic burnout among Chinese students: the mediating role of resilience and self-efficacy. BMC Psychology, 12(1). https://doi.org/10.1186/s40359-024-01823-5

Lu, D., He, Y., & Tan, Y. (2022). Gender, socioeconomic status, cultural differences, education, family size and Procrastination: A Sociodemographic Meta-Analysis. Frontiers in Psychology, 12. https://doi.org/10.3389/fpsyg.2021.719425

Lumayag, L. C., & Joan, P. B. (2024). Mental Wellbeing and Resilience among Occupational and Public Health Nurses in Cebu, Philippines. International Journal of Research and Scientific Innovation, XI(VII), 741–767. https://doi.org/10.51244/ijrsi.2024.1107058

[2]Corresponding Author: Angel Aiya M. Fernandez
[*]Corresponding Email: a.fernandez.554778@umindanao.edu.ph

Maji, S., Chaturmohta, A., Deevela, D., Sinha, S., Tarsolia, S., & Barsaiya, A. (2024). Mental health consequences of academic stress, amotivation, and coaching experience: A study of India's top engineering undergraduates. Psychology in the Schools, 61(9), 3540–3566. https://doi.org/10.1002/pits.23230

Matud, M. P., López-Curbelo, M., & Fortes, D. (2019). Gender and Psychological Well-Being. International Journal of Environmental Research and Public Health, 16(19), 3531. https://doi.org/10.3390/ijerph16193531

McMahon, G., Creaven, A., & Gallagher, S. (2020). Stressful life events and adolescent well-being: The role of parent and peer relationships. Stress and Health, 36(3), 299–310. https://doi.org/10.1002/smi.2923

NCBI. (2019). National Center for Biotechnology Information. Nih.gov; National Library of Medicine. https://www.ncbi.nlm.nih.gov/

Nielsen, L., Bermejo-Martins, E., Nelausen, M. K., Madsen, C. S., Riva, E., Koushede, V. J., & Meilstrup, C. B. (2024). The ABCs of mental health at the university: a multi-level intervention design for promoting mental well-being. Frontiers in Public Health, 12. https://doi.org/10.3389/fpubh.2024.1382393

Obenza, B. N. & Obenza, D. M. N. (2025). Exploring the mediating role of stress in internet addiction and insomnia among college students. International Journal of Didactical Studies, 6(2), 31585. https://doi.org/10.33902/ijods.202531585

Obenza, B. N., Kileste, F. L., Mesajon, J., Canciller, C., Escudero, M. J. F., Ligasan, N. G., Palacios, G., & Solis, J. (2024). The Mediating Effect of Academic Stress on Fear of Failure and Academic Procrastination of College Students. *International Journal of Humanities, Management and Social Science (IJ-HuMaSS)*, *7*(2), 63-73. https://doi.org/10.36079/lamintang.ij-humass-0702.685

Obenza, B. N., Fordan, M. J. G., Tripole, J. M. S., Cantor, F. D. E. C., Parantar, A. J. G., Florenosos, A. J. M., Ando, A. J. B., Reyes, A. M. C., & Sumayo, G. S. (2025). Bridging Academic Stress and Burnout: Procrastination as a Mediator and Implications for Education Policy. *Journal of Social Knowledge Education (JSKE)*, *6*(2), 154-163. https://doi.org/10.37251/jske.v6i2.1422

Ouali, U., et al. (2021). Procrastination in Tunisian university students. European Psychiatry, 64, S760. https://doi.org/10.1192/j.eurpsy.2021.2014

Pascoe, M. C., Hetrick, S. E., & Parker, A. G. (2019). The impact of stress on students in secondary school and higher education. International Journal of Adolescence and Youth, 25(1), 104–112. https://doi.org/10.1080/02673843.2019.1596823

Ringle, Christian, M., Sven, Becker, & Jan-Michael. (2022). SmartPLS 4. Oststeinbek: SmartPLS. Smartpls.com. https://www.smartpls.com/documentation/algorithms-and-techniques/bootstrapping

Rozental, A., Forsström, D., Hussoon, A., & Klingsieck, K. B. (2022). Procrastination among university students: differentiating severe cases in need of support from less severe cases. Frontiers in Psychology, 13. https://doi.org/10.3389/fpsyg.2022.783570

[2]Corresponding Author: Angel Aiya M. Fernandez
[*]Corresponding Email: a.fernandez.554778@umindanao.edu.ph

Ryff, C. D. (2013). Psychological Well-Being Revisited: Advances in the science and practice of Eudaimonia. Psychotherapy and Psychosomatics, 83(1), 10–28. https://doi.org/10.1159/000353263

Saikia, T., & Maraichelvi, D. (2015). Procrastination and Academic Performance. International Journal of Scientific Research, 4.

Santos, P. M. D., & Cirillo, M. Â. (2021). Construction of the average variance extracted index for construct validation in structural equation models with adaptive regressions. Communications in Statistics: Simulation and Computation, 52(4), 1639–1650. https://doi.org/10.1080/03610918.2021.1888122

Segar, P. G., & Kosnin, A. M. (2024). Influencing Factors, Academic Impacts, and Effective Evidence-Based Interventions for University and College Students' Mental Health: a Systematic review. International Journal of Academic Research in Business and Social Sciences, 14(9). https://doi.org/10.6007

Sirois, F. M. (2023). Procrastination and Stress: A conceptual review of why context matters. International Journal of Environmental Research and Public Health, 20(6), 5031. https://doi.org/10.3390/ijerph20065031

Slimmen, S., Timmermans, O., Mikolajczak-Degrauwe, K., & Oenema, A. (2022). How stress-related factors affect mental wellbeing of university students A cross-sectional study to explore the associations between stressors, perceived stress, and mental wellbeing. PLoS ONE, 17(11), e0275925. https://doi.org/10.1371/journal.pone.0275925

Smoletz, M. (2019). Academic procrastination and its effects on perceived stress and mental well-being. University of Twente. https://essay.utwente.nl/77488/1/Smoletz_MA_BMS.pdf

Soares, A. K. S., De Holanda Coelho, G. L., Freires, L. A., & Da Fonseca, P. N. (2022). Psychometric properties of the Academic Procrastination Scale (APS) in Brazil. Journal of Psychoeducational Assessment, 40(5), 634–648. https://doi.org/10.1177/07342829221079948

Steel, P., & Ferrari, J. (2013). Sex, Education and Procrastination: An Epidemiological Study of Procrastinators' Characteristics from A Global Sample. European Journal of Personality, 27(1), 51–58. https://doi.org/10.1002/per.1851

Steel, P., & Katrin Klingsieck. (2016, February). Academic Procrastination: Psychological Antecedents Revisited. ResearchGate; Taylor & Francis. https://www.researchgate.net/publication/291389227_Academic_Procrastination_Psychological_Antecedents_Revisited

Steel, P., & König, C. (2006). Integrating theories of motivation. Academy of Management Review, 31(4), 889–913. https://doi.org/10.5465/amr.2006.22527462

Steel, P., & Weinhardt, J. M. (2018). The Building Blocks of Motivation: Goal Phase System. The SAGE Handbook of Industrial, Work & Organizational Psychology, 69–96. https://doi.org/10.4135/9781473914957.n5

Streiner, D. L. (2003). Starting at the beginning: an introduction to coefficient alpha and internal consistency. Journal of Personality Assessment, 80(1), 99–103.

[2]Corresponding Author: Angel Aiya M. Fernandez
[*]Corresponding Email: a.fernandez.554778@umindanao.edu.ph

https://doi.org/10.1207/s15327752jpa8001_18

Suryanti, H., & Sholikhah, L. (2024). Analysis of the level of procrastination. Jurnal Konseling Pendidikan Islam, 5(2). https://doi.org/10.32806/jkpi.v5i2.180

Tabachnick, B. G., & Fidell, L. S. (2019). Using multivariate statistics (7th ed.). Pearson.

Taber, K. S. (2017). The use of Cronbach's Alpha when developing and reporting research instruments in science education. Research in Science Education, 48(6), 1273–1296. https://doi.org/10.1007/s11165-016-9602-2

Tennant, R., Hiller, L., Fishwick, R., Platt, S., Joseph, S., Weich, S., Parkinson, J., Secker, J., & Stewart-Brown, S. (2007). The Warwick- Edinburgh Mental Well-being Scale (WEMWBS): development and UK validation. Health and Quality of Life Outcomes, 5(1). https://doi.org/10.1186/1477-7525-5-63

Tobias, S., & Carlson, J. E. (1969). Brief Report: Bartlett's Test Of Sphericity And Chance Findings In Factor Analysis. Multivariate Behavioral Research, 4(3), 375–377. https://doi.org/10.1207/s15327906mbr0403_8

Viladrich, C., Angulo-Brunet, A., & Doval, E. (2017). Un viaje alrededor de alfa y omega para estimar la fiabilidad de consistencia

Villegas, K. G. N., Masabanda, V. D. R., Redroban, J. P. M., & Ocaña, M. P. C. (2023). Relationship between procrastination, academic performance, and mental health in university students at Uniandes in Ecuador. Salud Ciencia Y Tecnología - Serie De Conferencias, 2, 608. https://doi.org/10.56294/sctconf2023608

Wahid, S. N. S., Aminuddin, A. S., Hasan, H., Nikman, K., & Badruesham, N. (2023). Gender disparities in Universiti Teknologi MARA students' mental wellness: A comparative study. International Journal of Evaluation and Research in Education (IJERE), 12(1), 53. https://doi.org/10.11591/ijere.v12i1.23801

Wan, A., et al. (2021). Influence of academic stressors on engineering students. https://doi.org/10.33412/PRI.V12.1.2798

Wilson, S., et al. (2023). Mental health in undergraduate engineering students. Journal of Engineering Education, 112, 963–986. https://doi.org/10.1002/jee.20551

Wolming, S., & Wikström, C. (2010). The concept of validity in theory and practice. Assessment in Education Principles Policy and Practice, 17(2), 117–132. https://doi.org/10.1080/09695941003693856

Worthington, R. L., & Whittaker, T. A. (2006). Scale development research: A content analysis and recommendations for best practices. The Counseling Psychologist, 34(6), 806–838. https://doi.org/10.1177/0011000006288127

Zhou, M. (2018). Gender differences in procrastination: The role of personality traits. Current Psychology, 39(4), 1445–1453. https://doi.org/10.1007/s12144-018-9851-5

[2]Corresponding Author: Angel Aiya M. Fernandez
[*]Corresponding Email: a.fernandez.554778@umindanao.edu.ph

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[2]Corresponding Author: Angel Aiya M. Fernandez
[*]Corresponding Email: a.fernandez.554778@umindanao.edu.ph