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Perceived Academic Stress and Mental Well-Being of Non-Stem Students Enrolled in Stem Related Courses

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Index Terms:

non-STEM students, academic stress, mental well-being, STEM related courses, freshmen, higher education

Abstract. This study examined the perceived academic stress and mental well-being of non-STEM students enrolled in STEM major courses in higher education. The transition from non-STEM senior high school strands to rigorous STEM programs often presents unique challenges for freshmen students, prompting the need to understand how they cope with academic demands. Specifically, this research determined the Levels of Perceived Academic Stress, Mental Well-Being as well as the significant relationship between these two variables. A quantitative descriptive-correlational research design was utilized to systematically describe and correlate the variables among freshmen students who had taken non-STEM strands in senior high school and are currently enrolled in STEM-related courses. The study employed the total enumeration method. The survey questionnaires along with the information letter and consent form was distributed through Google form links and face-to-face administration. After the data was collected, tabulated, and statistically analysed, results showed that non-Stem students enrolled in STEM-related courses experienced high levels of Academic Stress as indicated by the accumulated Grand Mean which totals to 3.491. In contrast to this, the Mental Well-being results showed a total mean score of 3.26 which indicates that their mental well-being has been used positively and can improve. Moreover, Pearson's Correlational Coefficient was employed and results showed a Pearson's r value of .0791, which is close to zero, indicating a weak positive correlation between the two variables. Therefore, the null hypothesis of the study is accepted. These findings provide important insight for educational sectors seeking to develop targeted intervention that can reduce academic stress and to enhance the mental well-being of the students transitioning to STEM related courses.

Introduction

In tertiary education, academic background is a crucial factor that ensures students' smooth transition from secondary education and supports success throughout higher education. It serves as the foundation for college-level studies and provides students with the necessary skills and knowledge to thrive in college. The Science, Technology, Engineering, or Mathematics (STEM) strand in senior high school is an inquiry- and research-based program under the K-12 curriculum that exposes students to more complex mathematics and science concepts. Graduates of the STEM strand therefore possess an advantage over non-STEM students who later enrol in STEM major courses

Due to differences in academic background, the degree of academic stress experienced by these students may vary. Academic stress refers to the mental distress brought about by academic-related demands that exceed the student's adaptive capabilities, which negatively affects mental well-being. Studies on Filipino college students show that academic stress significantly affects mental health (Austria-Cruz, 2019; Dy et al., 2015). Moreover, Barbayannis et al. (2022) found a

positive correlation between academic stress and poorer mental well-being, noting that certain students are more vulnerable than others.

Despite growing interest in this area, limited studies have specifically examined non-STEM students transitioning into STEM majors in the Philippine context. The researchers therefore addressed this research gap by investigating the perceived academic stress and mental well-being of non-STEM freshmen students enrolled in STEM-related courses at Central Mindanao University.

Methodology

This study was conducted among first-year non-STEM students enrolled in STEM-related courses at Central Mindanao University, including BSEd Sciences, BSEd Mathematics, BS Chemistry, BS Biology, BS Physics, BS Mathematics, Doctor of Veterinary Medicine, BS Nursing, Engineering, and Information Technology programs. Data collection occurred from the last week of November to the first week of December 2023 using total enumeration sampling. Out of 248 identified non-STEM freshmen students, 149 consented to participate.

The researchers of this study utilized two validated instruments: the Perceived Academic Stress Scale (PASS) developed by Bedewy and Gabriel (2015), which consists of 18 items on a 5-point Likert scale measuring three domains (academic expectations, workload and examinations, and academic self-perceptions), to help researchers identify which specific area of university life is causing the most distress for a student, and the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS) developed by Tennant et al. (2007) to rate their experiences over the past two weeks. A higher total score indicates a higher level of mental well-being. It is widely used by health organizations and researchers to monitor the mental health of populations and evaluate the impact of projects aimed at improving well-being. Both instruments were administered via online Google Forms and face-to-face surveys, accompanied by an informed consent form and study information sheet.

Prior to data collection, ethical approval was secured from the Institution's Ethics and Review Committee (IERC) and formal communication letters were sent to the deans of the concerned colleges. Descriptive statistics (mean and standard deviation) were used to determine the levels of perceived academic stress and mental well-being. Pearson's correlation coefficient examined the relationship between the two variables.

The scope of the study was limited to first-year non-STEM students at Central Mindanao University during the specified data collection period. Findings may not be generalized to other student populations or institutions. The study relied on self-reported data, which may be subject to social desirability bias.

Results and Discussion

STATEMENTS	MEAN	DESCRIPTIVE RATING	QUALITATIVE INTERPRETATION
Stresses related to Academic Expectations	3.31	Agree	Moderate
My teachers are critical of my academic performance	3.57	Agree	High
Competition with my peers for grades is quite intense	3.47	Agree	High
The unrealistic expectations of my parents stresses me out	3.17	Agree	Moderate
Teachers have unrealistic expectations of me	3.04	Agree	Moderate
Stresses related to Work and Examination	3.37	Agree	Moderate
Examination times are very stressful to me	3.77	Agree	High
The examination questions are usually difficult	3.70	Agree	High
Examination time is short to complete the answers.	3.61	Agree	High

I am unable to catch up if getting behind the work.	3.37	Agree	Moderate
The size of the curriculum (workload) is excessive.	3.28	Agree	Moderate
The time allocated to classes and academic work is enough.	3.23	Agree	Moderate
I have enough time to relax after work	3.04	Agree	Moderate
I believe the amount of work assignment is too much.	2.96	Neutral	Moderate
Stresses related to students' Academic	3.77	Agree	High
Self-perception			
I fear failing courses this year	4.36	Strongly Agree	Extreme
I'm confident that I will be successful in my	3.86	Agree	High
future.			
I'm confident that I will be a successful student.	3.81	Agree	High
I think my worry about examinations is weakness of character.	3.77	Agree	High
Even if I pass my exams, I am worried	3.67	Agree	High
about getting a job.			
I can make academic decisions easily	3.18	Agree	Moderate
Grand Mean	**3.491**	**Agree**	**High**

Table 1. Level of Perceived Academic Stress of Non-stem enrolled in STEM related courses.

Table 1 presents the level of perceived academic stress among non-STEM students enrolled in STEM-related courses. The grand mean score was 3.491, indicating a high overall level of academic stress, with the highest mean recorded for the item "I fear failing courses this year" (M = 4.36).

The results of Table 1 indicate that the overall level of perceived academic stress was high (Grand Mean = 3.491), with the domain of academic self-perception obtaining the highest mean score. The item "I fear failing courses this year" received the highest rating (M = 4.36). Academic self-perception refers to a student's self-confidence and confidence for success in his academics, future career and confidence in making the right academic decisions. Studies showed that self-esteem contributes to the prediction of Academic stress among students (Busari 2017, Saleh et al. 2017, and Sim & Moons 2015). Having a low opinion of oneself can make one feel doubtful and insecure, and that can cause academic stress.

Research has shown that fear of failure can influence a variety of factors, such as coping behaviors, self- esteem, and motivation (Yoong & Saffari, 2019 and, Wagner & Brahm, 2017). Research also shows that fear of procrastination is positively associated with academic procrastination, with low self-efficacy and fear of procrastination being predictors that college students will procrastinate in studies (Begum, 2023). In addition, the fear of academic failure may be exacerbated by other challenges faced by students, leading to psychological distress (Perry et al., 2005) providing safe learning environments and purposeful activities to reduce fear of failure If we understand the impact of fear of failure on student learning sustainability under which teachers and policymakers can develop strategies to support student academic success and well-being

Based on the recent studies, self-confidence about their academic abilities plays an important role when it comes to motivating and engaging students (Md. Fajlay Rabbi & Md. Sefatul Islam, 2024). The absence of "mastery experience" in

technical courses may hinder students from developing their academic self-confidence, thus leading to "academic inefficacy," which is a critical element of student burnout (Pham Thi & Duong, 2024).

STATEMENTS	MEAN	DESCRIPTIVE RATING	QUALITATIVE INTERPRETATION
I been interested in new things	3.71	Often	High (positive)
I've been feeling optimistic about the future	3.57	Often	High (positive)
I've been feeling cheerful	3.41	Often	High (positive)
I've been feeling loved	3.38	Often	High (positive)
I've had energy to spare	3.28	Often	High (positive)
I've been feeling interested in the people	3.24	Often	High (positive)
I've been able to make up my own about things	3.23	Often	High (positive)
I've been feeling useful	3.22	Often	High (positive)
I've been feeling close to other people	3.20	Often	High (positive)
I've been dealing the problem well	3.16	Often	High (positive)
I've been thinking clearly	3.16	Often	High (positive)
I've been feeling good about myself	3.12	Often	High (positive)
I've been feeling confident	3.01	Often	High (positive)
I've been feeling relaxed	2.99	Some of the time	Average
Grand Mean	3.26	Often	High (positive)

Table 2. Mental Well-Being of Non-stem students enrolled in STEM-related courses

Table 2 shows the level of mental well-being of non-STEM students enrolled in STEM-related courses. The grand mean score was 3.26, interpreted as high, with most items rated as occurring "Often."

Table 2 shows that the participants reported a high level of mental well-being (Grand Mean = 3.26), with most items rated "Often. In their seminal work, Kashdan, Rose, and Fincham (2004) developed the Curiosity and Exploration Inventory (CEI) to assess individual differences in curiosity. The results indicated that the CEI has good psychometric properties, is relatively unaffected by socially desirable responses, and is relatively independent of positive affect. Furthermore, individuals who scored high on the CEI reported greater happiness, life satisfaction, and openness to experience. These findings suggest that curiosity is essential in facilitating positive subjective experiences and personal growth opportunities.

A recent study conducted by Christiansen et al. (2021) found that social isolation and loneliness are strongly linked to poorer mental health outcomes, including symptoms of depression and anxiety. Importantly, the researchers discovered that these negative associations were moderated by adolescents' sense of social connectedness and positive future outlook; those who felt more connected to others and maintained a hopeful perspective experienced better mental health, irrespective of their level of social isolation or loneliness. For instance, the 2024–2025 Healthy Minds Study (Eisenberg et al., 2025) reported a mean score of 43.3 on the Flourishing Scale (range 8–56), indicating that a substantial portion of college students experience positive psychological well-being, including self-esteem, purpose, and optimism, even while facing academic challenges.

Duckworth et al. (2007) investigated the impact of grit on academic success. The findings revealed that grit, defined as perseverance and passion for long-term goals, was the most important predictor of academic performance, often outperforming traditional measures of intelligence or talent.

VARIABLES	PEARSNON'S r VALUE	SIGNIFICANCE
Academic Stress	0.0791	0.337
Mental Well-being	0.0791	0.337

*** Correlation is significant at the 0.01 level (2-tailed)*
**Correlation significant at the 0.05 level (2-tailed)*

Table 3. Correlational Analysis between the Academic stress and Mental Well-being of Non-Stem students enrolled in Stem related courses.

Table 3 examined the relationship between Academic stress and Mental Well-being of Non-stem students. Results showed a Pearson's r value of 0.0791, indicating no significant relationship between the variables.

Table 3 presents the correlation analysis between perceived academic stress and mental well-being. A weak positive correlation was found ($r = 0.0791$, $p = 0.337$), which was not statistically significant. Interprets that as indicating that academic stress does not strongly predict mental well-being in this specific population. Investigating the complex interplay between academic stress, mental well-being, and the COVID-19 pandemic, Barbayannis et al. (2022) found a significant negative correlation between academic stress and mental well-being among college students. Higher levels of perceived academic stress were associated with poorer mental health outcomes, with the relationship being particularly pronounced among women, non-binary individuals, and freshmen. At times, students can face "high stress" levels while maintaining "high well-being" if they have high intrinsic motivation—that is, performing activities for their own sake without worrying about failing (Rožman et al., 2025).

Knowles et al. (2021) examined the relationship between mental health outcomes in athletes and non-athletes as they emerged from a COVID-19 pandemic lockdown. Their research revealed no significant differences in the strength or direction of the relationship between resilience and mental health across the two groups. This finding suggests that academic and pandemic-related stress may exert a similar impact on mental well-being regardless of athletic participation. It challenges the assumption that athletes are inherently more resilient to stress and underscores the need for broad institutional support systems for all students facing academic pressure.

Conclusion and Recommendations

The non-stem students enrolled in STEM-related courses' level of perceived Academic Stress is at a high level. Academic self-perception which refers to their self-confidence and confidence for success in their academics, future career, and confidence in making the right academic decisions most specifically their fear of failing the course has been the major contributor of their Academic Stress.

In contrast to this, the participants' Mental Well-being is still at a positively High Level. It indicates that their psychological well-being has been used positively and continuously improves despite their perceived academic stress.

In conclusion, Academic Stress and Mental Well-being does not show direct relationship towards each other, as supported by the results of the correlational analysis which shows weak positive correlation therefore, the null hypothesis is accepted.

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Competing Interests Statement

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this article.

Data Availability Statement

Data sharing is not applicable to this article as no new data were created or analyzed in this study; all data used were obtained from previously published sources as cited in the reference list.

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Appendices

No appendices are attached to this study.