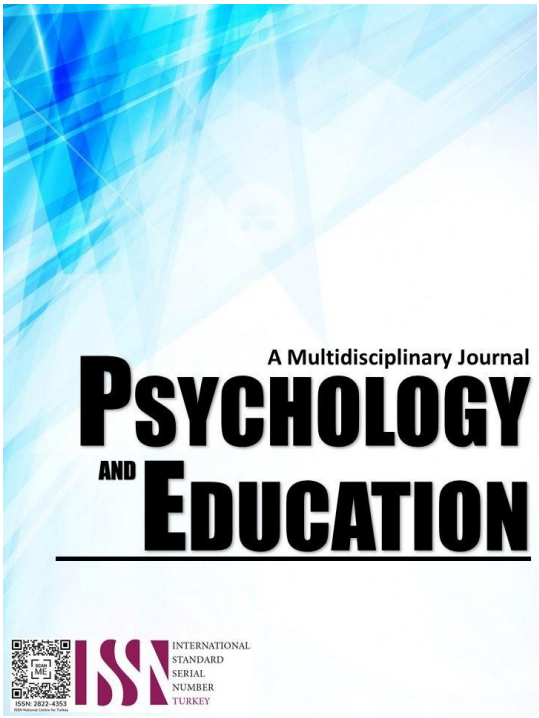
MATHEMATICS ANXIETY OF GRADE 7 AND 8 STUDENTS IN RELATION TO MATHEMATICAL PROFICIENCY: BASIS FOR AN INTERVENTION PLAN



PSYCHOLOGY AND EDUCATION: A MULTIDISCIPLINARY JOURNAL

Volume: 32
Issue 7
Pages: 878-892
Document ID: 2025PEMJ3106
DOI: 10.5281/zenodo.14936620
Manuscript Accepted: 02-10-2025

Psych Educ, 2025, **32**(7): 878-892, Document ID:2025PEMJ3106, doi:10.5281/zenodo.14936620, ISSN 2822-4353

Research Article

Mathematics Anxiety of Grade 7 and 8 Students in Relation to Mathematical Proficiency: Basis for an Intervention Plan

Karla Victoria I. Ong,* Ma. Quincy D. Dones
For affiliations and correspondence, see the last page.

Abstract

Mathematics anxiety is a significant barrier to student learning, often affecting academic performance and overall confidence in the subject. This study explored the relationship between mathematics anxiety and mathematical proficiency among Grade 7 and Grade 8 students at Teofilo Gensoli Sr. National High School during the 2023-2024 school year. The findings provide a foundation for targeted interventions to bridge learning gaps and improve student achievement. Using a correlational research design, the study involved 206 students who completed a 34-item questionnaire assessing mathematics anxiety, while their proficiency levels were determined through the Division Assessment of Learning (DAL) scores. Descriptive statistics analyzed anxiety and proficiency levels, while t-tests and H-tests ($\alpha = 0.05$) examined variations based on sex, school type, family income, parental education, and grade level. The Gamma Coefficient measured the relationship between mathematics anxiety and proficiency. Results showed that most students were female, enrolled in public schools, came from lower-income families, and had parents with a high school education. Mathematics anxiety was moderate, with physiological and psychological domain scores of 2.63 and 2.99, respectively. Proficiency levels indicated that 48.54% were low proficient, 45.15% nearly proficient, 0.97% proficient, and 5.34% not proficient, with an overall mean score of 45.72, classifying them as low proficient. Although proficiency levels varied significantly by school type, no significant differences in mathematics anxiety were observed across demographic groups. Additionally, no significant correlation was found between mathematics anxiety and mathematical proficiency. These insights emphasize the need for structured intervention programs incorporating targeted instruction, anxiety management techniques, and student support initiatives to enhance mathematical proficiency.

Keywords: *mathematics anxiety, proficiency levels*

Introduction

Mathematics education is vital for developing critical thinking and problem-solving skills, yet many students struggle with mathematics anxiety—a psychological barrier that hinders learning and academic performance. Studies indicate that this anxiety is prevalent among students and strongly correlates with lower achievement in mathematics (Chen et al., 2023). The 2018 Programme for International Student Assessment (PISA) highlighted its global impact, revealing that students with high levels of mathematics anxiety tend to score significantly lower in the subject (Bush, 2019). The COVID-19 pandemic further intensified this issue, as disruptions in education widened existing learning gaps. Addressing mathematics anxiety through effective interventions is crucial to rebuilding student confidence and improving academic performance.

The 2018 PISA results placed Filipino students among the lowest in mathematical proficiency worldwide, with fewer than 20% reaching the minimum proficiency level (Level 2), while over half performed below Level 1. The pandemic exacerbated these challenges, limiting access to quality education and deepening learning losses. In response, the Department of Education (DepEd) introduced the National Learning Recovery Program (DepEd Order No. 13, s. 2023) to prioritize literacy and numeracy, aiming to close learning gaps and support struggling students. This initiative highlights the importance of fostering a supportive learning environment that enhances mathematical competence while reducing anxiety, ultimately helping students regain essential skills and improve their academic outcomes.

Although extensive research has examined mathematics anxiety and its impact on student performance, gaps remain in understanding how these factors manifest within specific educational contexts, particularly in the Philippines' post-pandemic setting. This study seeks to identify key factors influencing the relationship between mathematics anxiety and proficiency, to develop targeted interventions that enhance confidence, reduce anxiety, and improve mathematical performance.

As a mathematics teacher and researcher, the findings of this study will serve as the foundation for designing an intervention plan that includes localized activities, personalized support, and the strategic use of technology. By implementing these evidence-based approaches, the study aims to create a more engaging and supportive learning experience, ultimately equipping students with the skills and confidence needed to succeed in mathematics.

Research Questions

This study determined the level of mathematics anxiety in relation to the mathematical proficiency of grade 7 and grade 8 students in one of the public secondary schools in the Division of Bacolod City for School Year 2023-2024. Specifically, this research study aimed to find answers to these questions:

1. What is the profile of grade 7 and 8 students in terms of:
    1.1. sex;
    1.2. type of school;
    1.3. monthly family income;
    1.4. parent's highest educational attainment; and
    1.5. grade level?
2. What is the level of mathematics anxiety of the students when taken as a whole and grouped according to physiological and psychological domains?
3. What is the level of proficiency of the students?
4. Is there a significant difference in the mathematics anxiety level of the students when grouped according to sex, type of school, monthly family income, parent's highest educational attainment, and grade level?
5. Is there a significant difference in the proficiency level of the students when grouped according to sex, type of school, monthly family income, parent's highest educational attainment, and grade level?
6. Is there a significant relationship between the mathematics anxiety level and the proficiency level of the students?

Methodology

Research Design

This study investigated the relationship between mathematics anxiety and mathematical proficiency among Grade 7 and Grade 8 students at Teofilo Gensoli Sr. National High School during the 2023-2024 school year. A descriptive correlational research design was employed, involving all 206 students from these two grade levels. According to Noel et al. (2022), this design is effective for describing variables and assessing the strength and direction of their relationships. Brodowicz (2024) further explains that this method is useful for examining relationships between variables without altering them. The primary objective of this study was to measure the level of mathematics anxiety in students and assess how it relates to proficiency levels in mathematics. The study also investigated whether factors such as sex, type of school attended, family income, parents' highest educational attainment, and grade level impacted mathematics anxiety and proficiency levels. Descriptive statistics, including frequency, weighted mean, and percentages, were used to summarize the data on these factors and the levels of mathematics anxiety and proficiency.

The descriptive correlational method was chosen to understand better how mathematics anxiety and mathematical proficiency are related. The research focused on exploring the relationship between respondents' mathematics anxiety and their proficiency levels in mathematics.

Respondents

The participants of this study were Grade 7 and Grade 8 students from Teofilo Gensoli Sr. National High School enrolled in the school year 2023-2024.

Instrument

The study utilized a standardized questionnaire to assess mathematics anxiety and mathematical proficiency among Grade 7 and Grade 8 students. The questionnaire was divided into three sections. The first section collected demographic information, including sex, type of elementary school attended, family income, parents' highest level of education, and current grade level.

The second section measured mathematics anxiety. To ensure the validity and reliability of the instrument, the researcher adopted a standardized mathematics anxiety questionnaire from Widjajanti et al. (2020). This section contained 34 questions, divided into two domains: physiological and psychological aspects of mathematics anxiety. The Likert scale used for scoring ranged from "Always" (5) to "Never" (1), with the intermediate responses being "Often" (4), "Sometimes" (3), and "Rarely" (2). This scoring system provided a quantifiable measure of students' anxiety levels related to mathematics.

For evaluating mathematical proficiency, the study used the Division Assessment for Learning (DAL) tool for the first quarter provided by the Division of Bacolod City. Respondents' scores were converted into percentage scores and classified into five categories: High Proficient (90-100%), Proficient (75-89%), Nearly Proficient (50-74%), Low Proficient (25-49%), and Not Proficient (0-24%). These categories allowed for a clear comparison of students' proficiency in mathematics.

After the utilization of the questionnaire, results were compiled, tabulated and accurately interpreted using frequency counts and interpretation table as part of the data analysis procedure to determine the student's level of mathematics anxiety and proficiency.

Procedure

The data collection process commenced with the researcher securing approval from both the Schools Division Superintendent of the Division of Bacolod and the school head of Teofilo Gensoli Sr. National High School. Once the necessary permissions were granted, the researcher, with the support of the students' advisers, conducted an orientation session. During this session, the students were informed about the study's objectives, the significance of their participation, and the purpose of the questionnaire. This orientation

ensured that the participants clearly understood the process before proceeding with the survey.

To uphold ethical research standards and maintain confidentiality, parental consent was obtained before students were allowed to participate in the study. Participants were given ample time to carefully complete the survey forms, ensuring that they could respond thoughtfully. Once the allotted time had elapsed, the researcher collected the completed forms promptly to maintain the integrity of the responses.

The gathered data underwent rigorous statistical analysis to identify correlations between mathematics anxiety and proficiency. Initially, Pearson's r and Spearman's rho were considered, as they are commonly used for examining relationships between continuous variables. However, to better align with the nature of the data where mathematics anxiety was measured using a Likert scale and proficiency was categorized the study opted for the Gamma Coefficient. This statistical method is more appropriate for analyzing ordinal data, ensuring the accuracy and validity of the findings. By selecting the most suitable analytical approach, the study aimed to provide a clearer and more reliable understanding of the relationship between mathematics anxiety and student proficiency.

Data Analysis

After the data was gathered, the researcher tallied, tabulated, analyzed, and interpreted it. The following statistical tools were used in analyzing and interpreting the data.

For the statement of problem number 1, which states, what is the profile of Grade 7 and Grade 8 students in terms of sex, type of school graduated, monthly family income, parent's highest educational attainment, and grade level, frequency and percent distribution were used.

For the statement of problem number 2, which states, what is the level of mathematics anxiety of grade 7 and grade 8 students when grouped according to physiological and psychological domains, mean was used.

For the statement of problem number 3, which states, what is the level of proficiency of the students, the mean of percentage score was used.

For the statement of problem number 4, which states, is there a significant difference in the mathematics anxiety level of grade 7 and grade 8 students when grouped according to sex, type of school, monthly family income, parent's highest educational attainment, and grade level, the T-test and H-test were used.

For the statement of problem number 5, which stated, "Is there a significant difference in the proficiency level of grade 7 and grade 8 students?" T-test and H-test were used.

For the statement of problem number 6, "Is there a significant relationship between the mathematics anxiety level and proficiency level of the students?" Gamma Coefficient was used.

Results and Discussion

This section underscores the presentation, analysis, and interpretation of the data gathered in this research study. The results are presented in tables to emphasize the significant meaning of each problem.

Profile of Grade 7 and Grade 8 Students

Table 1 below presents the profile of grades 7 and 8 students of Teofilo Gensoli Sr. National High School regarding sex, type of school, family monthly income, parent's highest educational attainment, and grade level.

Table 1. *Frequency and Percent Distribution of Respondents According to Profile*

Profile		*Frequency (f)*	*Percentage (%)*
Sex	Male	98	47.60
	Female	195	52.40
	Total	206	100.00
Type of School	Private	3	1.50
	Public	203	98.50
	Total	206	100.00
Family Monthly Income	5,000 and below	103	50.00
	5,001 to 10,000	74	35.90
	10,001 and above	29	14.10
	Total	206	100.00
Highest Educational Attainment	Elementary Level	16	7.80
	High School Level	127	61.70
	College Level	56	27.20
	Post Graduate Level	7	3.40

	Total	206	100.00
Grade Level	Grade 7	89	43.20
	Grade 8	117	56.80
	Total	206	100.00

The table shows that regarding sex, 195 out of 206 respondents, or 52.40, are female, while approximately 98, or 47.60, are male. The data suggests a 4.80 higher representation of female students than males, indicating female students' dominance among Grade 7 and 8 attendees.

Regarding the type of school during elementary education, the vast majority of grade 7 and 8 students, comprising 203 out of 206 respondents, or 98.50 attended public schools. Conversely, only about three students, or 1.50, received their primary education from private institutions. This data underscores the prevalence of students from public school backgrounds among grade 7 and 8 attendees.

In terms with family monthly income, 103 families with grade 7 and 8 students, or 50.00, have a monthly income of Php.5,000 or below. This is followed by 74 families, or 35.9, with incomes ranging from Php.5,001 to 10,000. Additionally, 29 families, or 14.1 of the totals, report a monthly income of Php.10,001 and above. The table highlights that most grade 7 and 8 students at Teofilo Gensoli Sr. National High School come from families with incomes of Php.5,000 or less.

Concerning the parents' highest educational attainment, the distribution of educational attainment among respondents reveals that the highest frequency, comprising 127 individuals, or 61.70, is among those who completed high school. Following this, individuals who finished college level rank second with a frequency of 56, accounting for 27.20. Furthermore, 16 parents, or 7.80, have education up to the elementary level, while seven parents, or 3.30, have attained a master's degree. This data underscores the varied educational backgrounds of parents surveyed in the study.

Regarding the grade level, most respondents, comprising 117 out of 206 students, or 56.80, are from grade 8. In contrast, the grade 7 students account for 89 out of 206 students, representing 43.20 of the population of Teofilo Gensoli Sr. National High School. This distribution indicates a higher representation of grade 8 students than grade 7 students in the school's population for grades 7 and 8.

Level of Mathematics Anxiety of Students

Table 2 below, presents the level of mathematics anxiety of grade 7 and 8 students of Teofilo Gensoli Sr. National High School in terms of physiological and psychological domains.

Table 2. *Level of Mathematics Anxiety of Students as a Whole and in terms of Physiological and Psychological Domains*

Variables	*Mean (x)*	*Interpretation*
Physiological	2.63	Moderate
Psychological	2.99	Moderate
As a whole	2.88	Moderate

Table 2 presents the level of mathematics anxiety among Grade 7 and 8 students of Teofilo Gensoli Sr. National High School, measured across physiological and psychological domains. The data indicate that the physiological domain has a mean score of 2.63, which falls within the moderate range. This suggests that students occasionally experience physical symptoms such as increased heart rate, cold sweats, and clammy hands when dealing with mathematical tasks. Meanwhile, the psychological domain records a slightly higher mean score of 2.99, also interpreted as moderate, reflecting occasional emotional distress, such as fear, worry, or mental disorganization, in response to mathematics-related activities. The overall mean score of 2.88 confirms that, as a whole, students experience a moderate level of mathematics anxiety.

The findings reveal that mathematics anxiety among the surveyed students is present but not at an extreme level. These results align with studies suggesting that mathematics anxiety varies in intensity among students, depending on individual differences, teaching strategies, and prior experiences (Namkung et al., 2019; Zhang et al., 2019). However, contrary to Luttenberger et al. (2018), who highlighted that mathematics anxiety often manifests as high physiological and psychological stress, the current study finds only a moderate level of anxiety in these domains. This discrepancy may be due to differences in cultural contexts, teaching methodologies, or sample demographics. Additionally, while PISA studies indicate that many adolescents report significant worry about mathematics (Luttenberger et al., 2018), the moderate anxiety levels found in this study suggest that, although students exhibit some apprehension, it does not consistently reach debilitating levels.

The implications of these findings are significant. Research indicates that even moderate levels of mathematics anxiety can hinder student performance and engagement in the subject (Barroso et al., 2021). According to the Debilitating Anxiety Model (Throndsen et al., 2022), persistent mathematics anxiety can negatively impact working memory, leading to decreased problem-solving abilities and academic achievement. Additionally, students experiencing moderate anxiety levels may still exhibit avoidance behaviors, such as procrastination or reluctance to participate in advanced mathematical tasks (Khasawneh et al., 2021). Given this, educators should implement targeted interventions, such as confidence-building activities, anxiety-reducing strategies, and supportive instructional approaches, to prevent these moderate levels from escalating into severe mathematics anxiety.

Furthermore, while previous research (Lucietto & Rada, 2022) suggests that standardized testing exacerbates mathematics anxiety, the moderate levels observed in this study might indicate that external academic pressures in this specific context are not as overwhelming as in other settings. However, additional research is needed to explore the underlying factors influencing students' anxiety levels and how they correlate with academic performance and instructional approaches.

Level of Proficiency of the Students

The table below presents the Level of Proficiency of Grade 7 and 8 students of Teofilo Gensoli Sr. National High School.

Table 3. *Level of Proficiency of Students*

Level of Proficiency	*Frequency (f)*	*Mean*	*Interpretation*
High Proficient	0		
Proficient	2	45.72	Low Proficient
Nearly Proficient	93		
Low Proficient	100		
Not Proficient	11		
Total	206		

Table 3 presents the proficiency levels of students at Teofilo Gensoli Sr. National High School, revealing that the majority fall into the low proficient category. Specifically, 100 students were classified as low proficient, while 93 students were nearly proficient, indicating they are close to achieving proficiency but still require improvement. Only 2 students demonstrated proficiency, and no students reached the high proficient level. Additionally, 11 students were categorized as not proficient, highlighting significant struggles with mathematical competency. The overall mean score of 45.72 confirms that students generally fall within the low proficient level, emphasizing the need for targeted interventions to improve their mathematical skills.

These findings align with the 2018 PISA results, which showed that Filipino students ranked among the lowest-performing globally in mathematics, with less than 20% reaching the minimum proficiency level (Department of Education, 2019). The current study further supports these concerns, as a significant portion of students remains below proficiency. Additionally, the results reinforce the findings of Cabuquin et al. (2023), who identified a strong correlation between mathematics proficiency and overall academic success. Given that only a small fraction of students in this study demonstrated proficiency, these results suggest broader implications for students' performance across other subjects.

Furthermore, the findings are consistent with research by Fascia et al. (2024), which found that many students require significant improvement in their mathematical performance due to challenges associated with mastering key competencies. Similar trends were observed in Bernardo et al. (2022), who reported that the majority of Filipino high school students are not acquiring the expected mathematical skills. The absence of students in the highly proficient category further emphasizes the urgent need for curriculum enhancements and structured remedial programs.

The importance of assessments in addressing these challenges is highlighted by Corrêa and Haslam (2021), who advocate for proficiency-based assessments to guide instruction and skill development. The fact that a considerable number of students in this study are classified as nearly proficient suggests that targeted interventions could help bridge the gap and improve overall proficiency. Therefore, implementing structured assessment frameworks and strategic instructional interventions is crucial in fostering mathematical competence and improving student learning outcomes.

Difference in the Mathematics Anxiety Level of Students According to Sex

Table 4.1, presents the difference in the mathematics anxiety levels of Students of grades 7 and 8 students of Teofilo Gensoli Sr. National High School in terms of sex.

Table 4.1. *Difference in the Mathematics Anxiety Level of Students when Grouped According to Sex*

Sex	*N*	*Mean*
Male	98	2.80
Female	108	2.82

Computed (t) value : -0.226
P- Value : 0.093
Decision : Accept Ho
Interpretation: no significant difference

Table 4.1 presents the difference in the mathematics anxiety levels of Grade 7 and 8 students at Teofilo Gensoli Sr. National High School based on sex. The results indicate that male students had a mean mathematics anxiety score of 2.80, while female students had a mean score of 2.82. The computed t-value of -0.226 and the p-value of 0.093 led to the decision to accept the null hypothesis, signifying no significant difference in mathematics anxiety levels between male and female students. This finding suggests that gender does not play a crucial role in determining students' anxiety toward mathematics.

The results align with the findings of Daverick et al. (2019), who concluded that males and females do not significantly differ in terms

of mathematics anxiety. Similarly, Sangral and Kumar (2023) found that gender does not significantly influence secondary school students' mathematics anxiety levels, further reinforcing the notion that anxiety towards mathematics is not inherently linked to one's sex. The lack of substantial gender-based variation in mathematics anxiety in this study also supports the research of Galiano et al. (2023), who noted that while gender stereotypes often suggest that females experience greater mathematics anxiety, actual self-reports did not indicate significant differences.

Moreover, these results contrast with findings from Van Mier et al. (2019), who reported a significant correlation between mathematics anxiety and performance, particularly among female students in early grades. However, the current study does not support the notion that gender-based mathematics anxiety discrepancies emerge significantly among junior high school students. Additionally, Sarfo et al. (2020) highlighted that while mathematics anxiety varies across cultural contexts, some locations report higher levels of anxiety in females, a pattern not observed in this study.

The consistency of the present findings with multiple studies underscores the argument that gender alone is not a determining factor in mathematics anxiety. While previous studies, such as those by Kumar & Scholar (2019) and Geary et al. (2019), found gender-based differences in anxiety and performance, the results of this study suggest that external factors, such as instructional strategies and classroom environment, may have a more substantial impact on students' mathematics anxiety than gender. Therefore, educators should focus on creating supportive learning environments that address anxiety-related challenges for all students, regardless of sex.

Difference in the Mathematics Anxiety Level of Students According to the Type of School

Table 4.2, presents the significant difference in the mathematics anxiety levels of Students of Grades 7 and 8 students of Teofilo Gensoli Sr. National High School in terms of type of school

Table 4.2. *Difference in the Mathematics Anxiety Level of Students when Grouped According to Type of School*

Type of School	*N*	*Mean*
Private	3	2.93
Public	203	2.81

Computed (t) value: 0.36
P-Value : 0.915
Decision: Accept Ho
Interpretation: no significant difference

Table 4b presented the analysis of mathematics anxiety levels among students from different types of schools revealed no significant difference. The computed t-value of 0.36, with a corresponding p-value of 0.915, falls above the 0.05 significance level. As a result, the null hypothesis is accepted, indicating that the type of elementary school attended whether private or public does not significantly influence students' mathematics anxiety levels. These findings align with the research of Taguinod (2022), who also found no significant difference in mathematics anxiety when respondents were grouped by school graduation.

This result supports the notion that students from both private and public elementary schools experience mathematics anxiety at comparable levels. Previous studies provide mixed perspectives on the relationship between school type and mathematics anxiety. Kumar and Scholar (2019) reported that students in government schools exhibited higher mathematics anxiety than their private school counterparts. However, the findings of Umam et al. (2023) suggest that anxiety levels remain similar across different educational levels, with junior high school students in both private and public schools experiencing moderate levels of anxiety. Similarly, Sangral and Kumar (2023) reported no significant difference in mathematics test anxiety concerning the type of school, reinforcing the present study's findings that students from varying academic backgrounds exhibit similar levels of anxiety toward mathematics.

Difference in the Mathematics Anxiety Level of Students According to Family Monthly Income

Table 4.3 presents the significant difference in the mathematics anxiety levels of students of grades 7 and 8 students of Teofilo Gensoli Sr. National High School in terms of family monthly income.

Table 4.3. *Difference in the Mathematics Anxiety Level of Students when Grouped According to Family Income*

Family Income	*N*	*Mean Rank*
Php.5,000 and below	103	99.87
Php. 5,001 to 10,000	74	108.67
Php.10,001 and above	29	103.19

Computed (H) value: 0.939
P- Value: 0.625
Decision: Accept Ho
Interpretation: no significant difference

The results presented in Table 4.3 indicate that family income does not have a significant impact on students' levels of mathematics anxiety, as reflected in the p-value of 0.625, which is above the conventional threshold of 0.05. The mean ranks for students with different income levels—Php 5,000 and below with mean rank of 99.87, Php 5,001 to 10,000 with mean rank of 108.67, and 103.19 as mean rank for Php 10,001 and above. It shows minimal variation, reinforcing the conclusion that family income does not significantly

affect mathematics anxiety. This outcome directly challenges the assumption that lower family income contributes to higher anxiety levels, a trend found in some other studies, such as Marks & Pokropek (2019), which suggested that family income could impact mathematics achievement. However, the lack of a statistically significant difference in the current study suggests that the relationship between family income and mathematics anxiety is not as pronounced in this context, and additional, more nuanced factors should be considered.

The study by Cheung et al. (2020) highlighted that parents' educational attainment had a more direct influence on children's numeracy skills, indicating that family income alone might not account for the variations in students' academic performance and anxiety.

The null hypothesis is accepted, and while this aligns with Daverick's (2019) conclusion of no significant variation in mathematics anxiety across different socioeconomic statuses, the findings highlight the need for further research to uncover underlying causes of mathematics anxiety beyond family income.

Difference in the Mathematics Anxiety Level of Students According to Parents' Highest Educational Attainment

Table 4.4 below presents the significant difference in the mathematics anxiety levels of Students of Grades 7 and 8 students of Teofilo Gensoli Sr. National High School in terms of parents' highest educational attainment.

Table 4.4. *Difference in the Mathematics Anxiety Level of Students when Grouped According to Highest Educational Attainment*

Parents' Highest Educational Attainment	*N*	*Mean rank*
Elementary Level	16	99.44
High School Level	127	108.62
College Level	56	92.76
Post Graduate Level	7	105.86

Computed (H) value: 2.841
P-Value: 0.417
Decision: Accept Ho
Interpretation: no significant difference

The table 4.4 presents the analysis of mathematics anxiety levels among students based on their parents' highest educational attainment presents an interesting but not statistically significant outcome. The computed value of 2.841 and the p-value of 0.417 indicate that there is no significant difference in the mathematics anxiety levels of students when grouped by their parents' educational background. This result suggests that the highest educational attainment of parents may not play a significant role in shaping students' anxiety toward mathematics. This finding aligns with the null hypothesis, which posits that parental education does not significantly affect student mathematics anxiety.

While this outcome contrasts with other studies, such as those by Yavuz (2018) and Bearneza (2020), which found significant differences, it highlights the need for a broader exploration of factors influencing mathematics anxiety. These studies indicated that parental education levels, especially in the case of fathers, were correlated with students' anxiety levels, suggesting that individual family dynamics and socioeconomic factors might influence the outcomes differently. The lack of significance in this study calls for further examination into other potential contributors to students' anxiety, including personal factors, teaching methods, and the school environment.

Furthermore, Yavuz (2018) and Bearneza (2020) observed a clear connection between parental education and mathematics anxiety, the present study's results suggest that other variables may be at play. It is important to recognize that educational attainment is just one of many factors that can impact a student's experience with mathematics anxiety. Studies like those of Marks & Pokropek (2019), which emphasize the impact of family income over parental education, point to the complex interplay of socioeconomic factors that could explain differing outcomes.

Difference in the Mathematics Anxiety Level of Students According to Grade Level

Table 4.5, presents the significant difference in the mathematics anxiety levels of Students of Grades 7 and 8 students of Teofilo Gensoli Sr. National High School in terms of grade level.

Table 4.5. *Difference in the Mathematics Anxiety Level of Students when Grouped According to Grade Leve*

Grade Level	*N*	*Mean*
Grade 7	89	2.80
Grade 8	117	2.82

Computed (t) value: -4.347
P-Value: 0.372
Decision: Accept Ho
Interpretation: no significant difference

The results presented in Table 4.5 indicate no significant difference in the mathematics anxiety levels between Grade 7 and Grade 8 students at Teofilo Gensoli Sr. National High School. The mean mathematics anxiety level for Grade 7 students was 2.80, while Grade 8 students had a slightly higher mean of 2.82. However, the computed t-value of -4.347 was greater than the p-value of 0.372, leading

to the acceptance of the null hypothesis. This suggests that, based on the data analyzed, there is no substantial difference in mathematics anxiety levels between students of these two grade levels.

This result contradicts previous research, such as the study by Lew and Hwang (2019), which found that Grade 11 students exhibited the highest levels of mathematics anxiety, while Grade 12 students had the lowest. The current findings, which show no significant difference between Grades 7 and 8, imply that the relationship between grade level and mathematics anxiety may not be as pronounced in this context as suggested by prior research in secondary education.

Difference in the Proficiency Level of Students According to Sex

The table below presents the significant difference in the proficiency level of students of Grades 7 and 8 students of Teofilo Gensoli Sr. National High School in terms of sex.

Table 5.1. *Difference in the Proficiency Level of Students when Grouped According to Sex*

Sex	*N*	*Mean*
Male	98	44.09
Female	108	47.20

Computed (t) value: -1.68
P- Value: 0.88
Decision: Accept Ho
Interpretation: no significant difference

Table 5.1 shows no significant difference in the proficiency levels of male and female students at Teofilo Gensoli Sr. National High School in terms of their mathematics performance, as evidenced by the computed t-value of -1.678 and a p-value of 0.879. This aligns with the findings of Hathella and Priyanath (2021), who concluded that, although males may generally outperform females in academic performance, no statistically significant difference was found between genders in mathematics performance. This suggests that gender does not play a significant role in overall proficiency levels for the student sample in this study.

However, this finding contradicts some earlier studies that reported gender-based performance differences in mathematics. Palomares-Ruiz (2020) observed that males performed better on arithmetic and unit measurement tasks, while females outperformed males in geometric tasks. These studies suggest that gender differences may be more pronounced within specific mathematical subdomains, rather than across the subject as a whole. While the current study found no significant difference overall, it would be valuable to explore these subdomain-specific performance differences in future research to provide a deeper understanding of how gender may influence mathematical achievement in distinct areas of the discipline.

Difference in the Proficiency Level of Students According to Type of School

Table 5.2 below presents the significant difference in the proficiency level of students of Grades 7 and 8 students of Teofilo Gensoli Sr. National High School in terms of type of school.

Table 5.2. *Difference in the Proficiency Level of Students when Grouped According to Type of School*

Type of School	*N*	*Mean*
Private	3	52.00
Public	203	45.63

Computed (t) value: 0.844
P- Value: .017
Decision: Reject Ho
Interpretation : there is a significant difference

The results presented in Table 5.2 reflect the statistical significance of the difference in proficiency levels between private and public school students, as evidenced by the computed (t) value of 0.844 and a p-value of 0.017. This suggests that students from private schools exhibit higher proficiency levels in mathematics compared to their public school peers. The rejection of the null hypothesis indicates that the proficiency gap is not due to random chance but reflects an actual disparity in student performance.

These findings are consistent with the broader trends observed in the PISA results, where Filipino students in general scored poorly in mathematics, with private school students performing better than their public school counterparts (Bernardo et al., 2022). While both private and public school students struggle to meet proficiency standards, the gap in performance between the two groups, as shown in the data, aligns with the findings of Shehzadi et al. (2022), who also reported higher cognitive and affective engagement, as well as better strategy use, among private school students.

Furthermore, the results show that private school students tend to perform better, which can be linked to factors such as higher engagement, better access to resources, and possibly more effective teaching strategies. However, the significant difference also highlights the need to address the educational disparities between public and private schools. Given the findings of the PISA study, which indicates that a significant portion of Filipino students, particularly in public schools, perform below the expected proficiency levels (OECD, 2019), this research underscores the urgency of targeting interventions that address these gaps.

Difference in the Proficiency Level of Students According to Family Monthly Income

Table 5.3. presents the significant difference in the proficiency level of students of Grades 7 and 8 students of Teofilo Gensoli Sr. National High School in terms of family monthly income.

Table 5.3. *Difference in the Proficiency Level of Students when Grouped According to Family Income*

Family Income	*N*	*Mean Rank*
Php.5,000 and below	103	105.43
Php.5,001 to 10,000	74	101.26
Php.10,001 and above	29	102.34

Computed (H) value: 0.225
P-Value: 0.894
Decision : Accept Ho
Interpretation: no significant difference

The results of the analysis, as presented in Table 5.3, reveal that there is no significant difference in the proficiency levels of students based on their family income. The computed H-value of 0.225 and a p-value of 0.894, which is much greater than the typical significance level of 0.05, led to the acceptance of the null hypothesis. This outcome suggests that family income does not have a measurable impact on the proficiency levels of students in the study sample.

This finding is in contrast to the study by Karla et al. (2023), which showed that students from families with a combined monthly income of Php10,000 or less had very satisfactory academic performance. Additionally, Karla's study identified a positive but negligible correlation between students' interest in mathematics and their performance. While Karla's findings hint at a possible relationship between family income and academic success, the current study does not find a similar pattern in terms of proficiency levels among different family income groups.

The results also challenge the findings of Marks and Pokropek (2019), who demonstrated that family income significantly impacts students' mathematics achievement across various countries. According to their study, family income often has a greater effect on academic performance than other socio-economic factors, such as parental education or occupation. This finding aligns with the literature suggesting that socio-economic indicators should be considered in a broader context, with particular attention to local and institutional factors. Therefore, while family income may influence educational outcomes in certain contexts, this study suggests that it does not exert a significant effect on proficiency levels at Teofilo Gensoli Sr. National High School.

Difference in the Proficiency Level of Students According to Parents' Highest Educational Attainment

The table below presents the difference in the proficiency level of students of Grades 7 and 8 students of Teofilo Gensoli Sr. National High School in terms of parent's highest educational attainment.

Table 5.4. *Difference in the Proficiency Level of Students when Grouped According to Highest Educational Attainment*

Family Income	*N*	*Mean Rank*
Elementary Level	16	97.31
High School Level	127	104.28
College Level	56	105.12
Post Graduate Level	7	90.50

Computed (H) value: 0.573
P-Value: 0.903
Decision: Accept Ho
Interpretation: no significant difference

The results of the study as presented in Table 5.4, indicate that there is no statistically significant difference in the proficiency levels of students when grouped according to their parents' highest educational attainment. The computed H-value of 0.573 and the p-value of 0.903, which is greater than the typical significance level of 0.05, support the acceptance of the null hypothesis. This means that, based on the data analyzed, the highest level of education attained by parents does not appear to have a significant impact on the proficiency levels of students in this particular context. Therefore, we can infer that, within the sample of students from Teofilo Gensoli Sr. National High School, parental educational attainment does not directly affect student performance in the subject.

However, this finding presents an interesting contradiction to previous research, such as that by Cheung et al. (2020), which suggests that children of more educated parents may have better numeracy skills. This discrepancy calls for a more thorough investigation into the factors that might be at play in the current study, especially considering the influence of other family-related factors, such as socioeconomic status and access to educational resources.

As noted by Bernardo et al., (2022), family income and the availability of resources at home have been identified as potential contributors to student achievement in mathematics. Therefore, while the results of this study do not show a significant correlation between parents' educational attainment and student proficiency, other variables, such as family income or access to resources, may still play a crucial role in shaping students' academic success.

Difference in the Proficiency Level of Students According to Grade Level

Table 5.5 below presents the difference in the proficiency level of students of Grades 7 and 8 students of Teofilo Gensoli Sr. National High School in terms of sex, type of school, family monthly income, parent's highest educational attainment, and type of school and grade level.

Table 5.5. *Difference in the Proficiency Level of Students when Grouped According to Grade Level*

Grade Level	*N*	*Mean*
Grade 7	89	39.34
Grade 8	117	50.58

Computed (t) value: -6.53
P- Value: 0.051
Decision : Accept Ho
Interpretation: no significant difference

Table 5e shows no statistically significant difference in the proficiency levels between Grade 7 and Grade 8 students, as indicated by the computed (t) value of -6.53 and the p-value of 0.051. This leads to the acceptance of the null hypothesis, suggesting that grade level does not have a significant impact on students' mathematics proficiency in this particular study. However, it is worth noting that Grade 8 students demonstrated a higher mean proficiency level than Grade 7 students, although this difference did not reach statistical significance. This outcome aligns with previous findings, where various studies have suggested that proficiency levels tend to improve as students' progress through higher grade levels, particularly in senior high school (Kandeel, 2021).

Nevertheless, in this study, the lack of a significant difference between Grade 7 and Grade 8 students suggests that other factors, such as teaching methods, learning environments, or socio-economic conditions, may play a more substantial role in influencing proficiency levels than grade progression alone.

The lack of significant findings in this study contrasts with the broader literature, such as Kandeel's (2021) study, which observed higher proficiency levels among students in higher grade levels.

According to Tan and Cordova (2018), a positive attitude toward mathematics can play a crucial role in improving proficiency levels, and this may not be fully captured by grade level alone. Thus, while grade level may not directly influence proficiency in this study, focusing on factors like student motivation, teacher effectiveness, and curriculum development could provide valuable insights for improving student performance.

Additionally, the comparison with national and international data, such as the performance of students in the Philippines and the NAEP results from 2019, suggests that a concerted effort should be made at the local level to identify and address barriers to academic success, particularly in schools like Saguday National High School, where mathematics proficiency remains a challenge (NAEP Mathematics: National Achievement-Level Results, 2019).

Relationship between Mathematics Anxiety and Proficiency Level

Table 6 below presents the relationship between Mathematics anxiety and the proficiency level of students of Grades 7 and 8 students of Teofilo Gensoli Sr. National High School.

Table 6. *Relationship between Mathematics Anxiety and Proficiency Level*

Mathematics Anxiety	*Proficiency Level*					
	High Proficient	*Proficient*	*Nearly Proficient*	*Low Proficient*	*Not Proficient*	*Total*
Very High	0	0	2	2	0	4
High	0	0	12	10	2	24
Moderate	0	1	44	54	5	104
Low	0	0	31	29	4	64
Very Low	0	0	7	3	0	10
Total	0	1	96	98	11	206

Computed (G) value: -.001
P- Value: 0.978
Decision: Accept Ho
Interpretation: not significant at a 0.05 level of significance

The findings in Table 6 indicate a general trend where increased mathematics anxiety correlates with lower proficiency levels. Specifically, students with very high or high anxiety predominantly fall into the "Nearly Proficient" and "Low Proficient" categories, while none reach the "High Proficient" level. Conversely, students with moderate or low anxiety are more represented in the "Proficient" and "Nearly Proficient" groups, suggesting that lower anxiety levels may be associated with better performance in mathematics. This trend aligns with existing literature that suggests anxiety can negatively impact cognitive processing and problem-solving abilities in mathematics.

However, despite these observed patterns, the computed (G) value of -0.001 and a high p-value of 0.978 indicate that the relationship between mathematics anxiety and proficiency level is not statistically significant. This result necessitates the acceptance of the null

hypothesis, meaning that within this particular sample, mathematics anxiety does not have a significant direct impact on students' proficiency levels. One possible explanation for this outcome is the multifaceted nature of academic performance. Mathematics proficiency is influenced by a variety of factors beyond anxiety levels, including teaching strategies, individual learning styles, prior knowledge, and external stressors such as family support or socioeconomic conditions. It is possible that these factors played a more dominant role in shaping students' proficiency levels in this study, thereby overshadowing any potential effects of anxiety.

Interestingly, these findings contrast with the study by Siaw et al. (2020), which identified a weak positive correlation between mathematics anxiety and performance in final examinations. Their study suggested that heightened anxiety could sometimes serve as a motivator, pushing students to perform better under pressure. The discrepancy between these findings may stem from differences in sample populations, assessment methods, or cultural contexts, highlighting the need for further research to explore the nuanced effects of anxiety on academic achievement.

Despite the lack of a statistically significant correlation, the implications of mathematics anxiety in educational settings should not be overlooked. High anxiety levels can still create psychological barriers to learning, reducing students' confidence and engagement in mathematical tasks. Therefore, interventions aimed at reducing mathematics anxiety such as confidence-building activities, growth mindset strategies, and supportive classroom environments remain essential in fostering better learning outcomes for students.

Conclusions

Based on the above findings, the following conclusions were drawn:

The demographic profile of Grade 7 and 8 students at Teofilo Gensoli Sr. National High School shows a slight gender disparity, with more female students than male. The majority of students come from public schools and lower-income families, with most parents having attained a high school education. Additionally, Grade 8 students make up a larger proportion of the population than Grade 7 students. These factors provide a contextual understanding of the student's learning environment and socioeconomic background, which may influence their academic experiences.

The study found that students exhibit a moderate level of mathematics anxiety, with psychological factors such as fear of failure and self-doubt being more pronounced than physiological symptoms like nervousness. This suggests that while students do experience anxiety in mathematics, it is not at an extreme level. Addressing negative thought patterns and self-perceptions about mathematics could be crucial in reducing anxiety and fostering a more positive attitude toward the subject.

Most of the students fall within the low proficiency level, highlighting significant struggles in mastering mathematical concepts and skills. While some students are nearing proficiency, very few demonstrate full competency, and none reach the high proficiency level. A small subset of students faces major difficulties in grasping fundamental mathematics concepts. These findings underscore the need for targeted instructional interventions, remediation programs, and curriculum adjustments to bridge the gaps and enhance students' mathematical abilities.

Statistical analysis revealed that mathematics anxiety does not significantly differ based on sex, type of school, family monthly income, parental educational attainment, or grade level. This suggests that anxiety is a widespread issue that cuts across demographic and socioeconomic backgrounds. Given this, broad school-wide strategies and systemic curriculum enhancements may be more effective than focusing on specific subgroups.

While mathematics proficiency is not significantly influenced by sex, family income, or parents' educational attainment, a notable difference was found based on the type of school attended. This indicates that students from different educational environments may have varying levels of proficiency, possibly due to differences in instructional methods, access to resources, or curriculum implementation. Further research is necessary to explore these disparities and identify the factors contributing to varying proficiency levels.

The study found no significant relationship between mathematics anxiety and proficiency. While descriptive data showed a trend where higher anxiety corresponded with lower proficiency, the statistical analysis indicated that this relationship was not strong enough to be considered significant. This challenges the common assumption that reducing anxiety alone will lead to improved performance. Instead, a more comprehensive approach integrating skill-building, confidence enhancement, and targeted academic support may be necessary to improve mathematical proficiency effectively.

The researcher highly recommends the following:

Teachers may develop and implement tailored instructional strategies that address the specific learning needs of students, particularly females, students from lower-income families, and those transitioning to Grade 8. These interventions should focus on personalized learning approaches, differentiated instruction, and scaffolding techniques to ensure inclusive and equitable education at Teofilo Gensoli Sr. National High School.

Given the moderate level of mathematics anxiety among students, teachers, and school administrators may implement structured programs aimed at reducing anxiety and fostering a growth mindset. Strategies such as mathematics mentoring, peer-assisted learning,

mindfulness activities, and positive reinforcement can help students build confidence in their mathematical abilities. Moreover, strengthening collaboration between parents and teachers is essential in creating a supportive learning environment in school and at home.

Mathematics teachers may introduce tailored intervention programs that cater to varying proficiency levels. This includes remedial sessions for struggling students, reinforcement activities for those approaching proficiency, and advanced problem-solving workshops for high-achieving students. Schools may also adopt evidence-based instructional strategies such as contextualized learning, real-world applications of mathematics, and the use of technology to enhance engagement and comprehension.

Since mathematics anxiety appears to affect students across demographic and socioeconomic backgrounds, schools can adopt a more holistic approach to designing interventions. Programs should focus on addressing psychological and educational factors contributing to anxiety rather than relying on demographic categorizations. Implementing stress management techniques, promoting a positive classroom culture, and incorporating hands-on, interactive math activities can help reduce anxiety and improve student engagement.

The Department of Education (DepEd) may allocate more resources to improving instructional quality, particularly in public schools where students tend to demonstrate lower mathematics proficiency. This includes teacher training in innovative pedagogy, provision of up-to-date instructional materials, and integration of digital learning tools to bridge the proficiency gap. Policies should also focus on enhancing assessment methods to ensure a more comprehensive evaluation of students' mathematical skills beyond standardized tests.

Future researchers can explore additional factors influencing mathematics proficiency beyond anxiety. Investigating elements such as teaching methodologies, curriculum design, student motivation, and cognitive learning styles could provide deeper insights into how mathematical skills can be effectively developed. Longitudinal studies may also be conducted to assess the long-term impact of anxiety reduction programs and instructional interventions on student performance.

References

Adalla, M. J. T., & Salazar, B. S. C. (2023). Pandemic-related anxiety in math learning among selected public senior high school students in the island municipalities of Northern Samar. Journal of Namibian Studies: History, Politics, Culture, 34, 1695–1721. https://doi.org/10.59670/jns.v34i.2728

Aranca, A. R. A. (2019). Proficiency level in the fundamental concepts of mathematics of Grade 10 students. Ascendens Asia Journal of Multidisciplinary Research Abstracts, 3(2G). https://ojs.aaresearchindex.com/index.php/AAJMRA/article/view/6363

Balmeo, C. (2018). Self-esteem as a factor in mathematics anxiety of Grade 6 pupils of Santolan Elementary School. ResearchGate. https://www.researchgate.net/publication/328330015

Barroso, C., Ganley, C. M., McGraw, A. L., Geer, E. A., Hart, S. A., & Daucourt, M. C. (2021). A meta-analysis of the relation between math anxiety and math achievement. Psychological Bulletin, 147(2), 134–168. https://doi.org/10.1037/bul0000307

Bearneza, F. J. D. T. B. (2020). The self-efficacy and anxiety in learning mathematics of college students. ResearchGate. https://www.researchgate.net/publication/345326054

Bernardo, A. B. I., Cordel, M. O., Lapinid, M. R. C., Teves, J. M. M., Yap, S. A., & Chua, U. C. (2022). Contrasting profiles of low-performing mathematics students in public and private schools in the Philippines: Insights from machine learning. Journal of Intelligence, 10(3), 61. https://doi.org/10.3390/jintelligence10030061

Broer, M., & Bai, Y. (2019). A review of the literature on socioeconomic status and educational achievement. ResearchGate.https://www.researchgate.net/publication/333123996_A_Review_of_the_Literature_on_Socioeconomic_Status_and_Educational_Achievement

Bureau, U. C. (2021). Educational attainment. The United States Census Bureau. https://www.census.gov/topics/education/educational-attainment.html

Bush, T., & Ng, A. Y. M. (2019). Distributed leadership and the Malaysia Education Blueprint. Journal of Educational Administration, 57(3), 279–295. https://www.researchgate.net/publication/333057322_Distributed_leadership_and_the_Malaysia_Education_Blueprint_From_prescription_to_partial_school-based_enactment_in_a_highly_centralised_context

Cabuquin, J. C., et al. (2023). Mathematics learners' performance and academic achievement at a public high school institution in Leyte, Philippines. Formative Assessment, 13(2). http://dx.doi.org/10.30998/formatif.v13i2.17235

Cheung, S. K., Dulay, K. M., & McBride, C. (2020). Parents' characteristics, the home environment, and children's numeracy skills: How are they related in low- to middle-income families in the Philippines? Journal of Experimental Child Psychology, 192, 104780. https://doi.org/10.1016/j.jecp.2019.104780

Chen, M. Y. K., Jamaludin, A., & Tan, A. L. (2023). Behavioral predictors of math anxiety [Review of Behavioral predictors of math anxiety]. ResearchGate. https://www.researchgate.net/publication/367652655_Behavioural_predictors_of_math_anxiety

Corrêa, P., & Haslam, D. (2021). Mathematical proficiency as the basis for assessment: A literature review and its potentialities. Mathematics Teaching Research Journal, 12. https://files.eric.ed.gov/fulltext/EJ1384844.pdf

Daverick, K., Delgado, D., & Kassim, S. (2019). Mathematics anxiety among young Filipino learners: Investigating the influence of gender and socio-economic status. Sci. Int. (Lahore), 31(3), 575–579. https://files.eric.ed.gov/fulltext/ED596724.pdf

Department of Education. (2019). PISA 2018 Philippine National Report. Department of Education. Available online: https://www.deped.gov.ph/wp-content/uploads/2019/12/PISA-2018-Philippine-National-Report.pdf

Dunford, E. (2022). The impact of Covid-19 on mathematics education. IMA. https://ima.org.uk/20392/the-impact-of-covid-19-on-mathematics-education

Elliott, L., & Bachman, H. J. (2018). SES disparities in early math abilities: The contributions of parents' math cognitions, practices to support math, and math talk. Developmental Review, 49, 1–15. https://doi.org/10.1016/j.dr.2018.08.001

Dy, F. H., & Nistal, C. (2024). Mathematics proficiency level among the grade three pupils in Cagayan De Oro City Division. International Journal of Research Publications, 147(1). https://doi.org/10.47119/ijrp1001471420246291

Galiano, M. J. J., Martín-Puga, M. E., Linares, R., & Pelegrina, S. (2023). Gender stereotypes about math anxiety: Ability and emotional components [Review of Gender stereotypes about math anxiety: Ability and emotional components]. ResearchGate. https://www.researchgate.net/publication/371979582_Gender_stereotypes_about_math_anxiety_Ability_and_emotional_components

Geary, D. C., Hoard, M. K., Nugent, L., Chu, F., Scofield, J. E., & Hibbard, D. F. (2019). Sex differences in mathematics anxiety and attitudes: Concurrent and longitudinal relations to mathematical competence. Journal of Educational Psychology, 111(8), 1447–1461. https://doi.org/10.1037/edu0000355

Justicia-Galiano, M. J., Martín-Puga, M. E., Linares, R., & Pelegrina, S. (2023). Gender stereotypes about math anxiety: Ability and emotional components. Learning and Individual Differences, 105, 102316. https://doi.org/10.1016/j.lindif.2023.102316

Kandeel, R. A. A. (2021). Learners' mathematics proficiency levels on PISA 2018: A comparative study. International Journal of Instruction, 14(3), 393–416. https://doi.org/10.29333/iji.2021.14323a

Karla, J., Puracan, C., Che, L., Celsa, M., Tabar, P., & Peteros, E. (2023). Math interest and performance of Grade 11 students in general mathematics. International Multilingual Journal of Science and Technology (IMJST), 8, 2528–9810. https://www.imjst.org/wp-content/uploads/2023/06/IMJSTP29120889.pdf

Khasawneh, E., Gosling, C., & Williams, B. (2021). What impact does math anxiety have on university students? BMC Psychology, 9(1). https://doi.org/10.1186/s40359-021-00537-2

Kumar, A., & Scholar, M. (2019). Mathematics anxiety and prevention strategies: An attempt to improve the mathematics performance of secondary school students in West Bengal. Open Journal of Social Sciences, 2(1), 2581–5415. http://www.wbnsou.ac.in/openjournals/Issue/1st-Issue/January2019/Arup_1.pdf

Hathella, H. V. R. G., & Priyanath, H. M. (2021). How demographic features and attitudes of students affect the mathematics performance of students? A case study from the Ordinary Level students in the Ratnapura Educational Zone in Sri Lanka. International Journal of Education, Teaching, and Social Sciences, 1(1), 28–47. https://doi.org/10.47747/ijets.v1i1.450

LaMorte, W. W. (2019). The social cognitive theory. Sphweb.bumc.bu.edu. https://sphweb.bumc.bu.edu/otlt/MPHModules/SB/BehavioralChangeTheories/BehavioralChangeTheories5.html

Lau, N. T. T., Hawes, Z., Tremblay, P., & Ansari, D. (2022). Disentangling the individual and contextual effects of math anxiety: A global perspective. Proceedings of the National Academy of Sciences, 119(7). https://doi.org/10.1073/pnas.2115855119

Lew, K., & Hwang, S. (2019). A study on the correlation between mathematics anxiety and mathematics achievement in high school students. Mathematics Education, 58(3), 337–346. https://doi.org/10.7468/mathedu.2019.58.3.337

Lucietto, A. M., & Rada, E. (2022). Math anxiety: A literature review on confounding factors. Journal of Research in Science, Mathematics and Technology Education, 117–129. https://doi.org/10.31756/jrsmte.12040

Luttenberger, S., Wimmer, S., & Paechter, M. (2018). Spotlight on math anxiety. Psychology Research and Behavior Management, 11, 311–322. https://doi.org/10.2147/prbm.s141421

Mammarella, I. C., Caviola, S., & Dowker, A. (2019). Mathematics anxiety: What is known and what is still to be understood. Routledge. https://www.routledge.com/Mathematics-Anxiety-What-is-Known-and-What-is-still-to-be-Understood/Mammarella-Caviola-Dowker/p/book/9780367190392?srsltid=AfmBOop_l-AX4PgHECNNAwmNNRkJMhKYqYedZTioQITbgcenXx-ZZt98

Marks, G. N., & Pokropek, A. (2019). Family income effects on mathematics achievement: Their relative magnitude and causal pathways. Oxford Review of Education, 45(6), 769–785. https://doi.org/10.1080/03054985.2019.1620717

National Center for Education Statistics (NCES). (2019). National achievement level results in mathematics. The Nation's Report Card. Retrieved from https://www.nationsreportcard.gov/mathematics/nation/achievement/?grade=12

Namkung, J. M., Peng, P., & Lin, X. (2019). The relation between mathematics anxiety and mathematics performance among school-aged students: A meta-analysis. Review of Educational Research, 89(4), 459–496. https://doi.org/10.3102/0034654319843494

Newman, T. (2018). Sex and gender: Meanings, definition, identity, and expression. Medical News Today. Retrieved from https://www.medicalnewstoday.com/articles/232363

Nickerson, C. (2024). Albert Bandura's social cognitive theory. Simply Psychology. Retrieved from https://www.simplypsychology.org/social-cognitive-theory.html

Noel, A., Aprecia, G., Barrera, K. R., Cuares, C., Cuison, J., Lazaro, K. K., Pat-I, M., Sayson, H., Gaygay, C., & Adviser, R. (2022). A descriptive correlational study on the physical environment and perceived academic performance of STEM online learners. Animo Repository. Retrieved from https://animorepository.dlsu.edu.ph/cgi/viewcontent.cgi?article=1178&context=conf_shsrescon

O'Connell, M., & Marks, G. N. (2021). Are the effects of intelligence on student achievement and well-being largely functions of family income and social class? Evidence from a longitudinal study of Irish adolescents. Intelligence, 84, 101511. https://doi.org/10.1016/j.intell.2020.101511

Organisation for Economic Co-operation and Development (OECD). (2019). Education at a glance 2019: OECD indicators. OECD Publishing. https://doi.org/10.1787/f8d7880d-en

Palomares-Ruiz, A. (2020). Math performance and sex: The predictive capacity of self-efficacy, interest, and motivation for learning mathematics (R. García-Perales, Ed.) [Review of Math performance and sex: The predictive capacity of self-efficacy, interest, and motivation for learning mathematics]. Frontiers in Psychology: Educational Psychology. https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2020.01879/full

Samante, J., & Alave, A. (2020). Anxiety and performance in mathematics of grade four pupils: Introduction. Globus Educational Journal. https://doi.org/10.46360/globus.edu.220211001

Sangral, M., & Kumar, S. (2023). Mathematical anxiety among secondary school students in relation to their gender, locality, and types of schools. EPRA International Journal of Multidisciplinary Research, 9(12). Retrieved from https://eprajournals.com/IJMR/article/11602/download

Sarah, J., Ginoo, M., & Inoc, M. (2023). Math anxiety, resiliency, and math performance of grade 7 students during the limited face-to-face class. Educational Research, 2023(1), 30–39. https://doi.org/10.5281/zenodo.8305058

Sarfo, J. O., García-Santillán, A., Adusei, H., & Najafi, R. (2020). Gender differences in mathematics anxiety across cultures: A univariate analysis of variance among samples from twelve countries. ResearchGate. Retrieved from https://www.researchgate.net/publication/347789152_Gender_Differences_in_Mathematics_Anxiety_Across_Cultures_A_Univariate_Analysis_of_Variance_Among_Samples_from_Twelve_Countries

Siaw, E. S., Shim, G. T. G., Azizan, F. L., & Shaipullah, N. M. (2020). Understanding the relationship between students' mathematics anxiety levels and mathematics performances at the foundation level. Journal of Education and Learning, 10(1), 47. https://doi.org/10.5539/jel.v10n1p47

Shehzadi, M., Batool, T., & Kalsoom, T. (2022). A comparative study of public and private secondary schools students on academic achievement, engagement, and self-regulation in mathematics. ResearchGate; Sir Syed Journal of Education & Social Research. Retrieved from https://www.researchgate.net/publication/366199778_A_Comparative_Study_of_Public_and_Private_Secondary_Schools_Students_on_Academic_Achievement_Engagement_and_Self-Regulation_in_Mathematics

Sokolowski, H. M., Hawes, Z., & Lyons, I. M. (2019). What explains sex differences in math anxiety? A closer look at the role of spatial processing. Cognition, 182, 193–212. https://doi.org/10.1016/j.cognition.2018.10.005

Taguinod, D. (2022). Level of mathematics anxiety of the first-year bachelor of elementary education students of Cagayan State University Andrews. International Journal of Arts. Retrieved from https://www.ijase.org/index.php/ijase/article/download/136/113/417

Tan, D., & Cordova, C. (2018). Mathematics proficiency, attitude, and performance of grade 9 students in private high schools in Bukidnon, Philippines. ResearchGate. Retrieved from https://www.researchgate.net/publication/326649734_Mathematics_Proficiency_Attitude_and_Performance_of_Grade_9_Students_in_Private_High_Schools_in_Bukidnon_Philippines#full-text

Throndsen, T. U., Lindskog, M., Niemivirta, M., & Mononen, R. (2022). Does mathematics anxiety moderate the effect of problem difficulty on cognitive effort? Scandinavian Journal of Psychology, 63(6), 601–608. https://doi.org/10.1111/sjop.12852

Trickett, J., Gilmore, C., Cragg, L., Clayton, S., Marlow, N., Simms, V., Spong, R., & Johnson, S. (2021). No excess of mathematics anxiety in adolescents born very preterm. Developmental and Behavioral Pediatrics, 42(8), 637–644. https://doi.org/10.1097/dbp.0000000000000884

Umam, K., Susandi, A. D., Zulherman, & Susilo. (2023). An exploration of students' anxiety in mathematics online learning using augmented reality at junior high school: A Rasch model construct. Pegem Journal of Education and Instruction, 14(1), 186–196. https://doi.org/10.47750/pegegog.14.01.21

U.S. Department of Commerce. (n.d.). U.S. population spotlight: Educational attainment. Performance Data. Retrieved from https://performance.commerce.gov/stories/s/U-S-Population-Spotlight-Educational-Attainment/na47-j74r/

Valenzuela, A. (2022). Physiological vs. psychological factors overview & examples. Study.com. Retrieved from https://study.com/learn/lesson/physiological-psychological-factors-concept-examples-differences.html

Van Mier, H. I., Schleepen, T. M. J., & Van den Berg, F. C. G. (2019). Frontier. Frontiers in Psychology. https://doi.org/10.3389/fpsyg.2018.02690

Victoria State Government. (2020). Mathematics anxiety. Department of Education and Training. Retrieved from https://www.education.vic.gov.au/school/teachers/teachingresources/discipline/maths/Pages/research_overcomingmathsanxiety.aspx

Vos, H., Marinova, M., De Léon, S. C., Sasanguie, D., & Reynvoet, B. (2023). Gender differences in young adults' mathematical performance: Examining the contribution of working memory, math anxiety, and gender-related stereotypes. Learning and Individual Differences, 102, 102255. https://doi.org/10.1016/j.lindif.2022.102255

West, M. (2022). Math anxiety: Definition, symptoms, causes, and tips. Medical News Today. Retrieved from https://www.medicalnewstoday.com/articles/math-anxiety-definition-symptoms-causes-and-tips

Widjajanti, D. B., Listyani, E., & Retnowati, E. (2020). The profile of student math-anxiety. Journal of Physics: Conference Series. https://www.researchgate.net/publication/343043246_The_profile_of_student_math-anxiety

Yavuz, G. (2018). Mathematics anxiety of ninth grade students. Journal of Education and Training Studies. https://www.researchgate.net/publication/323997223_Mathematics_Anxiety_of_Ninth_Grade_Students

Zhang, J., Zhao, N., & Kong, Q. P. (2019). The relationship between math anxiety and math performance: A meta-analytic investigation. Frontiers in Psychology, 10, 1–17. https://doi.org/10.3389/fpsyg.2019.01613

Affiliations and Corresponding Information

Karla Victoria I. Ong
Teofilo Gensoli Sr. National High School
Department of Education – Philippines

Ma. Quincy D. Dones
La Carlota City College – Philippines