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Students' Struggles, Coping Mechanisms, and Motivation in Learning Mathematics

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Abstract*—The main purpose of this study is to examine the relationship between students' struggles in learning Mathematics, their coping mechanisms, and their motivation to learn Mathematics. The study aims to evaluate the level of students' struggles, coping strategies, and motivation for learning Mathematics. Additionally, the study seeks to identify the significant relationships between students' struggles in learning Mathematics, their coping mechanisms, and their motivation to learn Mathematics. The study employed a quantitative, descriptive-correlational research design and used purposive sampling to select 150 Grade 11 students enrolled in three different schools in the Division of Laguna for S.Y. 2025-2026 who are experiencing struggles in learning Mathematics. Descriptive and inferential statistical tools, including the weighted mean, standard deviation, and Pearson's r, were used for data analysis. It was observed that respondents experience high levels of academic struggles and moderate difficulties with parents, peers, and emotional aspects of learning Mathematics. Additionally, students exhibit moderate coping mechanisms, particularly in time management, social support, and self-efficacy, while showing high levels of positive well-being and openness to change. Regarding motivation, students display high levels of intrinsic, extrinsic, and academic motivation. Concerning the relationship between students' struggles in learning Mathematics and their coping mechanisms, only parental-related struggles show weak but significant positive correlations with all coping mechanisms. Meanwhile, social support is the only coping mechanism that exhibits weak but significant positive correlations with all types of struggles. In terms of motivation, intrinsic motivation does not have a significant relationship with students' struggles in learning Mathematics, but external and academic motivation show weak but significant positive correlations with these struggles. There is no significant relationship between students' struggles in learning Mathematics and their coping mechanisms, but there is a significant relationship between students' struggles in learning Mathematics and their motivation to learn Mathematics. This indicates that students' struggles in learning Mathematics do not affect how they cope, but they do have a meaningful impact on their level of motivation to learn Mathematics. Based on the findings, it is recommended that programs be developed to reduce students' struggles and improve their coping mechanisms and motivation. Additionally, future researchers may conduct similar studies using different variables and populations to further investigate factors affecting students' struggles, coping, and motivation in learning mathematics.*

***Keywords*—** *Students' struggles, coping mechanism, motivation, learning Mathematics, significant relationship.*

I. INTRODUCTION

In education, mathematics is a subject that often sparks both admiration and anxiety. While some students are naturally talented in this area, many struggle with its challenges. Combined with difficulties such as academic pressure, parental expectations, peer influences, and emotional issues, it creates a perfect storm that tests students' endurance and resilience. Essentially, it is about the struggle to succeed academically, which can stem from various sources like emotional factors, friends, and family expectations.

At the core of this journey is the crucial role of coping mechanisms—the strategies and resources students use to handle struggles and overcome obstacles. According to Ban et al. (2024), positive coping strategies are frequently used and are linked to fewer struggles and improved psychological outcomes. This supports the idea of a positive relationship between students' struggles and the adoption of healthy, constructive coping techniques. It is vital for educators and policymakers to understand the coping mechanisms used by mathematics students if they want to foster a supportive learning environment. Effective coping mechanisms help students face challenges, which can boost their motivation to reach their goals.

Motivation is a key factor in human behavior, serving as the driving force behind actions, decisions, and goals. It functions as the engine that propels academic achievement. Depending on the source, motivation can be intrinsic or extrinsic. Intrinsic motivation originates from within the individual, driven by extrinsic motivation comes from external influences or rewards, such as money, recognition, grades, or admiration (Murayama, K, 2022). Teachers can help Math students succeed academically and develop a lifelong love of learning by understanding the obstacles they face and providing effective support.

This study titled "Students' Struggles, Coping Mechanisms, and Motivation in Learning Mathematics" aims to examine the relationship between students' struggles in learning Mathematics, their coping mechanisms, and their motivation to learn Mathematics.

1.1 Statement of the Problem

Problem/s which were addressed by the research

This study aimed to determine the relationship between students' struggles in learning mathematics and their coping mechanisms and motivation in learning Mathematics.

Specifically, this study sought to find answers to the following questions:

1. What is the level of students' struggles in learning Mathematics in terms of:
   1.1 Academic;
   1.2 parental;

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1.3 peer; and
1.4 emotional-related factors?
2. What is the level of students' coping mechanisms in learning Mathematics in terms of:
2.1 Positive Well-Being;
2.2 time Management;
2.3 openness to change;
2.4 social support; and
2.5 self-efficacy?
3. What is the level of the following students' motivation in learning Mathematics in terms of:
3.1 Intrinsic Motivation;
3.2 external Motivation; and
3.3 academic motivation?
4. Is there a significant relationship between students' struggles in learning mathematics and their coping mechanisms in learning mathematics?
5. Is there a significant relationship between students' struggles in learning mathematics and their motivation to learn mathematics?

II. Methodology

The study employed a quantitative, descriptive-correlational research design and used purposive sampling to select 150 Grade 11 students enrolled in three different schools in the Division of Laguna for S.Y. 2025-2026 who are experiencing struggles in learning Mathematics. Descriptive and inferential statistical tools, including the weighted mean, standard deviation, and Pearson's r, were used for data analysis.

III. Results and Discussion

This part discusses the presentation, analysis, and interpretation of data collected that demonstrate a significant relationship between students' difficulties in learning Mathematics, coping mechanisms, and motivation to learn Mathematics.

Level of Students' Struggles in Learning Mathematics

In this study, students' struggles in learning Mathematics refer to difficulties across academic, parental, peer, and emotional areas that can impact their performance. These include challenges in understanding concepts and solving problems, limited family support or pressure, negative peer influence or lack of collaboration, and emotional factors such as low confidence and disinterest in Mathematics.

The level of students' struggles in learning Mathematics is revealed in the following table, which shows the statement, mean, standard deviation, remarks, and verbal interpretation.
Table 1 shows the level of students' struggles in learning Mathematics, in terms of academic performance, including various statements with their corresponding means, standard deviations, and remarks.

The results indicate that students experience a high level of academic struggles in learning Mathematics. Students often feel overwhelmed by academic requirements, pressured to maintain high grades, and anxious during examinations and quizzes.

The level of students' struggles in learning Mathematics, in terms of deviation of 1.03 and was verbally interpreted as high among the respondents. This suggests that students commonly face emotional and cognitive challenges such as nervousness when explaining solutions, frustration from solving problems, pressure due to increasing lesson complexity, and discouragement from low academic performance despite their efforts.

Table 1. Level of Students' Struggles in Learning Mathematics in terms of Academic

Statements	Mean	SD	Remarks
I get nervous when I am asked to explain my solution in front of the class.	3.36	0.98	Sometimes
I am frustrated when I cannot immediately solve Mathematics problems correctly.	3.42	0.96	Often
I feel pressured when the mathematics lessons become more complicated each quarter.	3.45	1.11	Often
I feel discouraged when I receive low scores even after studying hard.	3.53	1.07	Often
I worry that I will not have enough time to study all the mathematics topics before the exams.	3.29	1.01	Sometimes
Weighted Mean	3.41		
SD	1.03		
Verbal Interpretation	High		

In summary, it shows that students face significantly high-level academic challenges in learning Mathematics, as most indicators were rated as occurring frequently. The findings reveal that students often feel overwhelmed by school demands, pressured to earn high grades, and anxious during tests and quizzes, which adds to their academic stress.

Table 2. Level of Students' Struggles in Learning Mathematics in terms of Parental

Statements	Mean	SD	Remarks
My parents' high expectations overwhelm me.	2.97	1.06	Sometimes
I feel burdened to achieve high grades to make my parents proud.	3.49	1.20	Often
I worry about disappointing my parents when I perform poorly in Mathematics.	3.26	1.24	Sometimes
I am discouraged when my parents compare me to other students.	2.96	1.41	Sometimes
I tend to lose confidence when dealing with Mathematics problems because of my parents' expectations.	2.88	1.22	Sometimes
Weighted Mean	3.11		
SD	1.23		
Verbal Interpretation	Moderately High		

Table 2 presents the level of students' struggles in learning Mathematics in terms of parental involvement, including various statements and their corresponding means, standard deviations, and remarks.

The results indicate that students experience moderate struggles in learning Mathematics, which are associated with parental expectations and pressures. These findings imply that emotional pressure coming from parents' expectations can heighten anxiety and negatively affect students' confidence and engagement in Mathematics learning.

The level of students' struggles in learning Mathematics in terms of parental attained the weighted mean of 3.11, standard deviation of 1.23 and was verbally interpreted as

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moderately high among the respondents, which implies that students occasionally experience pressure from parental expectations that may contribute to feelings of loneliness, reduced self-confidence, and decreased motivation in learning Mathematics. This indicates that parental influence is a notable factor in students' learning experiences.

In summary, parental expectations somewhat contribute to students' struggles in Mathematics, as indicated by the moderately high weighted mean. Excessive pressure and fear of disappointing parents may decrease students' confidence and motivation, emphasizing the need for supportive rather than pressuring parental involvement. This shows that parental influence significantly impacts students' academic experiences. Additionally, balanced expectations can help foster healthier learning attitudes among students.

Level of Students' Struggles in Learning Mathematics in terms of Peer

Table 3 shows the level of students' struggles in learning Mathematics in terms of peer, including various statements with their corresponding mean, standard deviation, and remarks.

The results indicate that students moderately experience challenges in Mathematics related to peer interactions. They sometimes feel pressured to match their friends' performance, embarrassed when they fall behind, and burdened by the need to conceal their struggles to avoid judgment.

Table 3. Level of Students' Struggles in Learning Mathematics in terms of Peer

Statements	Mean	SD	Remarks
I feel pressured to match my friends' performance during Mathematics quizzes.	3.01	1.02	Sometimes
I am embarrassed when I cannot keep up with my classmates during Mathematics discussions.	3.10	1.07	Sometimes
I feel burdened to hide my struggles in mathematics, so my friends won't judge me.	2.78	1.21	Sometimes
I lose confidence when others understand Mathematics lessons faster than I do.	3.05	1.17	Sometimes
I worry that my peers might laugh at my mistakes in Mathematics class.	3.02	1.15	Sometimes
Weighted Mean	2.99		
SD	1.12		
Verbal Interpretation	Moderately High		

The level of students' struggles in learning Mathematics in terms of peer attained the weighted mean of 2.99, standard deviation of 1.12, and was verbally interpreted as moderately high among the respondents, which implies that students occasionally experience peer-related pressure, comparison, and anxiety that may affect their confidence, participation, and openness in Mathematics learning situations.

In summary, the data shows a moderate level of difficulty for students in dealing with peer-related pressures in Mathematics, suggesting that peer comparison and classroom interactions lead to lower confidence and higher emotional stress during Mathematics learning.

Table 4 shows the level of students' struggles in learning Mathematics in terms of emotional factors, including various statements and their corresponding means, standard deviations, and remarks.

Table 4. Level of Students' Struggles in Learning Mathematics in terms of Emotional Factors

Statements	Mean	SD	Remarks
I get easily irritated when I don't understand a Mathematics lesson right away.	3.22	1.05	Sometimes
I become emotionally exhausted when I receive low scores in Mathematics despite my efforts.	3.28	1.13	Sometimes
I feel hopeless when I struggle to understand new Mathematics topics.	3.09	1.01	Sometimes
I find myself mentally drained when I spend too much time trying to solve Mathematics problems.	3.20	1.07	Sometimes
I lose motivation to study when I repeatedly make mistakes in Mathematics.	2.93	1.17	Sometimes
Weighted Mean	3.15		
SD	1.09		
Verbal Interpretation	Moderately High		

The results indicate that students sometimes experience emotional challenges in learning Mathematics. They sometimes feel irritated, emotionally exhausted, and mentally drained when they struggle with lessons or receive low scores, which can lead to feelings of hopelessness and decreased motivation.

The level of students' struggles in learning Mathematics in terms of emotional attained the weighted mean of 3.15, standard deviation of 1.09, and was verbally interpreted as moderately high among the respondents, which implies that students occasionally experience emotional difficulties such as frustration, exhaustion, mental fatigue, and reduced motivation when dealing with challenging Mathematics lessons and performance outcomes.

In summary, the findings indicate a moderately high level of emotional struggle among students in Mathematics, highlighting the impact of repeated difficulties on their emotional well-being and learning persistence. This implies that, though moderate, emotional challenges still require support and motivation to maintain students' engagement and confidence in Mathematics. It further indicates the need for classroom strategies that promote emotional regulation and resilience among learners.

Level of Coping Mechanisms in Learning Mathematics

In this study, the level of coping mechanisms in Mathematics learning refers to the extent to which students apply strategies and behaviors to manage academic, emotional, and social challenges encountered in Mathematics, including positive well-being, time management, openness to change, seeking social support, and maintaining self-efficacy.

The level of coping mechanisms in learning Mathematics is revealed in the following table, which shows the statement, mean, standard deviation, remarks, and verbal interpretation.

Table 5 presents the levels of coping mechanisms in learning Mathematics in terms of positive well-being, including various statements and their corresponding means, standard deviations, and remarks.

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Table 5. Level of Coping Mechanism in Learning Mathematics in terms of Positive Well-Being

Statements	Mean	SD	Remarks
I maintain a positive attitude even when Mathematics lessons become difficult.	3.81	1.01	Often
I know I can improve in Mathematics with consistent effort.	4.03	0.89	Often
I believe that challenges in Mathematics help me grow academically.	3.98	1.01	Often
I look for solutions instead of focusing on my mistakes in Mathematics.	3.84	0.97	Often
I stay calm and focused when facing Math-related stress.	3.53	0.99	Often
Weighted Mean	3.84		
SD	0.97		
Verbal Interpretation	High		

The results show that students use strong positive coping strategies when learning Mathematics. They often keep a positive attitude, believe in their ability to improve, see challenges as chances to grow, and focus on solutions instead of mistakes, while staying calm during math-related stress. This indicates that promoting positive well-being can be key to improving students' resilience, their ability to handle challenges, and ultimately their overall performance in Mathematics.

The level of coping mechanism in learning Mathematics in terms of positive well-being received a weighted mean of 3.84, a standard deviation of 0.97, and was verbally interpreted as high among the respondents. This suggests that students generally maintain a positive mindset and emotional stability despite challenges in learning Mathematics.

In summary, the data indicate a high level of resilience and a constructive mindset among students, suggesting that they are generally capable of managing difficulties in Mathematics effectively.

Table 6. Level of Coping Mechanism in Learning Mathematics in terms of Time Management

Statements	Mean	SD	Remarks
I prioritize tasks to complete schoolwork on time.	3.69	1.04	Often
I maintain a study schedule to manage multiple deadlines.	3.43	1.11	Often
I work on tasks early, so I will not rush later.	3.35	1.09	Sometimes
I regularly allocate time to study Mathematics.	3.01	0.97	Sometimes
I balance my schoolwork with personal activities through proper planning.	3.43	1.16	Often
Weighted Mean	3.38		
SD	1.07		
Verbal Interpretation	Moderately High		

Table 6 shows the level of coping mechanisms in learning Mathematics in terms of time management, including various statements with their corresponding mean, standard deviations, and remarks.

The results show that students have moderately high time management skills in handling their schoolwork. They often prioritize tasks, keep to schedules, and balance their activities, though some habits, such as regular study of Mathematics or starting tasks early, are less consistent.

The level of coping mechanisms in learning Mathematics, in terms of time management, had a weighted mean of 3.38 and a standard deviation of 1.07, interpreted as moderately high among the respondents. This suggests that students are generally able to manage and allocate their study time effectively in Mathematics. It also indicates that students are generally capable of organizing their study schedules, which may help improve their performance in Mathematics.

In summary, the findings indicate that while students are moderately organized, there is room for improvement in consistently applying time management strategies to enhance their learning outcomes.

Level of Coping Mechanism in Learning Mathematics in terms of Openness to Change

Table 7 presents the levels of coping mechanisms in learning Mathematics, including openness to change, with various statements and their corresponding means, standard deviations, and remarks.

The results indicate that students frequently demonstrate adaptability in their learning strategies. They often try new approaches, accept feedback to improve, and adjust study habits when needed, though adapting to schedule changes or exploring new techniques occurs less consistently.

Table 7. Level of Coping Mechanism in Learning Mathematics in terms of Openness to Change

Statements	Mean	SD	Remarks
I adjust my study time and habits when I realize my current strategies are not effective.	3.42	0.98	Often
I try new approaches to solve academic problems.	3.45	0.96	Often
I accept teachers' and peers' feedback to improve my performance.	3.99	0.95	Often
I adapt to changes in academic requirements or schedules without reservations.	3.33	1.00	Sometimes
I explore new learning techniques to overcome challenges in Mathematics.	3.32	1.13	Sometimes
Weighted Mean	3.50		
SD	1.00		
Verbal Interpretation	High		

The level of coping mechanisms in learning Mathematics, measured by openness to change, had a weighted mean of 3.50 and a standard deviation of 1.00. It was verbally interpreted as high among the respondents, indicating that students are generally receptive to new learning methods and willing to adjust their strategies to improve their understanding and performance in Mathematics, especially when facing difficult topics or academic challenges.

In summary, the data indicate a high level of academic adaptability among students, demonstrating their willingness to adjust and refine strategies to overcome challenges in Mathematics. This indicates that students' flexibility in learning approaches can significantly support their problem-solving skills and overall achievement in the subject. When confronted with challenging mathematical problems, such adaptability also suggests a willingness to use innovative learning approaches. Moreover, it highlights the importance of fostering a growth-oriented mindset in Mathematics learning.

Table 8 shows the level of coping mechanisms in learning Mathematics in terms of social support, including various statements with their corresponding means, standard deviations, and remarks.

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Table 8. Level of Coping Mechanism in Learning Mathematics in terms of Social Support

Statements	Mean	SD	Remarks
I rely on my friends and family when I am dealing with stressful situations.	3.03	1.18	Sometimes
I need emotional support from others to help me manage my stress effectively.	3.21	1.18	Sometimes
I seek advice or assistance from others when I face challenges.	3.25	1.13	Sometimes
I am dependent on supportive people to help me get through tough times.	3.13	1.08	Sometimes
I share my problems with others to help me manage stress more effectively.	2.84	1.24	Sometimes
Weighted Mean	3.09		
SD	1.16		
Verbal Interpretation	Moderately High		

The results show that students have a moderately high tendency to seek social support when managing stress. They occasionally rely on friends and family, ask for advice, or share their problems, but these behaviors are not consistently practiced.

The level of coping mechanism in learning Mathematics in terms of social support attained the weighted mean of 3.09, standard deviation of 1.16, and was verbally interpreted as moderately high among the respondents, which implies that students sometimes rely on assistance and encouragement from peers, teachers, and family to cope with difficulties in learning Mathematics.

In summary, the findings indicate that while students moderately utilize support networks, there is potential to strengthen their reliance on others for more effective stress management.

Level of Coping Mechanism in Learning Mathematics in terms of Self-Efficacy

Table 9 presents the levels of coping mechanisms in learning Mathematics in terms of self-efficacy, including various statements and their corresponding means, standard deviations, and remarks.

The results indicate that students exhibit a moderately high level of self-efficacy in learning Mathematics. They often show confidence, perseverance, and problem-solving skills, though their confidence in handling difficult lessons or achieving good results is somewhat lower.

Table 9. Level of Coping Mechanism in Learning Mathematics in terms of Self-Efficacy

Statements	Mean	SD	Remarks
I can handle difficult lessons in Mathematics with enough effort.	3.20	0.98	Sometimes
I am confident in my ability to overcome academic challenges.	3.43	0.95	Often
I find solutions when I face problems with schoolwork.	3.45	0.89	Often
I persevere to succeed against stressful situations.	3.45	0.96	Often
I am capable of achieving good results in Mathematics despite difficulties.	3.33	0.96	Sometimes
Weighted Mean	3.37		
SD	0.95		
Verbal Interpretation	Moderately High		

The level of coping mechanism in learning Mathematics in terms of self-efficacy attained the weighted mean of 3.37, standard deviation of 0.95, and was verbally interpreted as moderately high among the respondents, which implies that students generally have a fair level of confidence in their ability to understand and solve Mathematics problems despite challenges.

In summary, the findings indicate that students' self-efficacy in Mathematics is moderately high, suggesting that while they generally believe in their abilities, there is still potential to further build their confidence and sense of personal capability to overcome challenges.

Level of Motivation in Learning Mathematics

In this study, the level of motivation in learning Mathematics refers to the extent of students' drive, willingness, and interest to engage in learning Mathematics, including their intrinsic, external, and academic motivation, which influence their effort and persistence in the subject.

The level of motivation in learning Mathematics is revealed in the following table, which shows the statement, mean, standard deviation, remarks, and verbal interpretation.

Table 10 presents the level of motivation for learning Mathematics in terms of intrinsic motivation, including various statements and their corresponding means, standard deviations, and remarks.

Table 10. Level of Intrinsic Motivation in Learning Mathematics

Statements	Mean	SD	Remarks
I genuinely enjoy solving problems.	3.33	1.01	Sometimes
I am satisfied when I understand new concepts in Mathematics.	4.16	0.98	Often
I am motivated to learn Mathematics out of curiosity and personal interest.	3.63	1.01	Often
I enjoy challenging myself with difficult Mathematics tasks.	3.20	1.15	Sometimes
I felt accomplished when I improved my Mathematics skills.	4.07	0.94	Often
Weighted Mean	3.68		
SD	1.02		
Verbal Interpretation	High		

The results show that students have a strong sense of intrinsic motivation in learning Mathematics. They often feel satisfied when understanding new concepts and proud when improving their skills, although enjoyment of problem-solving and challenging tasks happens a bit less often.

The level of motivation in learning Mathematics in terms of intrinsic motivation had a weighted mean of 3.68, a standard deviation of 1.02, and was verbally described as high among the respondents. This indicates that students are strongly motivated by personal interest in learning Mathematics.

In summary, the findings show that students are mostly motivated by personal interest and internal satisfaction, highlighting a strong internal drive to engage with and succeed in Mathematics.

Table 11 presents the level of motivation for learning Mathematics in terms of external motivation, including various statements and their corresponding means, standard deviations, and remarks.

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Table 11. Level of External Motivation in Learning Mathematics

Statements	Mean	SD	Remarks
Appreciation and recognition of my performance in Mathematics motivates me.	3.81	1.00	Often
Rewards or certificates of recognition (e.g., prizes or certificates) for my performance in Mathematics motivate me.	3.62	1.07	Often
My parents' and/or teachers' acknowledgment of my good performance in Mathematics requires me to exert more effort.	3.61	1.07	Often
Approval of important persons to me for my good performance in Mathematics requires me to study harder.	3.59	0.96	Often
Others' expectations of me to do well in Mathematics are important.	3.32	1.04	Sometimes
Weighted Mean	3.59		
SD	1.03		
Verbal Interpretation	High		

The results show that students have a strong external motivation to learn
mathematics. They are often motivated by recognition, rewards, and approval from parents, teachers, or other important figures, although the influence of overall expectations from others is less consistent.

The level of motivation for learning Mathematics in terms of external motivation achieved a weighted mean of 3.59, a standard deviation of 1.03, and was verbally interpreted as high among the respondents, which suggests that students are strongly influenced by external factors such as rewards, recognition, and others' expectations in learning Mathematics. This also indicates that external reinforcement is vital in maintaining students' engagement and persistence in mathematical tasks.

In summary, the findings show that students' motivation in Mathematics is heavily influenced by external factors, emphasizing the importance of acknowledgment and encouragement from important people in boosting their effort and performance. This highlights the need for a supportive environment to maintain students' ongoing interest and success in Mathematics.

Level of Academic Motivation in Learning Mathematics

Table 12 presents the level of motivation for learning Mathematics including various statements and their corresponding means, standard deviations, and remarks.

Table 12. Level of Academic Motivation in Learning Mathematics

Statements	Mean	SD	Remarks
High grades in Mathematics motivate me to study harder in it.	3.83	1.12	Often
Keeping my good academic standing motivates me to review more thoroughly for the mathematics exams.	3.63	0.95	Often
Avoidance of failing grade in Mathematics requires me to work even harder.	3.61	1.00	Often
Achieving my goal of good performance in Mathematics requires me to strive harder.	3.73	1.02	Often
Completing Mathematics tasks well makes me prouder.	3.81	1.04	Often
Weighted Mean	3.72		
SD	1.02		
Verbal Interpretation	High		

The results indicate that students demonstrate a high level of academic motivation in learning Mathematics. They are often driven by the desire to achieve high grades, maintain good academic standing, avoid failing, reach performance goals, and take pride in accomplishing tasks.

The level of motivation for learning Mathematics, in terms of academic motivation, achieved a weighted mean of 3.72, with a standard deviation of 1.02, and was verbally interpreted as high among the respondents. This suggest that students are highly motivated to succeed academically and perform well in Mathematics.

In summary, the findings show that students' motivation in Mathematics is closely connected to their academic goals, reflecting a steady drive to succeed and do well in their studies. This suggests that increasing academic motivation can further improve students' ability to persist and succeed in Mathematics despite difficulties.

Test of Significant Relationship between the Students' Struggles and Coping Mechanisms in Learning Mathematics

The test for a significant relationship between students' struggles in learning Mathematics and their coping mechanisms in Mathematics, in terms of positive well-being, time management, openness to change, social support, and self-efficacy, was statistically analyzed using Jamovi 2.3.28 with the Pearson correlation coefficient

Pearson correlation results in Table 13 reveal that the relationships between students' struggles in learning Mathematics and their coping mechanisms are observed as very weak to weak, with a few statistically significant weak positive correlations.

Table 13. Significant Relationship between the Students' Struggles and Coping Mechanisms in Learning Mathematics

Students' Struggles in Learning Mathematics	Coping Mechanisms in Learning Mathematics				
	Positive Well-Being	Time Management	Openness to Change	Social Support	Self-Efficacy
Academic: Pearson Correlation	0.10	0.13	0.14	0.27***	0.01
Significance(2-Tailed)	0.216	0.116	0.09	<.001	0.922
N	150	150	150	150	150
Parental: Pearson Correlation	0.23**	0.23**	0.32***	0.23***	0.33***
Significance(2-Tailed)	0.01	0.01	<.001	<.001	<.001
N	150	150	150	150	150
Peer: Pearson Correlation	-0.09	0.08	0.11	0.21**	-0.03
Significance(2-Tailed)	0.251	0.339	0.187	0.009	0.713
N	150	150	150	150	150
Emotional: Pearson Correlation	-0.04	0.08	0.08	0.31***	0.08
Significance(2-Tailed)	0.642	0.795	0.360	<.001	0.273
N	150	150	150	150	150

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

For academic struggles, the relationships with positive well-being (r =0.10), time management (r = 0.13), openness to change (r = 0.14), and self-efficacy (r = 0.01) fall under very weak positive correlations and are not statistically significant

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(p > .05). In contrast, the relationship between academic struggles and social support (r = 0.27, p < .001) indicates a weak positive correlation. This implies that students experiencing academic difficulties in Mathematics tend to slightly increase their reliance on social support as a coping mechanism.

Regarding parental-related struggles, all coping mechanisms demonstrated weak positive correlations on the scale, with R-values ranging from 0.23 to 0.33. Although positive well-being (r = 0.23) and time management (r = 0.23) are at the upper end of the very weak positive correlation, openness to change (r = 0.32), social support (r = 0.23), and self-efficacy (r = 0.33) fall within the weak positive correlation range. All these relationships are statistically significant (p ≤ .01), implying that parental-related challenges are weakly but meaningfully correlated with students' use of various coping mechanisms, particularly self-efficacy and openness to change.

In terms of peer-related struggles, the correlations with positive well-being (r = −0.09), time management (r = 0.08), openness to change (r = 0.11), and self-efficacy (r = −0.03) are interpreted as very weak correlations, all of which are non-significant (p > .05). However, the relationship between peer struggles and social support (r = 0.21, p = .009) reflects a very weak positive correlation that is statistically significant, indicating that students who encounter peer-related difficulties slightly tend to seek social support.

For emotional struggles, very weak correlations were observed with positive well-being (r = −0.04), time management (r = 0.08), openness to change (r = 0.08), and self-efficacy (r = 0.08), all of which are non-significant (p > .05). On the other hand, the relationship between emotional struggles and social support (r = 0.31, p < .001) demonstrates a weak positive correlation, implying that students facing emotional challenges in Mathematics modestly depend on social support as a coping strategy.

In summary, the findings indicate that no moderate, strong, or very strong correlations were observed between students' struggles in learning Mathematics and their coping mechanisms. Only parental-related struggles show statistically significant, positive correlations with all coping mechanisms, particularly self-efficacy and openness to change, suggesting that parental-related struggles affect students at home, prompting them to use their own abilities and be open to change to cope with these challenges. Most relationships are very weak, while social support consistently shows weak but significant positive correlations, particularly with academic, parental, peer, and emotional struggles. This implies the important, though limited, role of social support in helping students cope with difficulties in learning Mathematics.

Test of Significant Relationship between the Students' Struggles and their Motivation in Learning Mathematics

To test the relationship between students' struggles in learning Mathematics and the level of students' motivation in learning Mathematics, in terms of intrinsic, external, and academic motivation, the data were analyzed statistically in Jamovi 2.3.28 using the Pearson correlation coefficient.

The Pearson correlation results in Table 14 show that the relationships between students' struggles in learning Mathematics and their level of motivation range from very weak to weak, with several statistically significant correlations observed.

Regarding academic struggles, the relationship with intrinsic motivation (r = −0.04, p = .625) is very weak and not statistically significant. In contrast, academic struggles show very weak to weak positive correlations with external motivation (r = .18, p = .028) and academic motivation (r = .20, p = .015), both of which are statistically significant. This implies that students who experience academic difficulties in Mathematics tend to exhibit slightly higher levels of motivation driven by external factors and academic goals.

Table 14. Significant Relationship between the Students' Struggles and Motivation in Learning Mathematics

Students' Struggles in Learning Mathematics	Level of Students' Motivation in Learning Mathematics		
	Intrinsic Motivation	External Motivation	Academic Motivation
Academic:			
Pearson Correlation	-0.04	0.18**	0.20**
Significance(2-Tailed)	0.625	0.028	0.015
N	150	150	150
Parental:			
Pearson Correlation	0.20**	0.41***	0.34***
Significance(2-Tailed)	0.015	<.001	<.001
N	150	150	150
Peer:			
Pearson Correlation	-0.05	0.19**	0.18**
Significance(2-Tailed)	0.555	0.018	0.025
N	150	150	150
Emotional:			
Pearson Correlation	-0.07	0.23**	0.25**
Significance(2-Tailed)	0.368	0.005	0.002
N	150	150	150

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

With respect to parental-related struggles, significant, very weak to weak positive correlations were found across all motivation dimensions. Intrinsic motivation (r = .20, p = .015) reflects a very weak positive correlation, while external motivation (r = .41, p < .001) and academic motivation (r = .34, p < .001) fall within the weak positive correlation range. This finding implies that parental-related challenges are weakly but meaningfully correlated with increased student motivation, particularly motivation correlated with external factors and academic expectations.

Regarding peer-related struggles, intrinsic motivation (r = −0.05, p= .555) shows a very weak, non-significant negative correlation. However, peer struggles demonstrate very weak positive correlations with external motivation (r = .19, p = .018) and academic motivation (r = .18, p = .025), both of which are statistically significant. This suggests that students facing peer-related difficulties may experience a slight increase in motivation through external incentives and academic pursuits.

For emotional struggles, very weak and non-significant negative correlations were observed with intrinsic motivation (r = −0.07, p = .368). On the other hand, emotional struggles exhibit very weak to weak positive correlations with external

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motivation (r = .23, p = .005) and academic motivation (r = .25, p = .002), both statistically significant. This implies that students experiencing emotional challenges in Mathematics tend to rely more on externally driven and academic forms of motivation rather than intrinsic interest.

In summary, the results indicate that no moderate, strong, or very strong correlations exist between students' struggles in learning Mathematics and their motivation levels. Most relationships are very weak, while external motivation and academic motivation consistently show weak but statistically significant positive correlations, particularly in relation to parental and emotional struggles. This implies that students' motivation in Mathematics is more closely correlated with external and academic factors when they encounter learning difficulties.

IV. Conclusion and Recommendations

There is no significant relationship between students' struggles in learning Mathematics and their coping mechanisms in learning Mathematics. This leads to a failure to reject the null hypothesis. This concludes that students' struggles in learning Mathematics do not necessarily influence the coping strategies they adopt, and that these coping mechanisms may be shaped by other factors beyond their academic, peer, and emotional difficulties.

There is a significant relationship between students' struggles in learning Mathematics and their motivation in learning Mathematics. This leads to the rejection of the null hypothesis. This concludes that different forms of struggle influence students' motivation in varying ways, and that addressing these specific struggles may help improve students' motivation to learn Mathematics.

In the formulated conclusions from the findings, it is recommended that:

Schools and administrators can create programs that promote positive well-being, adaptability, and effective coping strategies, such as stress-management activities, academic mentoring, and guidance services, to further strengthen students' coping skills.

Guidance counselors may enhance peer-support and social-support programs, as social support consistently demonstrated a significant link with students' struggles, highlighting its crucial role in helping students manage academic, emotional, and social challenges.

3. Teachers can enhance math instruction by implementing learner-centered strategies, diverse teaching techniques, and encouraging classroom support to lessen students' academic difficulties and anxiety, especially during challenging lessons and tests.

Students may be encouraged to enhance their time management, self-efficacy, and help-seeking behaviors, as these coping strategies were only moderately used despite facing academic challenges.

Future researchers might perform similar studies with different variables and populations to further explore other factors that could influence students' struggles, coping mechanisms, and motivation in learning Mathematics.

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