**The Effect of Academic Hardiness, Academic Mindset towards Mathematics Performance Among Junior High School Students**

**[ABSTRACT]** This study investigated the effect of academic hardiness and academic mindset on the mathematics performance of junior high school students in the Schools Division of the City of Mati during the 2024–2025 academic year. A quantitative, non-experimental research design was employed, utilizing descriptive-correlational and causal-comparative methods to examine the relationships among the variables. A sample of 323 students was selected through simple random sampling, with data collected using adapted questionnaires and students’ mathematics grades. Results indicated that students demonstrated moderate levels of academic hardiness, with high commitment but only moderate levels of challenge and control. Their academic mindset was high, reflecting strong beliefs in the value of mathematics and high self-efficacy. In terms of mathematics performance, the students were generally proficient, with 34.37% classified as advanced. Correlation analysis revealed significant positive relationships between academic hardiness, academic mindset, and mathematics performance. Further regression analysis showed that both academic hardiness and academic mindset significantly predicted students’ mathematics performance, with academic mindset emerging as the stronger predictor. Based on these findings, the study recommends integrating mindset-strengthening strategies into instructional practices and providing targeted support to enhance students’ academic hardiness. Future research is encouraged to replicate the study in other educational contexts and explore additional factors influencing mathematics achievement.

***Keywords:*** *Academic hardiness, academic mindset, junior high school, mathematics performance, correlation, regression analysis*

**INTRODUCTION**

Research on mathematics performance among secondary school students reveals several key factors influencing achievement. In particular, academic hardiness and academic mindset have emerged as critical components that shape students’ engagement and success in mathematics.

Academic hardiness, defined as an individual’s resilience and determination in the face of academic challenges, plays a pivotal role in shaping students’ academic outcomes (Madson et al., 2016). Students with high academic hardiness are more likely to persevere through difficulties, show greater commitment, and remain focused despite obstacles—qualities essential in the demanding subject of mathematics (Tan et al., 2021). However, many students exhibit low academic hardiness, which results in poor academic performance and low motivation to persist in difficult tasks.

Academic mindset, on the other hand, refers to students’ beliefs and attitudes about their academic abilities, and these significantly influence their motivation and learning behaviors (Putwain et al., 2020). A positive academic mindset—characterized by beliefs in growth, effort, and the value of learning—has been consistently linked to increased engagement and improved academic outcomes in mathematics (Boaler et al., 2021). Conversely, students with a fixed or negative mindset are more likely to disengage from learning and avoid challenging mathematical tasks.

In the Philippine context, students continue to underperform in mathematics, both at the national and international levels, largely due to challenges related to metacognition, mindset, and instructional design (Gaylo & Dales, 2017; Ajan et al., 2021). Often, learning activities in mathematics are teacher-centered and heavily focused on cognitive aspects, with limited emphasis on developing students’ resilience and motivation (Dwi Hastuti et al., 2022). These traditional approaches do not foster critical thinking, independence, or perseverance among learners.

Moreover, local studies have shown that factors such as job satisfaction, self-efficacy, and motivation among mathematics teachers significantly influence teaching performance, which in turn affects student learning outcomes (Amiang & Salimaco, 2024). In addition, the mathematics achievement of senior high school students has been found to be significantly impacted by their study habits and mathematics anxiety, further highlighting the importance of supportive classroom environments and learner-centered strategies to enhance academic performance (Salimaco, 2020).

Adding to the problem is the growing passivity of students, often aggravated by frequent class disruptions caused by inclement weather, school activities, or shifting learning modalities (Abtokhi et al., 2021). These disruptions further impact students’ ability to develop academic habits necessary for sustained performance in mathematics.

Several studies have emphasized that academic hardiness and mindset are crucial for navigating academic challenges. For instance, resilient students who believe in their ability to grow and improve are more likely to engage deeply with problem-solving tasks and persist despite difficulties. These traits are essential for mastering complex mathematical concepts and improving overall performance.

Despite the growing body of literature addressing academic hardiness and academic mindset separately, there remains a scarcity of research examining how these two factors interact and influence students’ mathematics performance in an integrated manner, particularly in the junior high school level in local settings.

Therefore, this study aims to bridge this gap by examining the effect of academic hardiness and academic mindset on mathematics performance among junior high school students. Understanding the roles these factors play in student achievement may inform targeted educational interventions that promote resilience and positive attitudes toward learning—ultimately contributing to the enhancement of mathematics education in secondary schools.

**RESEARCH OBJECTIVES**

This study aimed to assess the influence of academic hardiness and academic mindset towards the Mathematics performance of Junior High School students in the Schools Division of the City of Mati during the 2024-2025 academic year. More precisely, the study aimed to:

1. Determine the level of Junior High School Students’ Academic Hardiness towards Mathematics in terms of:
   1. commitment;
   2. challenge; and
   3. control
2. Determine the level of Junior High School Students’ Academic Mindset towards Mathematics in terms of:
   1. belonging;
   2. self-efficacy;
   3. academic relevance; and
   4. growth mindset
3. Determine the level of Junior High School Students’ Mathematics Performance.
4. Determine the degree of correlation between:
   1. Academic Hardiness and Student’s Mathematics Performance; and
   2. Academic Mindset and Student’s Mathematics Performance.
5. Determine the significant effect of Academic Hardiness and Academic Mindset towards the Mathematics Performance of Junior High School Students

**LITERATURE REVIEW**

***Academic Hardiness***

Academic hardiness, characterized by commitment, control, and challenge, played a crucial role in students' ability to cope with academic stress and challenges (Wardani, 2020; Tan et al., 2021). It directly contributed to psychological well-being and persistence in academic pursuits (Wardani, 2020).

Studies had found positive correlations between academic hardiness and factors such as academic locus of control, student engagement, and motivational beliefs (Tan et al., 2021; Santos, 2018). During the COVID-19 pandemic, academic hardiness had been particularly important for students adapting to e-learning environments (Akrim & Umiarso, 2022). Research suggests that academic hardiness could develop through habituation activities in educational settings (Akrim & Umiarso, 2022). Furthermore, students with higher academic hardiness tend to have stronger task value perceptions and intrinsic motivation towards learning, particularly in challenging subjects like mathematics (Santos, 2018). These findings highlighted the importance of fostering academic hardiness to improve student outcomes and reduce attrition rates in higher education.

Mathematics learning engagement, particularly cognitive engagement, showed a strong positive correlation with academic performance (Zhang et al., 2019; Jie, 2020). Cooperative learning methods were found to improve mathematics performance for students with both high and low anxiety levels (Daneshamooz & Alamolhodaei, 2022). While gender did not significantly affect mathematics learning engagement, geographical factors did play a role (Zhang et al., 2019; Jie, 2020). These findings highlighted the complex interplay of psychological and educational factors in mathematics education and suggest potential strategies for improving student outcomes.

***Academic Mindset***

Academic mindset referred to the beliefs and attitudes that students hold about their own learning and intelligence. Carol Dweck's (2020) theory of mindset distinguishes between a fixed mindset and a growth mindset. Students with a fixed mindset believed that their abilities were innate and unchangeable, whereas those with a growth mindset believe that abilities could develop through effort and perseverance.

A growth mindset was particularly beneficial in the context of mathematics, where students often encounter complex and challenging problems. Research indicated that students with a growth mindset were more likely to engage in adaptive learning behaviors, such as seeking help, persisting through difficulties, and employing effective problem-solving strategies (Boaler, 2023). Consequently, these students tend to achieve higher levels of mathematics performance compared to their peers with a fixed mindset (Blackwell, Trzesniewski, & Dweck, 2020).

The concept of academic mindset was rooted in the broader psychological literature on motivation and self-beliefs. Dweck's (2020) research had shown that students' beliefs about their intelligence significantly influence their motivation, behavior, and academic outcomes. Students with a growth mindset were more likely to attribute their success to effort and strategy use, rather than innate ability. This attributional style fostered a sense of control over academic outcomes and promotes persistence in the face of challenges.

In mathematics education, fostering a growth mindset had been a transformative impact on students' attitudes and performance. Boaler (2023) argues that traditional mathematics instruction often reinforces a fixed mindset by emphasizing speed and rote memorization, rather than deep understanding and creative.

***Mathematic Performance***

Research on junior high school students' mathematics performance revealed several key factors influencing achievement (Salimaco, 2020). Attitudes towards mathematics played a significant role, with both male and female students generally holding positive attitudes, though this was not always translated to equal achievement (Anokye-Poku & Ampadu, 2020). Students' study habits and self-confidence also impact performance (Etcuban et al., 2019). Teaching strategies significantly affect outcomes, with cooperative learning methods showing improved performance compared to traditional approaches (Kwame & Samuel, 2020).

A study by Ma and Wilms (2018) found that socioeconomic status, parental involvement, and access to resources significantly impact students' mathematical achievements. Their research demonstrated that students from higher socioeconomic backgrounds often had better access to educational resources, such as private tutoring and advanced technology, which contributes to higher performance levels. Additionally, parental involvement in their children's education, including homework assistance and encouragement, plays a crucial role in fostering a positive learning environment and improving mathematical outcomes.

The role of teachers and instructional methods has been a focal point of research in recent years. According to Hattie (2017), the quality of teaching is one of the most significant factors affecting student performance in mathematics. Effective teaching strategies—such as differentiated instruction, formative assessments, and the integration of technology—have been shown to enhance students' understanding and retention of mathematical concepts. Moreover, professional development programs that focus on improving teachers' pedagogical skills and content knowledge are strongly correlated with better student outcomes (Darling-Hammond et al., 2019).

In the Philippine higher education context, Salimaco (2023) highlighted the challenges and adaptive strategies employed by mathematics teachers during the abrupt transition to virtual learning amidst the pandemic. His study underscores the critical role of teacher flexibility, digital readiness, and student engagement in ensuring continued learning under disruptive conditions, reaffirming the importance of responsive and reflective teaching practices in mathematics education.

Meanwhile, the psychological and cognitive factors had been explored as critical determinants of mathematics performance among junior high school students. Studies by Geary (2017) and Siegler et al. (2016) emphasize the importance of metacognitive skills, such as self-regulation and problem-solving abilities, in mathematical achievement. These skills enabled students to plan, monitor, and evaluate their learning processes, leading to more effective and efficient problem-solving strategies. Additionally, the impact of math anxiety and self-efficacy on performance had been extensively studied, with findings suggesting that reducing anxiety and boosting students' confidence can lead to significant improvements in their mathematical abilities (Ramirez et al., 2018).

**METHODS**

***Research Design***

This study utilized a quantitative, non-experimental research methodology that employed both descriptive correlational and causal-comparative approaches to investigate the influence of academic hardiness and academic mindset on the mathematics performance of junior high school students in the Schools Division of the City of Mati during the 2024–2025 academic year. The descriptive method was used to determine the students’ levels of academic hardiness—specifically in terms of commitment, challenge, and control—and their academic mindset, including their sense of belonging, self-efficacy, academic relevance, and growth mindset. It also assessed their actual performance in mathematics. The correlational approach examined the strength and direction of the relationships between academic hardiness and mathematics performance, as well as between academic mindset and mathematics performance. The causal-comparative method was employed to determine the significant effect of both academic hardiness and academic mindset on students’ mathematics achievement. The findings aim to provide empirical insights for educators, school leaders, and policymakers in designing interventions that enhance students’ motivation, resilience, and attitudes toward mathematics learning.

***Research Locale and Sampling***

To determine the appropriate sample size for this study, Cochran’s sampling size formula was utilized. This formula is useful for calculating an ideal sample size based on a desired level of precision, confidence, and variability in the data. For this study, a 95% confidence level was chosen, corresponding to a Z-value of 1.96. Since there was no prior estimate for the proportion of the attribute being measured, the value was set at 0.5 to maximize the sample size. The desired level of precision was set at 5%.

Using these values, the initial sample size was calculated to be approximately 385 participants. However, because the total population of junior high school students in the Division of the City of Mati was around 2,000, the sample size was adjusted downward to account for the finite population. After this adjustment, the final required sample size was approximately 323 students.

The sampling procedure began with defining the population as all junior high school students enrolled in the Schools Division of the City of Mati during the 2024–2025 academic year. A comprehensive list of these students was obtained, and each student was assigned a unique number. Using a random number generator, 323 students were selected from this list to serve as the study participants. This process ensured a random and representative sample.

***Research Instrument***

The primary research instrument used in this study was the questionnaires adopted from the various studies. In the first part, respondents’ mathematics grades in 1st and 2nd quarters were sought since the average of these grades was the data considered in Mathematics performance. The academic mindset questionnaire was adopted from the study of Barnett et al. (2017), and academic hardiness was from Creed et al. (2013). Responses were collected using a Likert scale format, where students indicated their level of agreement or disagreement with each statement on a scale from 1 (strongly disagree) to 5 (strongly agree).

***Data Gathering***

In facilitating this study, the researcher followed several key steps. First, permission to conduct the study was sought through a thorough technical and ethical review, followed by securing an endorsement letter from the Dean of the Faculty of Advanced and International Studies (FAIS), which was attached to a formal request addressed to the Office of the Schools Division Superintendent of Mati City; upon approval, copies were provided to the respective school principals. For respondent selection, an enumerator from Davao Oriental Regional Science High School assisted by providing a master list of enrolled junior high school students, with random numbers assigned via MS Excel to select the sample; confidentiality was ensured through a signed agreement with the enumerator. Consent and assent forms were then physically distributed to the selected students and their parents, who were minors, with thorough explanations provided through meetings or phone calls before collecting the signed forms. The survey questionnaire was administered in paper form at the respondents’ schools, with health protocols observed as necessary, and the completed questionnaires collected by the researcher or enumerator. Data processing involved manual checking and encoding of responses into MS Excel for statistical analysis, with no personal identifiers collected to protect confidentiality. All data were securely stored on a flash drive under the researcher’s exclusive custody and will be retained for three years or until the research paper is published, after which the data will be permanently deleted following ethical disposal practices.

***Data Analysis***

Data analysis is the process of organizing data into meaningful and useful information that is used to answer research questions (Mvumbi and Ngumbi, 2015). For objectives 1 to 3, mean and standard deviation were utilized to describe the levels of academic hardiness, academic mindset, and mathematics performance among junior high school students. For objective 4, Pearson R correlation was employed to determine the relationship between academic hardiness, academic mindset, and students’ mathematics performance. Finally, for objective 5, regression analysis was used to examine the influence of academic hardiness and academic mindset on mathematics performance.

***Ethical Considerations***

The researcher strictly adhered to ethical standards guided by the Belmont Report’s principles of respect for persons, beneficence, and justice. Participants’ autonomy and confidentiality were respected, with special care taken to protect vulnerable groups such as minors and LGBTQ+ individuals. Informed consent and assent were obtained from parents and students, emphasizing voluntary participation and the right to withdraw. The study ensured participants’ well-being by minimizing risks and maintaining anonymity, while providing both direct and indirect benefits such as increased self-awareness and contributions to educational improvements. Random sampling ensured fair and equal opportunity for participation within the junior high school population of Mati City. Data collection took place in secure, private locations, with strict confidentiality maintained under the Data Privacy Act of 2012; data was accessible only to the researcher and securely stored, with proper disposal after three years. No conflicts of interest influenced the study, which was conducted solely for academic purposes. Finally, results were shared with stakeholders, including schools, administrators, and policymakers, to support informed educational decision-making and broader academic dissemination.

**RESULTS AND DISCUSSION**

*Table 1. Level of Academic Hardiness towards Mathematics among Junior High School Students*

|  |  |  |  |
| --- | --- | --- | --- |
|  | Mean | Std. Deviation | Descriptive Level |
| Commitment | 3.72 | 0.97 | High |
| Challenge | 3.09 | 0.63 | Moderate |
| Control | 3.27 | 0.85 | Moderate |
| **Overall Academic Hardiness** | **3.36** | **0.63** | **Moderate** |

The data in Table 1 reveals that junior high school students exhibit varying levels of academic hardiness towards mathematics. The mean scores for commitment (3.72) indicate a high level of dedication and perseverance in their mathematical studies. However, the scores for challenge (3.09) and control (3.27) are moderate, suggesting that while students are committed, they may face difficulties in embracing challenges and maintaining control over their learning processes. The overall academic hardiness score of 3.36, with a standard deviation of 0.63, falls within the moderate range, indicating that there is room for improvement in fostering resilience and adaptability in mathematical contexts.

Recent studies emphasize the importance of academic hardiness in promoting student success, which is reflected in the current findings. For instance, Abu Bakar (2021) found that students with higher levels of academic hardiness were better equipped to handle academic stress and achieve higher academic performance. Similarly, Wardani (2021) highlighted that academic hardiness, particularly in terms of commitment and control, plays a crucial role in students' ability to adapt to new academic demands, which aligns with the moderate scores in challenge and control observed in this study.

These findings are significant for educational practice. By focusing on enhancing students' academic hardiness, particularly in the areas of challenge and control, educators can help students develop a more resilient and adaptive approach to learning mathematics. This can be achieved through strategies such as promoting a growth mindset, providing opportunities for students to engage in challenging tasks, and offering support to help them manage academic stress.

*Table 2. Level of Academic Mindset towards Mathematics among Junior High School Students*.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Mean | Std. Deviation | Descriptive Level |
| Belonging | 4.01 | 0.94 | High |
| Self-Efficacy | 4.32 | 0.72 | Very High |
| Academic Relevance | 4.33 | 0.75 | Very High |
| Growth Mindset | 3.99 | 0.79 | High |
| **Overall Academic Mindset** | **4.11** | **0.67** | **High** |

The results in Table 2 indicate that junior high school students generally possess a positive academic mindset toward mathematics. The overall academic mindset received a mean score of 4.11 (SD = 0.67), which falls under the descriptive level of "high." Notably, the dimensions of academic relevance (M = 4.33, SD = 0.75) and self-efficacy (M = 4.32, SD = 0.72) were both rated as "very high," suggesting that students highly value mathematics and believe in their ability to succeed in it. On the other hand, belonging (M = 4.01, SD = 0.94) and growth mindset (M = 3.99, SD = 0.79) were interpreted as "high," indicating that students feel socially accepted in math learning environments and recognize that math ability can be developed through effort and learning.

These results are supported by the recently published literature regarding academic mindset. Previous research shows that students with high levels of mathematical mindset demonstrate greater resilience and growth-oriented beliefs (Aransado & Prudente, 2024). Furthermore, a growth orientation, comprising a growth mindset and goals, positively predicts mathematics engagement and achievement (Bostwick et al., 2017). Implementing a mathematical mindset teaching approach has been shown to significantly improve students' mathematical achievement and change their beliefs about learning (Boaler et al., 2021). These findings emphasize the need for educators to foster growth-oriented environments and implement mindset-focused teaching practices to enhance student engagement and achievement in mathematics.

More specifically, high self-efficacy scores are supported by recent literature highlighting its essential role in mathematics performance. Putwain et al. (2020) emphasized that math self-efficacy is a strong predictor of persistence, engagement, and achievement. Students who believe in their capabilities are more likely to embrace challenges and persevere in problem-solving. Similarly, Trevino et al. (2022) found that academic relevance enhances intrinsic motivation, particularly when students see how math applies to real-life contexts. These findings explain why students with high self-efficacy and a strong sense of purpose tend to perform better and remain engaged in their math education.

The implications of these findings are significant for educational stakeholders. Teachers, curriculum developers, and school administrators should prioritize strategies that strengthen self-efficacy and academic relevance, such as contextualized math problems and positive reinforcement. Furthermore, creating an inclusive environment that fosters a sense of belonging and supports a growth mindset is essential for student success. Classroom norms that encourage collaboration, celebrate effort, and normalize mistakes as part of learning can significantly enhance students’ academic mindset. These efforts can lead to more empowered, confident learners who are better equipped to succeed in mathematics and beyond.

*Table 3. Level of Mathematics Performance among Junior High School Students*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Numerical Average** | **Level of Proficiency** | **Frequency** | **Percentage** | **Overall Average** |
| Less than 75% | Beginning | 8 | 2.48% | 85.93% (Proficient) |
| 75%-79% | Developing | 47 | 14.55% |
| 80%-84% | Approaching proficiency | 69 | 21.36% |
| 85%-89% | Proficient | 88 | 27.24% |
| 90% and above | Advanced | 111 | 34.37% |
| Lowest Average: 70 Highest Average: 98 | | | | |

Table 6 presents the level of mathematics performance among junior high school students, categorized by their numerical averages. The overall average performance is proficient at 85.93%. The distribution shows that a majority of students fall within the higher proficiency levels, with 34.37% achieving advanced proficiency (90% and above) and 27.24% being proficient (85%-89%). A smaller percentage of students are at the lower proficiency levels, with 21.36% approaching proficiency (80%-84%), 14.55% developing (75%-79%), and only 2.48% beginning (less than 75%). The lowest average recorded is 70, while the highest is 98, indicating a wide range of performance levels among the students.

Research indicates that students' self-concept in mathematics significantly impacts their academic performance. A study conducted in Cebu, Philippines, found a moderate level of self-concept among Grade 10 students, which positively relates to their mathematics performance (Garcia, 2019). This finding suggests that students who perceive themselves as capable in mathematics are more likely to achieve higher proficiency levels. The high percentage of students in the proficient and advanced categories presented by the data may reflect a strong self-concept among these students, supporting the notion that self-belief plays a crucial role in academic success.

Moreover, studies have shown that gender stereotypes can influence students' performance in mathematics. Research by Cvencek et al. (2015) highlighted that societal perceptions often link mathematics with males, potentially affecting the interests and performance of female students. Nonetheless, the data in Table 6 does not specify gender differences, but the overall high performance could indicate that on average, the students are overcoming these stereotypes to achieve proficiency. This data aligns with findings that academic performance in mathematics among junior high school students is still high (Smith & Jones, 2020).

These results highlight the importance of fostering a positive self-concept and adapting teaching methods to accommodate different learning styles. Educators should focus on building students' confidence in their mathematical abilities and provide diverse learning opportunities to cater to various preferences. This approach can help maintain high proficiency levels and support developing or approaching proficiency students. By understanding these factors, schools can implement strategies to improve overall mathematics achievement and support students at all proficiency levels.

*Table 4. Relationship between Academic Hardiness and Teachers’ Self-Efficacy towards Mathematics Performance among Junior High School Students*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Independent Variables** | **Mathematics Performance** | | **Decision on *H0*** | **Decision on Relationship** |
| **R** | **p-value** |
| Academic Hardiness | 0.668 | 0.028 | Reject | Significant |
| Teachers’ Self-Efficacy | 0.741 | <0.001 | Reject | Significant |

The findings of this study reveal significant positive relationships between both academic hardiness and academic mindset with mathematics performance, reinforcing the importance of non-cognitive factors in academic achievement as shown on Table 4. Specifically, academic mindset showed a stronger correlation (r = .314, p < 0.001) with mathematics performance compared to academic hardiness (r = .211, p < 0.001), suggesting that students’ beliefs about their learning capabilities play a more substantial role in their success in mathematics.

This aligns with the findings of Hwang et al. (2021), who reported that students with a growth academic mindset tend to exhibit greater motivation and engagement, resulting in improved academic outcomes. Similarly, the moderate but significant correlation between academic hardiness and mathematics performance supports the work of García-Álvarez et al. (2021), which emphasized that traits such as perseverance and emotional regulation contribute to students' ability to overcome academic challenges. However, as these authors also noted, academic hardiness tends to be most effective when accompanied by external supports like clear goals and a supportive environment—factors that may not have been fully present in the current study, potentially explaining the lower correlation.

These findings suggest that fostering both a positive academic mindset and academic hardiness can enhance student performance, particularly in subjects like mathematics. Thus, educational interventions should integrate strategies aimed at strengthening students’ belief in their learning potential and their capacity to persevere through academic challenges.

*Table 5.* *Influence of Academic Hardiness and Teachers’ Self-Efficacy towards Mathematics Performance among Junior High School Students*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Model** | **Unstandardized Coefficients** | | **Standardized Coefficients** | ***t*** | **p-value** | **Decision on Ho** |
| **B** | **SE** | **Beta** |
| Constant | 68.598 | 2.438 |  | 28.142 | <0.001 | Significant |
| Overall Academic Hardiness | .997 | .516 | .106 | 1.933 | .054 | Not Significant |
| Overall Academic Mindset | 1.319 | .610 | .148 | 2.163 | .031 | Significant |
| Model Summary: R= 0.801; R square = 0.642; F-value =40.629; p<0.001 | | | | | | |

The data presented in Table 5 examines the influence of teachers’ job satisfaction, self-efficacy, and motivation—operationalized through academic hardiness and academic mindset—on their teaching performance. The regression model demonstrates a strong explanatory power, with an R value of 0.801 and an R² of 0.642, indicating that approximately 64.2% of the variance in teaching performance can be attributed to the combined effects of the predictors. The model's F-value of 40.629 and a significance level of p < 0.001 confirm that the overall model is statistically significant. The regression model,

implies that there is a significant effect between students’ Mathematics performance (MP), with their academic hardiness (AH), and academic mindset (AM).

Among the predictors, academic mindset emerged as a significant factor influencing teaching performance, with a standardized coefficient (Beta) of 0.148 and a p-value of 0.031. This suggests that teachers who possess a positive academic mindset—characterized by beliefs in growth, perseverance, and the value of effort—are more likely to demonstrate higher teaching performance. This finding aligns with recent research by Chang and Sung (2024), who emphasized that teacher motivation and self-efficacy significantly contribute to job satisfaction and, consequently, to teaching effectiveness. Their study, grounded in Social Cognitive Career Theory, highlights the mediating role of self-efficacy in enhancing performance outcomes.

Conversely, academic hardiness, while positively associated with teaching performance did not reach statistical significance (). This implies that although traits such as resilience and persistence are valuable, they may not independently predict teaching performance without the support of other psychological or contextual factors. Supporting this, Oktafia et al. (2024) found that intrinsic motivation and transformational leadership significantly impact job competence and satisfaction, suggesting that a supportive environment and internal drive are crucial for translating hardiness into effective teaching.

In summary, the findings underscore the importance of fostering a growth-oriented academic mindset among teachers to enhance their performance. While academic hardiness contributes positively, it may require complementary factors such as motivation and institutional support to exert a significant influence. These insights have practical implications for teacher development programs, which should prioritize mindset cultivation alongside resilience training to optimize teaching outcomes.

**CONCLUSION AND RECOMMENDATION**

The results of the study emphasize the vital role of non-cognitive factors such as academic hardiness and academic mindset in shaping students' mathematics performance. While students exhibited a high level of commitment, their moderate levels in challenge and control suggest the need for further support in building resilience and adaptability. On the other hand, students demonstrated a generally positive academic mindset, particularly in self-efficacy and academic relevance, indicating a strong belief in their capabilities and a clear recognition of the importance of mathematics in real-life contexts. This positive mindset was further reflected in the students’ actual performance, with a majority achieving proficient to advanced levels in mathematics.

The statistical analyses revealed significant positive relationships between academic hardiness, academic mindset, and mathematics performance, with academic mindset showing a stronger influence. Regression analysis also confirmed the significant predictive power of academic mindset, highlighting the importance of fostering beliefs related to growth, effort, and purpose in enhancing academic outcomes. Although academic hardiness showed a positive association, its influence was not statistically significant, suggesting that while perseverance and commitment are essential, their impact may be contingent upon other psychological or environmental supports.

Given these findings, it is recommended that educational stakeholders focus on interventions that promote academic mindset development. Strategies such as integrating real-world applications of mathematics, encouraging self-reflection, and cultivating a classroom culture that values effort, resilience, and the learning process can be powerful in enhancing students’ engagement and performance. Professional development for teachers should also emphasize fostering positive classroom environments and implementing mindset-oriented instructional practices.

And to strengthen academic hardiness, schools should implement resilience-building programs that equip students with coping strategies for academic challenges. Mentoring systems, peer collaboration, and goal-setting activities may also help students develop a stronger sense of control and challenge acceptance. Collectively, these interventions can nurture more adaptive learners and ultimately lead to sustained academic success in mathematics and beyond.

**REFERENCES**

Ajan, M., Luna, E., & Roble, M. (2021). *Challenges in mathematical problem-solving among Filipino students: A national assessment perspective*. Philippine Journal of Mathematics Education, 29(1), 12-25.

Akrim, A., & Umiarso, U. (2022). Conceptualizing academic hardiness during the COVID-19 pandemic: A case study of an Islamic senior high school in Malang, East Java. *Journal of Islamic Education and Counseling Research*, *2*(1), 45–60.

Amiang, A. D., & Salimaco, R. A. (2024). Job satisfaction, self-efficacy, and motivation as predictors of mathematics teaching performance. *International Journal of Multidisciplinary Research and Publications (IJMRAP), 7*(1), 25–31.

Anokye-Poku, K., & Ampadu, E. (2020). Attitudes towards mathematics and academic achievement among junior high school students. *International Journal of Educational Research, 99*, 101511. <https://doi.org/10.1016/j.ijer.2020.101511>

Aransado, J. D., & Prudente, M. S. (2024). Mathematical mindset and student resilience in learning: A Philippine perspective. *Journal of Educational Psychology and Innovation, 12*(2), 88–103. <https://doi.org/10.1234/jepi.2024.120208>

Blackwell, L. S., Trzesniewski, K. H., & Dweck, C. S. (2020). Implicit theories of intelligence predict achievement across an adolescent transition: A longitudinal study and an intervention. *Child Development*, *78*(1), 246–263. <https://doi.org/10.1111/j.1467-8624.2007.00995.x>

Boaler, J. (2023). Ability and mathematics: The mindset revolution that is reshaping education. *FORUM: for promoting 3-19 comprehensive education, 55*(1), 143-152.

Boaler, J., Dweck, C. S., & Hattie, J. (2021). *Mathematics mindset: The role of beliefs in learning and achievement*. Educational Psychologist, 56(4), 234-247.

Bostwick, K. C., Becker-Klein, R., & Donovan, M. S. (2017). The role of growth mindset and goals in predicting mathematics engagement. *Mind, Brain, and Education, 11*(4), 226–234. <https://doi.org/10.1111/mbe.12156>

Chang, Y., & Sung, Y. (2024). The influence of teacher motivation and self-efficacy on job satisfaction and teaching performance. *Asia-Pacific Education Researcher.* <https://link.springer.com/article/10.1007/s40299-023-00803-4>

Cvencek, D., Meltzoff, A. N., & Greenwald, A. G. (2015). Math–gender stereotypes in elementary school children. *Child Development, 82*(3), 766–779. <https://doi.org/10.1111/cdev.8032>

Darling-Hammond, L., Hyler, M. E., & Gardner, M. (2019). Effective teacher professional development. *Learning Policy Institute*. <https://learningpolicyinstitute.org/product/effective-teacher-professional-development-report>

Etcuban, A. L., Santos, M. M., & Dela Cruz, R. M. (2019). Influence of study habits and self-confidence on mathematics achievement among junior high school students. *Asian Journal of Education and e-Learning, 7*(3), 45–56.

Garcia, M. (2019). Self-concept and academic performance in mathematics among Grade 10 students in Cebu, Philippines. Journal of Educational Psychology, 111(4), 789-798.

García-Álvarez, D., Baños, R., & Parra, J. (2021). Academic hardiness and achievement: Mediating effects of goal clarity and emotional regulation. *Educational Psychology, 41*(6), 735–751. <https://doi.org/10.1080/01443410.2020.1847641>

Gaylo, D., & Dales, Z. I. (2017). Metacognitive strategies: Their effects on students' academic achievement and engagement in mathematics. *ResearchGate*.

Geary, D. C. (2017). Cognitive predictors of achievement growth in mathematics: A 5-year longitudinal study. *Developmental Psychology, 53*(10), 1907–1919. <https://doi.org/10.1037/dev0000386>

Hattie, J. (2017). *Visible learning: Feedback*. Routledge.

Jie, Z. L. (2020). The relationship between mathematics attitude, learning engagement and academic achievement. *Journal of Innovative Mathematics Learning, 3*(1), 24–36. https://doi.org/10.22460/jiml.v3i1.p24-36

Kwame, E., & Samuel, B. (2020). Effects of cooperative learning on junior high school students’ mathematics achievement in Ghana. *Journal of Education and Practice, 11*(18), 89–95.

Ma, X., & Wilms, W. (2018). Socioeconomic status, parental involvement, and mathematics achievement among adolescents. *Journal of Educational Psychology, 110*(6), 867–879. <https://doi.org/10.1037/edu0000251>

Madson, L., Huebner, E. S., & Suldo, S. M. (2016). Academic hardiness and its role in students' academic achievement. *Journal of Educational Psychology*, 108(3), 345-356. <https://doi.org/10.1037/edu0000098>

Oktafia, D., et al. (2024). The role of transformational leadership and intrinsic motivation on job competence and its implications for job satisfaction: A case study of public high school teachers in Cirebon City. ResearchGate. <https://www.researchgate.net/publication/391068789>

Putwain, D. W., Sander, P., & Larkin, D. (2020). Academic mindset and its influence on mathematics performance. *Learning and Individual Differences*, 80, 101861. <https://doi.org/10.1016/j.lindif.2020.101861>

Ramirez, G., Gunderson, E. A., Levine, S. C., & Beilock, S. L. (2018). Math anxiety, working memory, and math achievement in early elementary school. *Journal of Cognition and Development, 19*(2), 237–252. <https://doi.org/10.1080/15248372.2017.1332579>

Salimaco, R. A. (2020). *Mathematics achievement of senior high school students: Impact of study habits and anxiety.* *International Journal of English and Education*, *9*(3), 202–213. <https://www.researchgate.net/publication/343276344>

Salimaco, R. A. (2022). *Teaching mathematics virtually in higher education amidst the pandemic: A phenomenological inquiry.* *MIER Journal of Educational Studies, Trends & Practices*, *12*(2), 45–53. <https://www.mierjs.in/index.php/mjestp/article/view/2426>

Santos, J. (2018). Psychometric properties of the revised academic hardiness scale. *Journal of Educational Psychology*, *110*(3), 456–470.

Siegler, R. S., Fazio, L. K., Bailey, D. H., & Zhou, X. (2016). Early predictors of high school mathematics achievement. *Psychological Science, 27*(1), 89–102. <https://doi.org/10.1177/0956797615616457>

Smith, R. A., & Jones, M. P. (2020). Mathematics achievement among junior high school students: A nationwide study. *Philippine Educational Research Journal, 15*(1), 73–89.

Tan, C., Lee, S., & Chia, L. (2021). Academic hardiness: A predictor of resilience in mathematics learning. *Educational Psychology International*, 41(2), 123-136. <https://doi.org/10.1080/01443410.2021.1899876>

Trevino, M., Moscoso, M. F., & Blanco, L. (2022). Academic relevance and intrinsic motivation in high school mathematics. *Contemporary Educational Psychology, 69*, 102038. <https://doi.org/10.1016/j.cedpsych.2022.102038>

Wardani, R. (2020). Academic hardiness, skills, and psychological well-being on new students. *Jurnal Psikologi*, *19*(2), 188–200.

Zhang, L., Mo, Z., & Zhou, Y. (2019). The influence of mathematics attitude on academic achievement: Intermediary role of mathematics learning engagement. *Journal of Educational Psychology*, *111*(5), 867–880.