



PSYCHOLOGICAL DETERMINANTS OF MATHEMATICS ACHIEVEMENT: EXAMINING THE ROLES OF SELF-CONFIDENCE, ACADEMIC RESILIENCE, AND LEARNING DISCIPLINE

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ABSTRACT

This study aims to analyze the influence of self-confidence, academic resilience, and learning discipline on students' mathematics learning outcomes. The research method used is quantitative with an ex post facto design, because the research variables have existed naturally without manipulation. The study was conducted in July 2025 with a population of all students of SMK Muhammadiyah Mlati and a sample of 150 students selected through a simple random sampling technique. The data collection instrument was a 5-point Likert scale questionnaire on the variables of self-confidence (X_1), academic resilience (X_2), learning discipline (X_3), and mathematics achievement (Y). Before being used, the instrument was tested for validity and reliability. Data were analyzed using prerequisite tests (normality, multicollinearity, heteroscedasticity, and linearity) and multiple regression using SPSS-25. The results showed that self-confidence, academic resilience, and learning discipline had a significant effect both simultaneously and partially on mathematics learning outcomes. Simultaneously, the three variables contributed 21.4% to learning outcomes, while the rest was influenced by other factors. Self-confidence increases students' courage to face challenges, academic resilience helps students survive difficulties, and learning discipline supports learning consistency

Keywords: *self-confidence, academic resilience, learning discipline, mathematics achievement*

Abstrak

Penelitian ini bertujuan untuk menganalisis pengaruh kepercayaan diri, resiliensi akademik, dan disiplin belajar terhadap hasil belajar matematika siswa. Metode penelitian yang digunakan adalah kuantitatif dengan desain ex post facto, karena variabel-variabel penelitian telah ada secara alami tanpa manipulasi. Penelitian dilaksanakan pada Juli 2025 dengan populasi seluruh siswa SMK Muhammadiyah Mlati dan sampel berjumlah 150 siswa yang dipilih melalui teknik simple random sampling. Instrumen pengumpulan data berupa angket skala Likert 5 pada variabel kepercayaan diri (X_1), resiliensi akademik (X_2), disiplin belajar (X_3), dan hasil belajar matematika (Y). Sebelum digunakan, instrumen diuji validitas dan reliabilitasnya. Data dianalisis dengan uji prasyarat (normalitas, multikolinearitas, heteroskedastisitas, dan linearitas) serta regresi berganda menggunakan SPSS-25. Hasil penelitian menunjukkan bahwa kepercayaan diri, resiliensi akademik, dan disiplin belajar berpengaruh signifikan baik secara simultan maupun parsial terhadap hasil belajar matematika. Secara simultan, ketiga variabel memberikan kontribusi sebesar 21,4% terhadap hasil belajar, sedangkan sisanya dipengaruhi oleh faktor lain. Kepercayaan diri meningkatkan keberanian siswa menghadapi tantangan, resiliensi akademik membantu siswa bertahan menghadapi kesulitan, dan disiplin belajar mendukung konsistensi belajar.

Kata Kunci: kepercayaan diri, resiliensi akademik, disiplin belajar, hasil belajar matematika

1. INTRODUCTION

Mathematics learning is one of the subjects that plays a crucial role in shaping students' logical, analytical, and systematic thinking skills, as well as their problem-solving abilities [1]. However, the reality in the field shows that mathematics is still considered a difficult and intimidating subject, and is often perceived

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as a major cause of students' low academic performance compared to other subjects. This phenomenon occurs at almost all levels of education, including vocational high schools (SMK), where students are required not only to understand theoretical concepts but also to apply mathematical knowledge in their chosen field of expertise [2]. The low achievement in mathematics is not solely influenced by cognitive aspects, but also by non-cognitive factors such as self-confidence, academic resilience, and learning discipline embedded within students.

Self-confidence is a psychological aspect that greatly determines success in learning mathematics. Students with high self-confidence tend to be more courageous in solving difficult problems, less likely to give up when facing failure, and better able to manage learning anxiety [3]. Conversely, students with low self-confidence often feel afraid of making mistakes, procrastinate in completing tasks, or even avoid mathematics lessons altogether [4]. In this context, self-confidence is not only about belief in one's ability but also about developing a positive attitude toward academic challenges. Thus, self-confidence can be viewed as a key foundation for students to master mathematics optimally.

In addition to self-confidence, academic resilience also plays an important role. Academic resilience is defined as the ability of students to bounce back when encountering difficulties, failures, or pressures during the learning process [5]. In mathematics learning, which is full of challenges, academic resilience enables students to persist, search for alternative strategies, and remain motivated when facing obstacles. Students with high resilience are more capable of enduring stressful learning situations, such as exams or complex problem-solving tasks [6]. In other words, academic resilience serves as a protective factor that helps students remain focused and persistent in achieving learning goals.

Learning discipline is another essential variable. Discipline in the learning context includes orderliness, consistency, and responsibility in carrying out academic activities both in school and at home [7]. Students with strong learning discipline tend to manage their time effectively, complete assignments on schedule, and adhere to established rules and study plans. In mathematics learning, discipline is highly necessary because mastering the material requires repeated practice, systematic problem-solving, and consistent reinforcement of concepts. Without discipline, students' ability to understand mathematical material will be difficult to develop optimally [8].

Mathematics achievement does not only reflect students' cognitive abilities but also serves as an indicator of the overall success of the learning process at school [9]. Internal factors such as self-confidence, academic resilience, and learning discipline significantly contribute to students' academic outcomes [10], [11]. Therefore, examining the influence of these three variables is highly relevant, particularly among students of SMK Muhammadiyah Mlati, who possess unique characteristics as vocational learners. Understanding these psychological and behavioral factors can help teachers design more effective learning strategies tailored to students' needs.

Previous studies have highlighted the significance of these factors. Akosah et al. [12] found that students with high self-confidence demonstrated better mathematics achievement. Similarly, Supriyadi et al. [13] emphasized that academic resilience plays a crucial role in helping students overcome academic difficulties, while Carandang et al. [14] reported a significant relationship between learning discipline and academic achievement. Nevertheless, studies that simultaneously integrate these three variables remain limited, particularly in the context of mathematics learning at vocational high schools.

Based on this rationale, the present study aims to analyze the extent to which self-confidence, academic resilience, and learning discipline influence the mathematics achievement of students at SMK Muhammadiyah Mlati. This research is expected to contribute theoretically to the development of educational psychology studies while providing practical implications for teachers in designing learning approaches that emphasize not only cognitive mastery but also the enhancement of affective and self-regulatory aspects. Thus, the findings of this study may serve as a valuable reference for improving the quality of mathematics learning, particularly in vocational education settings.

2. LITERATURE REVIEW

2.1. Self-Confidence

Self-confidence is one of the essential psychological aspects that influence students' learning processes and outcomes. According to Bandura [15], self-confidence is closely related to the concept of self-efficacy, defined as an individual's belief in their ability to organize and execute the actions required to achieve

specific goals. Students with a high level of self-confidence are more willing to face learning challenges, less likely to give up, and more optimistic in completing academic tasks, including mathematics, which is often characterized by logical and analytical challenges [16]. Conversely, students with low self-confidence tend to hesitate, fear failure, and avoid challenges, which negatively affects their academic performance.

Previous studies have shown that self-confidence has a significant effect on achievement. For instance, Fardani et al. [17] found that students with higher self-confidence achieved better results in science-related subjects because they were more active in asking questions and attempting to solve problems. Similarly, Siswanto et al. [18] and Astiwi et al. [19] emphasized that self-confidence is related to intrinsic motivation, leading students to be more diligent in practicing and reviewing material. Thus, self-confidence should not merely be seen as a psychological aspect but also as a fundamental asset for enhancing students' academic achievement.

2.2. Academic Resilience

Academic resilience is defined as students' ability to endure, recover, and adapt when facing challenges, pressures, or difficulties in the learning process. According to Elyas et al. [20], academic resilience is a critical factor that enables students to remain engaged in learning despite failures or obstacles. Students with high levels of academic resilience are able to develop alternative learning strategies, stay motivated, and persist even when encountering difficulties, particularly in mathematics, which is often perceived as a challenging subject. This suggests that resilience is not merely a form of mental toughness but also an adaptive skill that helps students manage the complexities of learning [21], [22].

Previous studies reinforce the importance of academic resilience in supporting achievement. Erdemir et al. [23] found that academic resilience positively correlates with academic achievement, as resilient students are better able to manage academic stress and stay focused on learning goals. Similarly, Daraojimba et al. [24] reported that academic resilience contributes to fostering perseverance, allowing students to enhance their conceptual understanding despite frequent failures in solving problems. Therefore, academic resilience plays a crucial role in enabling students to overcome learning pressures while improving their academic performance.

2.3. Learning Discipline

Learning discipline refers to students' ability to regulate themselves to consistently follow study rules, use time effectively, and comply with predetermined learning plans. According to Budiyanto et al. [25] and Janah et al. [26], learning discipline involves regularity, adherence to schedules, and seriousness in fulfilling academic responsibilities. In the context of mathematics learning, discipline is a key factor because the subject matter is hierarchical and requires continuous practice. Without discipline, students may struggle to understand basic concepts, leading to gaps in comprehending subsequent material.

Research findings have consistently highlighted the role of learning discipline in academic performance. Ssemugenyi [27] found that students with high levels of learning discipline achieved better mathematics outcomes compared to those with low discipline. Discipline fosters habits of regularity, such as routinely reviewing lessons, completing practice problems, and utilizing free time for study. This is consistent with Saleh et al. [28] findings, which indicate that learning discipline is strongly correlated with effective time management, ultimately enhancing students' concentration and material comprehension. Hence, learning discipline can be considered a fundamental foundation for academic success.

2.4. Mathematics Achievement

Mathematics achievement refers to students' attainment in understanding, mastering, and applying mathematical concepts, as measured through assessments such as tests or other evaluations [29]. Magdalena et al. [30] stated that achievement can be categorized into three domains: cognitive, affective, and psychomotor. In mathematics learning, the cognitive domain dominates, as students are required to understand concepts, conduct analysis, and apply formulas in problem-solving. However, mathematics achievement not only reflects cognitive understanding but also demonstrates the extent to which students develop critical, logical, and systematic thinking skills [31].

A number of studies emphasize that mathematics achievement is influenced by both internal and external factors. Internal factors include self-confidence, motivation, resilience, and learning discipline, while external factors involve teaching methods, learning environments, and family support. For example, Tarso

et al. [32] found that mathematics achievement can be improved through a combination of students' psychological factors and teachers' innovative learning strategies. Similarly, Efendi et al. [33] concluded that mathematics achievement is optimized when psychological aspects, such as self-confidence, are combined with a supportive learning environment. This indicates that mathematics achievement results from the synergy between personal student factors and external elements that facilitate the learning process

3. RESEARCH METHODOLOGY

This research method uses a quantitative approach with an ex post facto research design because the variables studied, namely self-confidence (X_1), academic resilience (X_2), learning discipline (X_3), and mathematics achievement (Y), have existed naturally in students without any manipulation. This research was conducted in July 2025. The population in this study were all students of SMK Muhammadiyah Mlati, while the research sample consisted of 150 students selected by simple random sampling to represent the population proportionally. The data collection instrument was a closed questionnaire with a 5-point Likert scale to measure psychological variables (X_1 , X_2 , and X_3), as well as documentation of learning outcome scores for variable Y . The instrument was first tested for validity and reliability, then analyzed using prerequisite tests including normality, multicollinearity, heteroscedasticity, and linearity tests [34]. Data analysis was carried out using multiple regression analysis using the SPSS-25 program to determine the simultaneous and partial effects of the three independent variables on mathematics achievement.

4. RESULTS AND DISCUSSION

4.1. Instrument Testing Results and Descriptive Analysis of Each Variable

Prior to conducting the research, a pilot test instrument was developed that included variables related to self-confidence (X_1), academic resilience (X_2), learning discipline (X_3), and mathematics achievement (Y). After the instrument was constructed and validated by experts, its validity and reliability were tested. The results of the pilot test are presented in the following table.

Table 1. Instrument test results

No	X_1		X_2		X_3		Y	
	t _{count}	Sig.	t _{count}	Sig.	t _{count}	Sig.	t _{count}	Sig.
1	0.334	0.577	0.564	0.555	0.396	0.384	0.708	0.594
2	0.485		0.475		0.583		0.684	
3	0.552		0.443		0.677		0.596	
4	0.665		0.381		0.359		0.763	
5	0.674		0.278		0.279		0.384	
6	0.418		0.553		0.466		0.465	
7	0.554		0.394		0.396		0.588	
8	0.384		0.544		0.489		0.363	
9	0.378		0.661		0.563		0.679	
10	0.643		0.546		0.306		0.728	

Based on the results of the instrument test analysis described above, it can be seen that the t_{value} for all items in each variable is greater than the t_{table} (1.976), and the Cronbach's Alpha significance value exceeds 0.05. Thus, it can be concluded that the research instrument used in this study is valid and reliable for measuring the intended variables. Next, a descriptive analysis was conducted to provide an overview of the data used in the study. This analysis aims to display the amount of data collected, along with a summary of the total score, average (mean), maximum value, and minimum value for each research variable. The results of the descriptive analysis of the collected research data are presented clearly in the following table.

Table 2. Description of each variable

Value	X_1	X_2	X_3	Y
Total score	12,235	11,885	11,930	12,340
Mean	81.57	79.23	79.53	82,27
Maximum	100	97.50	100	100
Minimum	55.00	40.00	60.00	60.00

Based on the calculation results, variable X_1 obtained a total score of 12,235 with an average value of 81.57, a maximum score of 100, and a minimum score of 55. Variable X_2 had a total score of 11,885 with an average of 79.23, a maximum score of 97.50, and a minimum score of 40. Meanwhile, variable X_3 obtained a total score of 11,930 with an average of 79.53, a maximum score of 100, and a minimum score

of 60. Meanwhile, variable Y obtained a total score of 12,340 with an average of 82.27, a maximum score of 100, and a minimum score of 60.

4.2. Prerequisite Analysis Testing

The initial step in the analysis was to test the data for normality using the Kolmogorov-Smirnov method. This test was chosen because it is suitable for samples of more than 50 respondents [35]. The goal was to ensure the questionnaire data were normally distributed, as a prerequisite for parametric statistical analysis [36]. The results of the normality test, which illustrate the data distribution, are presented in the following table.

Table 3. Results of normality test

One-Sample Kolmogorov-Smirnov Test		
Unstandardized Residual		
N	150	
Normal Parameters ^{a,b}	Mean	.0000000
	Std. Deviation	4.47675362
Most Extreme Differences	Absolute	.064
	Positive	.049
	Negative	-.064
Test Statistic	.064	
Asymp. Sig. (2-tailed)	.200 ^{c,d}	

Based on the table above, in the Kolmogorov-Smirnov column, the Asymp. Sig. (2-tailed) value is 0.200. Compared with the significance level of $\alpha = 0.005$, H_0 is accepted, indicating that the data is normally distributed. Therefore, it can be concluded that the values of all variables in this study come from a normal population. Next, a multicollinearity test is conducted to see whether there is a perfect relationship between the independent variables. The following are the results of the multicollinearity test.

Table 4. Results of multicollinearity test

		Coefficients^a					Collinearity Statistics	
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Tolerance	VIF
		B	Std. Error	Beta				
1	(Constant)	16.137	4.099		3.937	.000		
	X ₁	.394	.146	.277	2.700	.008	.510	1.961
	X ₂	-.176	.125	-.117	-1.409	.161	.775	1.290
	X ₃	.298	.101	.275	2.947	.004	.619	1.614

a. Dependent Variable: Y

Based on the analysis results, it can be concluded that there is no multicollinearity in the regression model. This is indicated by the tolerance values of $X_1 = 0.510 > 0.10$ and $VIF = 1.961 < 10$; $X_2 = 0.775 > 0.10$ and $VIF = 1.290 < 10$; and $X_3 = 0.619 > 0.10$ and $VIF = 1.614 < 10$. All of these values indicate the absence of multicollinearity. Next, a heteroscedasticity test was conducted using the Glejser technique to determine whether there were deviations from the classical assumption of homoscedasticity, namely differences in residual variances in each observation. The results of the heteroscedasticity test are presented below.

Table 5. Heteroscedasticity test results

		Coefficients^a				
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.368E-16	4.099		.000	1.000
	X ₁	.000	.146	.000	.000	1.000
	X ₂	.000	.125	.000	.000	1.000
	X ₃	.000	.101	.000	.000	1.000

a. Dependent Variable: Abs RES

Based on the analysis results, it can be concluded that there are no symptoms of heteroscedasticity in the regression model, indicated by the significance values of X_1 , X_2 , and X_3 of $1,000 > 0.05$. Next, a linearity test was conducted to ensure a linear relationship between the dependent and independent variables, because the regression model cannot be used if the linearity assumption is not met. The results of the linearity test are presented below.

Table 6. Results of linearity test results between self-confidence and mathematics achievement

ANOVA Table							
			Sum of Squares	df	Mean Square	F	Sig.
Y * X ₁	Between Groups	(Combined)	1098.179	15	73.212	3.724	.000
		Linearity	570.152	1	570.152	29.000	.000
		Deviation from Linearity	528.027	14	37.716	1.918	.230
	Within Groups		2634.514	134	19.661		
Total			3732.693	149			

Table 7. Results of linearity test between academic resilience and mathematics achievement

ANOVA Table							
			Sum of Squares	df	Mean Square	F	Sig.
Y * X ₂	Between Groups	(Combined)	537.061	16	33.566	1.397	.152
		Linearity	20.875	1	20.875	.869	.353
		Deviation from Linearity	516.185	15	34.412	1.432	.141
	Within Groups		3195.633	133	24.027		
Total			3732.693	149			

Table 8. Results of linearity test between learning discipline and mathematics achievement

ANOVA Table							
			Sum of Squares	df	Mean Square	F	Sig.
Y * X ₃	Between Groups	(Combined)	1270.333	16	79.396	4.288	.000
		Linearity	652.593	1	652.593	35.249	.000
		Deviation from Linearity	617.741	15	41.183	2.224	.078
	Within Groups		2462.360	133	18.514		
Total			3732.693	149			

Based on the analysis results, it can be concluded that there is a significant linear relationship between purchasing decisions and the three variables studied. In Table 6, the deviation from linearity significance value of $0.230 > 0.05$ indicates a significant linear relationship between self-confidence and mathematics achievement. In Table 7, the significance value of $0.141 > 0.05$ also indicates a significant linear relationship between academic resilience and mathematics achievement. Meanwhile, in Table 8, the significance value of $0.078 > 0.05$ indicates a significant linear relationship between learning discipline and mathematics achievement. Hypothesis testing in this study was conducted through multiple regression analysis to determine the effect of two or more independent variables (X) on the dependent variable (Y), which includes a simultaneous test (F test), a partial test (t-test), and a coefficient of determination. The simultaneous significance test with the F test in the ANOVA table shows a joint influence of the variables of self-confidence, academic resilience, learning discipline, and mathematics achievement. The results of the F test are presented below.

Table 9. F test results

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	800.620	3	266.873	13.289	.000 ^b
	Residual	2932.074	146	20.083		
	Total	3732.693	149			
a. Dependent Variable: Y						
b. Predictors: (Constant), X ₃ , X ₂ , X ₁						

The decision based on the table above shows that the F test results obtained a significance value of $0.000 < 0.05$ so that H_1 is accepted, meaning that self-confidence, academic resilience, and learning discipline simultaneously influence mathematics achievement. Next, a partial test (t-test) was conducted to determine the effect of each independent variable on the dependent variable at a significance level of 0.05, with the results of the SPSS-25 analysis displayed in the following table

Table 10. T-Test results

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	16.137	4.099		3.937	.000
	X ₁	.394	.146	.277	2.700	.008
	X ₂	-.176	.125	-.117	-1.409	.041
	X ₃	.298	.101	.275	2.947	.004

a. Dependent Variable: Y

Based on Table 10, partial hypothesis testing shows that: (1) the self-confidence variable has a significance value of $0.008 < 0.05$ so that H_1 is accepted and has an effect on mathematics achievement; (2) the academic resilience variable has a significance value of $0.041 < 0.05$ so that H_2 is accepted and has an effect on mathematics achievement; and (3) the learning discipline variable has a significance value of $0.004 < 0.05$ so that H_3 is accepted and has an effect on mathematics achievement. Next, a determination coefficient (R^2) test was conducted to determine how much variation in the independent variable (X) is able to explain changes in the dependent variable (Y), with the results of the SPSS-25 analysis displayed in the following model summary table.

Table 11. Coefficient test results

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.463 ^a	.214	.198	4.48137

a. Predictors: (Constant), X₃, X₂, X₁

Based on the table above, the R-Square value is the coefficient of determination that has been adjusted for the number and size of the sample to minimize bias if there are additional variables. In this study, the R-Square value of 0.214 indicates that the variables of store location, price sensitivity, and product promotion collectively can influence the purchasing decision variable by 21.4% holistically.

4.3. Discussion

The results of this study indicate that the instruments used to measure self-confidence, academic resilience, learning discipline, and mathematics achievement met the requirements of validity and reliability. This means that each item on the questionnaire was able to consistently measure the intended indicators, ensuring that the collected data can be scientifically justified. A valid and reliable instrument is a crucial foundation in quantitative research because without an accurate instrument, research findings may be biased or inaccurate. This finding is consistent with Rochmat et al. [37] and Anto [38], who stated that research instruments that pass validity and reliability testing form the basis for generating data that truly reflects actual conditions. Therefore, the data collected in this study provides a clear picture of students' psychological conditions and how these factors contribute to their mathematics achievement.

Based on the descriptive analysis, the average scores of self-confidence (81.57), academic resilience (79.23), learning discipline (79.53), and mathematics achievement (82.27) were all categorized as relatively high. This indicates that most students demonstrate positive tendencies in terms of psychological aspects as well as learning behavior. Such conditions naturally support their academic achievement, particularly in mathematics, which is often perceived as difficult. The findings also show that students with stronger psychological conditions tend to cope better with academic pressure and display greater enthusiasm when facing academic challenges. This result aligns with Harefa [39] and Hilmayr et al. [40], who found that students with higher levels of self-confidence and learning discipline achieved better mathematics outcomes than those with weaker psychological conditions. Thus, these psychological factors serve as

essential supports for academic success and as fundamental assets for students in dealing with increasingly complex learning demands.

The prerequisite tests for analysis showed that the data were normally distributed, free from multicollinearity, and not affected by heteroscedasticity. These conditions reinforce the reliability of the regression model used, thereby ensuring that the analysis results are trustworthy for drawing valid conclusions. In addition, the linearity test indicated a significant linear relationship between self-confidence, academic resilience, and learning discipline with mathematics achievement. In other words, the stronger the students' psychological conditions across these three aspects, the higher their potential to achieve good academic performance. These findings are consistent with Khalabuzar [41] and Alainati [42], who emphasized that self-confidence and academic resilience are closely linked to improved achievement, particularly in exact sciences that require consistency, perseverance, and critical thinking skills. This strengthens the view that internal student factors cannot be overlooked in the learning process.

The simultaneous test (F-test) revealed that self-confidence, academic resilience, and learning discipline collectively exert a significant influence on mathematics achievement. This suggests that the combination of these psychological factors plays an important role in explaining students' success in mastering mathematical concepts and skills. Although each variable independently contributes to learning, their combined effect is stronger when integrated within students. These results reinforce Mala et al. [43] and Afandi et al. [44] findings, which highlighted that affective aspects such as self-belief and resilience in overcoming difficulties are major contributors to academic achievement. Therefore, teaching should not only focus on cognitive aspects, such as delivering material and providing practice problems, but should also include the development of students' psychological aspects. Teachers can provide motivation, guidance, and foster discipline to help students optimize their achievement.

The partial test (t-test) indicated that each independent variable self-confidence, academic resilience, and learning discipline had a significant influence on mathematics achievement. Higher self-confidence enabled students to attempt problem-solving without fear of making mistakes, academic resilience supported persistence in overcoming challenges or failures, while learning discipline ensured consistency in completing tasks and preparing for evaluations. These findings are in line with Liu et al. [45] and Palah et al. [46], who reported that students with high learning discipline tended to achieve better mathematics scores because they managed their study time effectively. Therefore, it can be concluded that each variable provides a unique contribution, yet all three complement and reinforce one another in supporting optimal achievement.

The coefficient of determination (R^2) of 0.214 indicates that self-confidence, academic resilience, and learning discipline collectively explain 21.4% of the variance in mathematics achievement, while the remaining variance is influenced by other factors outside this study, such as teaching methods, learning environment, and family support. Although this value is not particularly large, it still demonstrates that students' psychological factors make a tangible contribution to their academic performance. This finding is consistent with Karakose et al. [47] and Courtney et al. [48], who argued that psychological factors are only one determinant of academic success, while external factors also play a significant role in shaping achievement. Therefore, this study highlights the importance of nurturing and developing students' psychological aspects through integrated learning strategies, while also involving external factors, to achieve more optimal and sustainable mathematics achievement.

5. CONCLUSION

The results of the regression analysis indicate that self-confidence, academic resilience, and learning discipline have a significant influence both simultaneously and partially on mathematics achievement, with a contribution of 21.4%, while the remainder is influenced by other factors outside this study. The implication of this finding is the need for more attention from teachers and schools to develop students' psychological aspects, especially in fostering self-confidence, training academic resilience, and cultivating learning discipline, so that mathematics academic achievement can be more optimal. Therefore, it is recommended that teachers not only focus on mastering cognitive material, but also integrate learning strategies that support students' affective aspects and self-regulation, for example through providing motivation, reflective practice, strengthening regular learning habits, and a fun and challenging learning approach

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