

THE EFFECT OF ADVERSITY QUOTIENT, LEARNING INTEREST AND PARENTAL ATTENTION ON STUDENTS' MATHEMATICS LEARNING OUTCOMES AT STATE SMP 10 PALU

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ABSTRAK

Penelitian ini bertujuan untuk menganalisis pengaruh *adversity quotient*, minat belajar, dan perhatian orang tua terhadap hasil belajar matematika siswa kelas VIII SMP Negeri 10 Palu. Penelitian ini menggunakan pendekatan kuantitatif dengan jenis penelitian korelasional. Populasi penelitian adalah siswa kelas VIII SMP Negeri 10 Palu, sampel menggunakan teknik *sampling jenuh*. Data dikumpulkan melalui angket untuk mengukur *adversity quotient*, minat belajar, dan perhatian orang tua, serta tes hasil belajar matematika. Analisis data dilakukan menggunakan analisis regresi linier sederhana dan regresi linier berganda setelah memenuhi uji prasyarat analisis dan uji asumsi klasik. Hasil penelitian menunjukkan bahwa: 1) *adversity quotient* berpengaruh positif dan signifikan terhadap hasil belajar matematika siswa dengan kontribusi sebesar 12.8%, 2) minat belajar berpengaruh positif dan signifikan terhadap hasil belajar matematika siswa dengan kontribusi sebesar 21.2%; (3) perhatian orang tua tidak berpengaruh signifikan terhadap hasil belajar matematika siswa (Sig. = 0.905 > 0.05) dengan kontribusi sebesar 0%; dan 4) *adversity quotient*, minat belajar, dan perhatian orang tua secara simultan berpengaruh positif dan signifikan terhadap hasil belajar matematika siswa ($F = 8.645$; Sig. = 0.000) dengan koefisien determinasi (R^2) sebesar 0.309, yang berarti ketiga variabel tersebut secara bersama-sama memberikan kontribusi sebesar 30.9% terhadap hasil belajar matematika siswa. Temuan penelitian menunjukkan bahwa faktor internal, yaitu *adversity quotient* dan minat belajar, lebih dominan memengaruhi hasil belajar matematika dibandingkan faktor eksternal berupa perhatian orang tua.

Kata kunci: *adversity quotient*, minat belajar, perhatian orang tua, hasil belajar

ABSTRACT

This study aims to analyze the effects of adversity quotient, interest in learning, and parental attention on the mathematics achievement of eighth-grade students at SMP Negeri 10 Palu. This study employs a quantitative approach using a correlational research design. The study population consists of eighth-grade students at SMP Negeri 10 Palu, and the sample was selected using a saturation sampling technique. Data were collected through questionnaires to measure adversity quotient, interest in learning, and parental attention, as well as a mathematics achievement test. Data analysis was performed using simple linear regression and multiple linear regression after meeting the prerequisite tests and classical assumption tests. The results of the study indicate that: 1) the adversity quotient has a positive and significant effect on students' mathematics achievement, contributing 12.8%; 2) learning interest has a positive and significant effect on students' mathematics achievement, contributing 21.2%; (3) parental attention does not have a significant effect on students' mathematics achievement (Sig. = 0.905 > 0.05) with a contribution of 0%; and 4) adversity quotient, interest in learning, and parental attention simultaneously have a positive and significant effect on students' mathematics achievement ($F = 8.645$; Sig. = 0.000) with a coefficient of determination (R^2) of 0.309, meaning that these three variables together contribute 30.9% to students' mathematics learning outcomes. Research findings

Keywords: adversity quotient, interest in learning, parental attention, mathematics learning outcomes.

INTRODUCTION

Education is a key factor in improving the quality of human resources. The success of an educational system is determined not only by the learning process that takes place in schools but also by students' ability to achieve optimal learning outcomes. According to Panjaitan et al. (2022), the educational process in schools is realized through teaching and learning activities aimed at developing students' knowledge, skills, and character. Therefore, education plays a strategic role in preparing a generation capable of keeping pace with advancements in science and technology.

One of the subjects that plays a crucial role in education is mathematics. Mathematics is not only studied as a collection of concepts and formulas but also serves to develop logical, critical, systematic, and analytical thinking skills. According to Sari and Himmi (2019), mathematics has grown and evolved as a human activity that shapes a person's way of thinking, making it inseparable from daily life. Nevertheless, many students still view mathematics as a difficult, boring, and anxiety-inducing subject. This situation affects students' motivation to learn and their achievement in mathematics.

Learning outcomes are indicators of students' success in achieving learning objectives. According to Nainggolan et al. (2022), learning outcomes are the competencies students acquire after participating in the learning process, while Yandi et al. (2023) explain that mathematics learning outcomes are the competencies students acquire after completing learning activities, as demonstrated by their grades. The success of learning outcomes is influenced by various factors, both internal and external. Dewi (2020) states that learning outcomes are influenced by internal and external factors. Internal factors include the ability to cope with difficulties, motivation, interest, talent, and readiness to learn, while external factors include the family, school, and community environments.

One internal factor believed to influence learning outcomes is the adversity quotient. The concept of the adversity quotient was first introduced by Stoltz (1997) as a measure of an individual's ability to cope with difficulties. Stoltz (2002) explains that the adversity quotient is an individual's ability to persevere, exercise self-control, and turn obstacles into opportunities for success. In line with this, Refizal and Nastiti (2021) state that the

adversity quotient is a person's perseverance in facing various obstacles until they find a solution to the problems they face. According to Kusnanda et al. (2023), the adversity quotient not only indicates the ability to persevere in difficult situations but also reflects a person's fighting spirit and psychological flexibility in dealing with pressure. Himmah and Ayun (2024) also state that students with a high adversity quotient generally possess strong internal motivation, which can enhance their learning outcomes. Therefore, the higher a student's adversity quotient, the greater their chances of achieving better mathematics learning outcomes.

In addition to the adversity quotient, interest in learning is also an internal factor that determines students' academic success. Dukalang and Sudirman (2024) state that interest is an attraction to an object that creates a drive to study and explore it further. Slameto (2010) explains that interest has a significant influence on the learning process because students will study diligently if the material they are learning aligns with their interests. This view is supported by Prastika (2020), who states that students with a strong interest in learning tend to be diligent, persistent, enthusiastic, dedicated, and capable of overcoming various challenges in learning. Furthermore, Setiawan et al. (2022) suggest that low student interest in learning can occur if teachers focus more on delivering content than on student engagement, resulting in less engaging instruction. Therefore, a high level of interest in learning will encourage active student engagement during the learning process and lead to improved mathematics learning outcomes.

Another external factor that influences learning outcomes is parental attention. Idris and Jamali (2023) explain that attention is a psychological phenomenon manifested through concern for others. In the context of education, parents are the primary educators, providing motivation, guidance, and supervision for their children's learning activities. According to Slameto (2010), parental attention can be demonstrated through providing guidance, supervision, rewards and punishments, meeting learning needs, creating a conducive learning environment, and caring for the child's health. This view is supported by Sianipar et al. (2022), who state that parental attention has a positive and significant impact on students' mathematics learning outcomes. Afni and Jumahir (2020)

also emphasize that parental involvement in supporting the learning process at home is a crucial form of support that can enhance students' academic achievement.

Based on observations and interviews conducted by the researcher on February 25, 2025, at Palu Public Junior High School No. 10, it was found that the eighth-grade students' mathematics achievement remains relatively low. This is evidenced by the large number of students who still score below the Minimum Graduation Criteria (KKM) of 75. Furthermore, several issues were identified during the learning process, including students giving up easily when faced with difficult math problems, viewing math as a difficult and boring subject, lacking interest in learning, being unable to manage their study time independently, and low parental involvement in supporting the learning process at home.

Previous research findings indicate that adversity quotient, interest in learning, and parental attention are associated with student academic achievement. However, most previous studies have tended to examine these variables separately or have yielded differing results depending on student characteristics and the research context. For example, the study by Muhayana et al. (2021) demonstrated the influence of the adversity quotient on mathematics learning outcomes, whereas the studies by Prastika (2020) and Usatnoby et al. (2020) revealed a positive relationship between learning interest and mathematics learning outcomes. On the other hand, studies by Sianipar et al. (2022) and Sinambela et al. (2023) indicate that parental attention influences mathematics learning outcomes. These differing results suggest that the influence of internal and external factors on learning outcomes is not necessarily the same in every educational context.

Based on previous research, there are still conflicting findings regarding the factors that influence students' mathematics learning outcomes. Therefore, this study simultaneously examines three factors representing students' internal and external dimensions namely, adversity quotient and interest in learning as internal factors, and parental attention as an external factor among eighth-grade students at SMP Negeri 10 Palu. This study not only examines whether these three variables influence mathematics

learning outcomes but also compares the relative strength of each factor's contribution. Thus, this study provides a contextual contribution by identifying which factors are more dominant in explaining students' mathematics learning outcomes within the school environment under study. This contribution is significant because the research results indicate that students' internal factors particularly learning interest and adversity quotient have a more pronounced influence than parental attention.

Furthermore, this study presents findings that differ from some previous research on parental attention. In this study, parental attention did not show a significant partial effect on mathematics learning outcomes. These findings suggest that the role of a given factor in learning outcomes may vary depending on student characteristics, family environment, and school context. Therefore, this study is expected to enrich the field of mathematics education by highlighting that improvements in learning outcomes are not solely related to external support but are also closely linked to students' psychological readiness and internal engagement in the learning process.

Based on the above discussion, this study aims to analyze the effects of adversity quotient, interest in learning, and parental attention on the mathematics achievement of eighth-grade students at SMP Negeri 10 Palu, both partially and simultaneously, as well as to identify the most dominant factor in relation to students' mathematics achievement.

METHOD

Research Design

This study employs a quantitative approach using a correlational design. According to Sugiyono (2013), quantitative research is a research method grounded in the philosophy of positivism that examines a specific population or sample using research instruments and statistical data analysis to test predetermined hypotheses. Correlational research aims to determine the relationship and the magnitude of the influence of one or more independent variables on a dependent variable. In line with Sukmadinata's view (as cited in Rifal, 2023), correlational research is used to determine the relationship between variables, which is expressed through a correlation coefficient and statistical significance.

This study aims to analyze the effects of adversity quotient (X_1), interest in learning (X_2), and parental attention (X_3) on the mathematics achievement (Y) of eighth-grade students at SMP Negeri 10 Palu. Data analysis was conducted using simple linear regression to determine the effect of each independent variable on mathematics achievement, and multiple linear regression to determine the simultaneous effect of these three independent variables on students' mathematics achievement.

Population and Sample

According to Sugiyono (2019), a population is a general group consisting of objects or subjects with specific characteristics that are determined by the researcher for study, from which conclusions are then drawn. The population in this study consists of all 62 eighth-grade students at SMP Negeri 10 Palu for the 2025–2026 school year, comprising 31 students in Class VIII A, 15 students in Class VIII B, and 16 students in Class VIII C.

A sample is a subset of the population with specific characteristics that serves as the source of research data. The sampling technique used is saturation sampling. According to Sugiyono (2019), saturation sampling is a sampling technique in which the entire population is used as the sample. This technique was chosen because the population size is relatively small, so the entire population was used as the study's respondents. Therefore, the sample size for this study is 62 students.

Research Instruments

A research instrument is a tool used to collect research data. According to Sugiyono (2013), a research instrument is a tool used to measure observed natural or social phenomena. The instruments used in this study consist of a questionnaire and a test.

The questionnaire was used to measure the variables of adversity quotient, interest in learning, and parental involvement. The questionnaires were constructed using a Likert scale with four response options: Strongly Agree (S), Agree (S), Disagree (DS), and Strongly Disagree (STS). The adversity quotient instrument consists of 20 items, the learning interest instrument consists of 26 items, and the parental involvement instrument consists of 25 items.

The mathematics achievement instrument consists of a multiple-choice test designed based on the Integers and Algebra curriculum for eighth-grade junior high school students. Before being used in the study, all instruments underwent content validity, construct validity, empirical validity, and reliability testing to ensure their suitability for use as research data collection tools.

Research Procedures and Analysis Data

This study was conducted in several stages. The first stage was preparation, which included developing the research proposal, developing the research instruments, having the instruments validated by experts, conducting a pilot study, and then analyzing validity and reliability.

The second stage was the implementation of the study. In this stage, the researcher distributed questionnaires on adversity quotient, interest in learning, and parental attention to all respondents. After all questionnaires were collected, students were given a mathematics achievement test to obtain data on the dependent variable.

The third stage was data analysis. The data obtained were analyzed using descriptive statistics to describe the characteristics of each variable. Next, prerequisite tests were conducted, including tests for normality, linearity, multicollinearity, heteroscedasticity, and autocorrelation. Hypothesis testing was performed using simple linear regression analysis, the t-test, multiple linear regression analysis, the F-test, and the coefficient of determination (R^2) at a significance level of 5% ($\alpha = 0.05$).

RESULTS AND DISCUSSION

Research Result

Prior to data collection, the validity and reliability of the instruments were tested. The test results showed that the Adversity Quotient instrument had 16 valid items with a Cronbach's Alpha value of 0.769, the learning interest instrument had 21 valid items with a Cronbach's Alpha value of 0.801, the parental attention instrument had 18 valid items with a Cronbach's Alpha value of 0.843, and the mathematics achievement test had 16 valid items with a Cronbach's Alpha value of 0.922. Thus, all instruments were deemed suitable for use in the study.

Research Data Description

Table 1. Descriptive Statistics of Research Variables

Variables	N	Minimum	Maximum	Mean	Standard Deviation
Adversity Quotient	62	21	64	45.21	11.09
Learning Interest	62	22	84	52.47	17.19
Parental Attention	62	20	76	48.61	16.24
Mathematics Learning Outcomes	62	44	100	70.37	16.11

Table 1 shows that the average scores were 45.21 for adversity quotient, 52.47 for interest in learning, 48.61 for parental attention, and 70.37 for mathematics achievement. These average scores indicate that most students fall into the moderate-to-good range for adversity quotient, interest in learning, and parental attention.

Adversity Quotient Category

Table 2. Frequency Distribution of Adversity Quotient

Categories	Frequency	Percentage
Very Poor	7	11.29%
Poor	9	14.52%
Fairly Good	17	27.42%
Good	19	30.65%
Very Good	10	16.13%

Table 2 shows that the majority of students are in the good category, namely 19 students (30.65%), while only 11.29% are in the very poor category.

Learning Interest Categories

Table 3. Frequency Distribution of Learning Interests

Categories	Frequency	Percentage
Very Poor	10	16.13%
Poor	19	30.65%
Fairly Good	12	19.35%
Good	11	17.74%
Very Good	10	16.13%

Based on Table 3, the most common category is less good, namely 30.65%.

Parental Attention Categories

Table 4. Frequency Distribution of Parental Attention

Categories	Frekuensi	Persentase
Very Poor	12	19.35%
Poor	13	20.97%
Fairly Good	12	19.35%
Good	15	24.19%
Very Good	10	16.13%

Based on Table 4, it can be seen that most of the parents' attention is in the good category (24.19%).

Mathematics Learning Outcomes Categories

Table 5. Frequency Distribution of Mathematics Learning Outcomes

Category	Frequency	Percentage
Very Poor	17	27.42%
Poor	11	17.74%
Fairly Good	17	27.42%
Good	13	20.97%

Category	Frequency	Percentage
Very Good	4	6.45%

Based on Table 5, it can be seen that the majority of mathematics learning outcomes are in the fairly good and very poor categories, respectively at 27.42%.

Analysis Prerequisite Test

Normality Test

A normality test was conducted to determine whether the research data are normally distributed. The test used the one-sample Kolmogorov-Smirnov test. The results of the normality test are presented in Table 6.

Table 6. Normality Test Results

Statistik	Nilai
N	62
Test Statistic	0.070
Asymp. Sig. (2-tailed)	0.200

Based on Table 9, the Asymp. Sig. (2-tailed) value is 0.200, which is greater than 0.05. Thus, it can be concluded that the research data are normally distributed, thereby satisfying one of the assumptions of regression analysis.

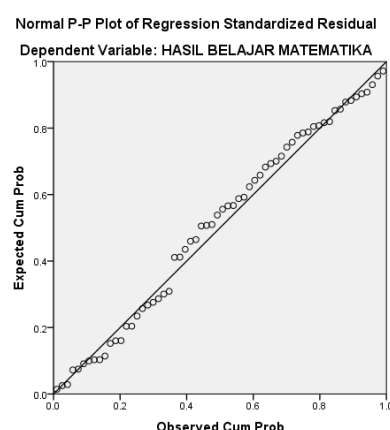


Figure 1. Normal P-P Plot of Regression Standardized Residual

In addition, the results of the Normal P-P Plot show that the residual points are scattered around the diagonal line and follow its direction, thereby confirming that the data satisfy the assumption of normality.

Linearity Test

A linearity test was conducted to determine whether there is a linear relationship between each independent variable and the dependent variable. The test was performed using the Test for Linearity. The results of the linearity test are presented in Table 7.

Table 7. Linearity Test Results

Variable Relationship	Sig. Deviation From a linearity	Information
Adversity Quotient (X_1) $\rightarrow$ Learning Outcomes (Y)	0.430	Linear
Learning Interest (X_2) $\rightarrow$ Learning Outcomes (Y)	0.775	Linear
Parental Attention (X_3) $\rightarrow$ Learning Outcomes	0.788	Linear

Based on Table 7, the significance values for the “Deviation from Linearity” test show a correlation coefficient of 0.430 between adversity quotient and academic achievement, 0.775 between learning interest and academic achievement, and 0.788 between parental attention and academic achievement. All significance values are greater than 0.05, so it can be concluded that the relationship between each independent variable and mathematics achievement is linear. Thus, the data meet the assumption of linearity and are suitable for use in multiple linear regression analysis.

Classical Assumption Test

Before conducting the multiple linear regression analysis, classical assumption tests were first performed, including tests for multicollinearity, heteroscedasticity, and autocorrelation. The test results are presented as follows.

Multicollinearity Test

The multicollinearity test aims to determine whether or not there is a correlation among the independent variables in the regression model. The test results are presented in Table 8.

Table 8. Multicollinearity Test Results

Variables	Tolerance	VIF	Description
Adversity Quotient	0.961	1.041	No multicollinearity occurs
Learning Interest	0.935	1.070	No multicollinearity occurs
Parental Attention	0.951	1.051	No multicollinearity occurs

Based on Table 8, all variables have Tolerance values > 0.10 and VIF values < 10 ; therefore, it can be concluded that the regression model does not exhibit multicollinearity. This indicates that the independent variables are not strongly correlated with one another and are thus suitable for use in regression analysis.

Heteroscedasticity Test

A heteroscedasticity test was conducted to determine whether there was unequal variance in the residuals of the regression model. The results of the test, using the Glejser test, are presented in Table 9.

Table 9. Results of Heteroscedasticity Test

Variable	Sig.	description
Adversity Quotient	0.572	There is no Heteroscedasticity
Interest in Learning	0.528	There is no Heteroscedasticity
Parental Attention	0.768	There is no Heteroscedasticity

Based on Table 9, the significance value of each variable is greater than 0.05, namely the adversity quotient of 0.572, learning interest of 0.528, and parental attention of 0.768. Thus, it can be concluded that the regression model does not experience symptoms of heteroscedasticity.

Autocorrelation Test

The autocorrelation test was conducted using the Runs Test to determine the presence or absence of residual correlation in the regression model. The test results are presented in Table 10.

Table 10. Autocorrelation Test Results

Test	Z	Asymp. Sig. (2-tailed)	Description
Runs Test	0.256	0.798	There is no autocorrelation

Based on table 10, the asymp. Sig. (2-tailed) value is 0.798, which is greater than 0.05. Therefore, it can be concluded that the regression model does not experience autocorrelation symptoms, thus fulfilling one of the assumptions in multiple linear regression analysis.

HYPOTHESIS TESTING

Partial Test (t-Test)

Table 11. t-Test Results For X_1 Against Y

Model	Unstandardized		Standardized	t	Sig.
	Coefficients		Coefficients		
	B	Std. Error	Beta		
(Constant)	46.880	8.151		5.752	0.000
<i>Adversity Quotient</i>	0.520	0.175	0.358	2.966	0.004

Based on Table 4.11, the calculated t value is 2,966. The t table value is obtained in the following way.

$$\begin{aligned}
 t_{\text{Table}} &= t(k; n - k - 1) \\
 &= t(1; 62 - 1 - 1) \\
 &= t(1; 60) \\
 &= 2.000
 \end{aligned}$$

The results above show that t count (2,966) > t table (2.000) and the Sig. value is obtained. $\rightarrow (0.004) < 0.05$. Based on this, it indicates that there is a significant influence between the adversity quotient and students' mathematics learning outcomes.

Table 12. t-Test Results X_2 Against Y

Model	Unstandardized		Standardized	t	Sig.
	Coefficients		Coefficients		
	B	Std. Error	Beta		
(Constant)	47.749	5.924		8.060	0.000
Minat Belajar	0.431	0.107	0.460	4.015	0.000

Based on Table 12, the calculated t value is 4,015. The t table value is obtained in the following way.

$$\begin{aligned}
 t_{\text{Table}} &= t(k; n - k - 1) \\
 &= t(1; 62 - 1 - 1) \\
 &= t(1; 60) \\
 &= 2.000
 \end{aligned}$$

The results above show that the calculated t (4,015) > t table (2.000) and the Sig. value obtained is -(0.000) < 0.05. Based on this, it indicates that there is a significant influence between learning interest and students' mathematics learning outcomes.

Table 13 t-Test Results X_3 Against Y

Model	Unstandardized		Standardized	t	Sig.
	Coefficients		Coefficients		
	B	Std. Error	Beta		
(Constant)	69.628	6.557		10.619	0.000
Perhatian Orang Tua	0.015	0.128	0.015	0.119	0.905

Based on Table 13, the calculated t value is 0,119. The t table value is obtained in the following way.

$$\begin{aligned}
 t_{\text{Table}} &= t(k; n - k - 1) \\
 &= t(1; 62 - 1 - 1) \\
 &= t(1; 60) \\
 &= 2.000
 \end{aligned}$$

The results above show that t count (0.119) < t table (2.000) and the Sig. value is obtained. --(0.905) > 0.05. Based on these results, H_0 is accepted and H_1 is rejected, so it

can be concluded that parental attention does not have a significant effect on students' mathematics learning outcomes.

Simultaneous Test (F Test)

Table 14 F-Test Results for X_1 , X_2 dan X_3 Against Y

Model	Sum of Squares	df	Rerata Kuadrat	F	Sig.
Regression	4891.582	3	1630.527	8.645	0.000 ^b
Residual	10938.886	58	188.601		
Total	15830.468	61			

Based on Table 14, the calculated F value is 8.645. The F table value is obtained in the following way.

$$\begin{aligned}
 F_{\text{Table}} &= F(k; n - k) \\
 &= F(3; 62 - 3) \\
 &= F(3; 59) \\
 &= 2.761
 \end{aligned}$$

The results above show that F count (8.645) > F table (2.761) and the Sig. value is obtained. $-(0.000) < 0.05$. Based on this, it indicates that there is a significant influence between adversity quotient, learning interest and parental attention on students' mathematics learning outcomes.

Multiple Linear Regression Analysis

Table 15 Multiple Regression Results X_1 , X_2 dan X_3 Against Y

Model	Unstandardized		Standardized	t	Sig.
	coefficient		coefficient		
	B	Std. Error	Beta		
(Konstan)	22.681	11.035		2.055	0.044
Adversity Quotient	0.432	0.162	0.297	2.669	0.010
Interest in Learning	0.408	0.106	0.436	3.861	0.000
Parental Attention	0.139	0.111	0.140	1.250	0.216

Based on the regression results in Table 15, the Constant value (a) is 22.681, while the adversity quotient regression coefficient value (b1) is 0.432, the regression coefficient value for interest in learning (b2) is 0.408 and the coefficient value for parental attention (b3) is 1.139, so the regression equation is as follows.

$$Y = a + b_1X_1 + b_2X_2$$

$$Y = 22.681 + 0.432X_1 + 0.408X_2 + 1.139X_3$$

The regression coefficients have positive values, so it can be concluded that the direction of the influence of the independent variables adversity quotient (X_1), interest in learning (X_2), and parental attention (X_3) on mathematics learning outcomes (Y) is positive.

The coefficient of determination of X_1 Against Y

The coefficient of determination (r^2) aims to see how much contribution the variable X_1 makes to the variable Y. The results of the r^2 test can be seen in the table below.

Tabel 16 Results of the r^2 Test for X_1 Against Y

Model	R	R Squared	R Squared Standard	Standard Error of Estimate
1	0.358 ^a	0.128	0.113	15.169

Based on Table 16, the coefficient of determination (r^2) is 0.128. This concludes that the adversity quotient has a 12.8% effect on students' mathematics learning outcomes. All data on the coefficient of determination of X_1 against Y are obtained from the data in Appendix 7 and Appendix 8.

The coefficient of determination of X_2 Against Y

The coefficient of determination (r^2) aims to see how much contribution the variable X_2 makes to the variable Y. The results of the r^2 test can be seen in the table below.

Table 17 Results of the r^2 Test for X_2 Against Y

Model	R	R Kuadrat	Adjusted R Squared	Standard Error of Estimate
1	0.460 ^a	0.212	0.199	14.421

Based on Table 17, the coefficient of determination (r^2) is 0.212. This concludes that the influence of learning interest on students' mathematics learning outcomes is 21.2%.

Koefisien Determinasi X_3 terhadap Y

The coefficient of determination (r^2) aims to see how much contribution the variable X_3 makes to the variable Y . The results of the r^2 test can be seen in the table below.

Tabel 18 Results of the r^2 Test for X_3 Against Y

Model	R	R Kuadrat	Adjusted R Squared	Standard Error of Estimate
1	0.015 ^a	0.000	-0.016	16.241

Based on Table 18, the coefficient of determination (r^2) is 0.000. This can be concluded that the influence of parental attention on students' mathematics learning outcomes is 0%.

Simultaneous Determination Coefficient

The coefficient of determination (r^2) aims to see how much contribution all variables, namely X_1 , X_2 and X_3 make to variable Y . The results of the r^2 test can be seen in Table 19 below.

Tabel 19. Results of the r^2 Test for X_1 , X_2 and X_3 Against Y

Model	R	R Kuadrat	Adjusted R Squared	Standard Error of Estimate
1	0.556 ^a	0.309	0.273	13.73323

Based on Table 19, the coefficient of determination (r^2) is 0.309. This can be concluded that the influence of adversity quotient, learning interest, and parental attention on students' mathematics learning outcomes is 30.9%.

DISCUSSION

The Effect of Adversity Quotient on Mathematics Learning Outcomes of Eighth-Grade Students at SMP Negeri 10 Palu

Based on data from a study conducted at SMP Negeri 10 Palu, which has been processed and analyzed, the results show that the effect of adversity quotient on students' mathematics achievement is positive. At a 5% significance level, the t-value (2.966) is greater than the critical t-value (2.000), and the Sig. value (0.004) < 0.05. Therefore, H_0 in the first hypothesis is rejected, leading to the conclusion that the adversity quotient has a significant effect on the mathematics learning outcomes of eighth-grade students at SMP Negeri 10 Palu. The coefficient of determination for the research data was 0.128, indicating that the adversity quotient accounts for 12.8% of the variation in the mathematics achievement of eighth-grade students at SMP Negeri 10 Palu.

The results of this study indicate that the better students' ability to cope with difficulties, the greater their tendency to achieve better learning outcomes in mathematics. Theoretically, this finding aligns with Stoltz's (1997) concept, which views the adversity quotient as an individual's ability to face and overcome difficulties and to transform obstacles into opportunities for success.

The influence of the adversity quotient on mathematics achievement can be explained by the nature of mathematics learning, which demands perseverance and problem-solving skills. Students cannot always solve a math problem on the first try. When faced with a difficult problem, students need to persist, identify their mistakes, try different strategies, and seek solutions. Students with a higher adversity quotient are less likely to give up easily when they experience failure, giving them a greater chance to remain engaged in the problem-solving process.

Konsep adversity quotient yang dikemukakan Stoltz juga berkaitan dengan kemampuan mengendalikan respons terhadap kesulitan, memahami sumber masalah, mempertahankan jangkauan masalah agar tidak mengganggu aspek kehidupan lainnya,

serta memandang kesulitan sebagai sesuatu yang dapat berlangsung sementara. Dalam konteks pembelajaran matematika, kemampuan tersebut dapat membantu siswa tetap fokus ketika menghadapi materi atau soal yang dianggap sulit. Dengan demikian, adversity quotient tidak hanya berkaitan dengan ketahanan psikologis, tetapi juga dapat mendukung perilaku belajar yang diperlukan dalam pembelajaran matematika.

Sejalan dengan penelitian yang dilakukan Muhayana, dkk. (2021) menunjukkan bahwa terdapat pengaruh variabel AQ terhadap variabel hasil belajar matematika siswa dengan persamaan $Y = -20,593 + 0,577X$ dan pengaruh AQ terhadap hasil belajar matematika sebesar 68 %.

The Influence of Learning Interest on Mathematics Learning Outcomes of Eighth-Grade Students at SMP Negeri 10 Palu

Based on data from a study conducted at SMP Negeri 10 Palu, which has been processed and analyzed, the results show that the direction of the effect of students' interest in learning on their mathematics achievement is positive. At a 5% significance level, the calculated t-value (4.015) is greater than the critical t-value (2.000), and the Sig. value is $-(0.000) < 0.05$. Therefore, H_0 in the first hypothesis is rejected, leading to the conclusion that learning interest has a significant effect on the mathematics achievement of eighth-grade students at SMP Negeri 10 Palu. The coefficient of determination for the research data, tested using SPSS Version 25, was 0.212, indicating that learning interest accounts for 21.2% of the variation in the mathematics achievement of eighth-grade students at SMP Negeri 10 Palu. This finding suggests that students' internal engagement in mathematics learning activities is a significant factor in their academic achievement within the studied group.

Theoretically, these results are consistent with Slameto's (2010) view that interest is one of the psychological factors that influence the learning process. Students who are interested in a subject tend to pay closer attention, feel motivated to learn it, and are more willing to engage in learning activities. In mathematics education, such engagement is crucial because conceptual understanding is gained not only by listening to the teacher's explanations but also through practice, problem-solving, and experimenting with various strategies.

Interest in learning can have a more direct impact on learning outcomes because it is directly related to student behavior during the learning process. When students are interested in mathematics, their attention to the teacher's explanations may increase, they are more motivated to complete exercises, and they are more willing to seek understanding when facing difficulties. Conversely, low interest can cause students to pay less attention, be less active in class, and have less motivation to complete learning tasks.

In line with the study conducted by Usatnoby et al. (2020), the test results show that the simple regression equation for X_1 and Y is as follows: $Y = 9.682 + 0.831X_1$. The constant is 9.682, meaning that if learning interest (X_1) = 0, then the mathematics achievement ($Y = 9.682$). The regression coefficient for learning interest (X_1) is 0.831. A positive regression coefficient indicates a positive relationship between learning interest and mathematics achievement; the higher the learning interest, the higher the mathematics achievement.

The Influence of Parental Attention on Mathematics Learning Outcomes of Class VIII Students at SMP Negeri 10 Palu

Based on the results of a study conducted at SMP Negeri 10 Palu, following data processing and analysis, it was found that parental attention has a positive effect on students' mathematics achievement. However, based on the results of the partial hypothesis test (t-test) at a 5% significance level, the calculated t-value was $0.119 <$ the critical t-value of 2.000, and the p-value was $0.905 > 0.05$. Based on these results, H_0 is accepted and H_1 is rejected; therefore, it can be concluded that parental attention does not have a significant effect on the mathematics learning outcomes of eighth-grade students at SMP Negeri 10 Palu.

Based on the results of the coefficient of determination test, an R-squared value of 0.000 was obtained, which means that parental attention contributes 0% to students' mathematics learning outcomes. This indicates that changes in students' mathematics learning outcomes in this study cannot be significantly explained by the variable of parental attention. In other words, the level of attention given by parents has not been able to exert a significant influence on either the improvement or decline in students' mathematics learning outcomes.

The lack of influence of parental attention on students' mathematics achievement at SMP Negeri 10 Palu may be due to the fact that parental involvement in the students' learning process is not yet optimal. Based on information obtained from teachers at the school, there are still some parents who are not very active in monitoring their children's learning progress—for example, they do not closely monitor students' learning outcomes, do not provide sufficient guidance during learning activities, and are not sufficiently involved in efforts to improve their children's academic achievement. These conditions mean that parental attention, as one of the external factors in learning, has not been able to exert a significant influence on students' mathematics learning outcomes.

In addition, at the junior high school level, students begin to face greater demands for independence in managing their learning activities. Therefore, parental support can serve as a contributing factor, but academic success is also greatly influenced by how students themselves manage their learning process. In mathematics learning—which demands practice, perseverance, problem-solving, and active engagement—students' internal factors may be more closely tied to their daily learning process than the external support provided at home.

The results of this study do not align with the research conducted by Sianipar et al. (2022), which showed that parental attention has an influence on students' mathematics learning outcomes with a coefficient of determination of 0.760, or 76.0%. Furthermore, a study by Sinambela et al. (2023) also demonstrated the influence of parental attention on students' mathematics learning outcomes, with a coefficient of determination of 0.528, or 52.8%. These differences in research findings may stem from variations in respondent characteristics, family environment conditions, levels of parental involvement, and the dominant factors influencing students' learning outcomes in each respective study.

Based on the results of this study, it can be concluded that parental attention is not the primary factor influencing the mathematics achievement of eighth-grade students at SMP Negeri 10 Palu. Although parental attention still plays a role in supporting students' learning process, this study found that students' internal factors—particularly their adversity quotient and interest in learning—had a greater influence on their mathematics achievement.

The Influence of Adversity Quotient, Learning Interest and Parental Attention on Mathematics Learning Outcomes of Class VIII Students of SMP Negeri 10 Palu

Based on the results of a study conducted at SMP Negeri 10 Palu, following data processing and analysis, it was found that the adversity quotient, interest in learning, and parental attention have a positive influence on students' mathematics achievement. Based on the results of the simultaneous hypothesis testing (F-test) at a 5% significance level, the calculated F-value was $8.645 >$ the table F-value of 2.761, and the significance value was $0.000 < 0.05$. Based on these results, H_0 is rejected and H_1 is accepted; thus, it can be concluded that the adversity quotient, interest in learning, and parental attention collectively have a significant effect on the mathematics achievement of eighth-grade students at SMP Negeri 10 Palu.

The results of the coefficient of determination test showed an R-squared value of 0.309, meaning that the variables adversity quotient, interest in learning, and parental attention collectively contribute 30.9% to students' mathematics learning outcomes. This indicates that the three variables studied play a role in students' mathematics learning outcomes, although there are still other factors that influence students' academic achievement.

The simultaneous influence of adversity quotient, interest in learning, and parental attention on mathematics learning outcomes indicates that students' academic success is not determined by a single factor alone but is the result of the interaction between internal and external factors. The internal factors in this study—adversity quotient and interest in learning—play a role in shaping students' ability to cope with difficulties and in encouraging their engagement in the mathematics learning process. Students with a high adversity quotient tend to persevere when facing difficulties in understanding mathematical concepts, do not give up easily when encountering obstacles, and strive to find solutions to the problems presented.

In addition, interest in learning is also a factor that supports students' achievement in mathematics. Students with a high interest in learning pay closer attention in class, are curious about the material being studied, are active in learning activities, and are motivated to achieve better learning outcomes. Therefore, the higher a student's

adversity quotient and interest in learning, the greater the likelihood that the student will achieve optimal learning outcomes in mathematics.

Meanwhile, parental attention, as an external factor, also plays a role in supporting students' learning process. Parental support in the form of motivation, meeting learning needs, and supervising learning activities can help students achieve better learning outcomes. However, based on the results of the partial tests in this study, parental attention did not show a significant individual effect on students' mathematics learning outcomes. This indicates that the contribution of parental attention in this research model is not as substantial as the influence of students' internal factors, namely adversity quotient and interest in learning.

The presence of a significant simultaneous effect—even though one variable was not significant in a partial test—may occur because the F-test examines the combined effect of all three variables on mathematics learning outcomes, whereas the t-test examines the effect of each variable after controlling for the other variables. Thus, the significance of the simultaneous effect in this study is largely influenced by the contributions of the adversity quotient and interest in learning, which have a stronger relationship with students' mathematics learning outcomes.

Based on the results of this study, it can be concluded that adversity quotient, interest in learning, and parental attention collectively have a significant effect on the mathematics achievement of eighth-grade students at SMP Negeri 10 Palu. However, the more dominant factors in supporting improvements in mathematics achievement in this study are the students' internal factors—namely, adversity quotient and interest in learning—while parental attention has not yet shown a significant effect when considered in isolation.

CONCLUSION

Based on the results of the research and data analysis conducted, the conclusions of this study are as follows.

1. In this study, the adversity quotient had a significant and positive effect on the mathematics learning outcomes of eighth-grade students at SMP Negeri 10 Palu, as indicated by the calculated t-value ($2.966 > \text{critical t-value } (2.000)$) and a significance

- level of $0.004 < 0.05$. The adversity quotient in this study had a significant positive effect on students' mathematics learning outcomes, contributing 12.8%.
2. In this study, interest in learning had a significant and positive effect on the mathematics learning outcomes of eighth-grade students at SMP Negeri 10 Palu, as indicated by the calculated t-value ($4.015 > \text{critical t-value } (2.000)$) and a significance level of $\text{Sig. } -(0.000) < 0.05$. In this study, learning interest had a significant positive effect on students' mathematics achievement, contributing 21.2%.
 3. Parental attention in this study did not have a significant effect on the mathematics achievement of eighth-grade students at SMP Negeri 10 Palu. This was demonstrated by the results of the t-test, which yielded a calculated t-value ($0.119 < \text{critical t-value } (2.000)$) and a significance level (Sig.) of $0.905 > 0.05$. Based on the coefficient of determination, parental attention contributed 0% to students' mathematics achievement. This indicates that parental attention was not a dominant factor influencing students' mathematics achievement in this study. Nevertheless, parental attention still plays a supporting role in the students' learning process.
 4. Adversity quotient, interest in learning, and parental attention collectively have a significant and positive effect on the mathematics achievement of eighth-grade students at SMP Negeri 10 Palu. This is demonstrated by the results of the F-test, which yielded an F-calculated value ($8.645 > \text{F-table value } (2.000)$) and a significance value of $\text{Sig. } -(0.044) < 0.05$. The contribution of these three variables to students' mathematics achievement, based on the coefficient of determination, was 30.9%. Based on the contribution of each variable, it can be concluded that students' mathematics learning outcomes in this study are more heavily influenced by internal factors—namely, adversity quotient and interest in learning—than by external factors, such as parental attention. Therefore, efforts to improve students' mathematics learning outcomes should focus more on strengthening students' ability to cope with learning difficulties and on increasing their interest and engagement in the mathematics learning process.

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