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IS THERE A RELATIONSHIP BETWEEN EMOTIONAL INTELLIGENCE AND STUDENTS' MATHEMATICS LEARNING OUTCOMES?

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ABSTRAK

Siswa dengan kecerdasan emosional yang baik memiliki kemampuan adaptasi dan dapat mengembangkan hubungan sosial dengan guru maupun siswa lain dengan lebih mudah. Hal ini diprediksi memberikan dampak bagi capaian akademik siswa. Penelitian ini bertujuan untuk mengetahui apakah terdapat pengaruh positif kecerdasan emosional terhadap hasil belajar matematika siswa one of MAN in Yogyakarta pada materi baris dan deret geometri. Penelitian ini menggunakan pendekatan kuantitatif dengan jenis penelitian korelasional. Penelitian ini dilakukan di MAN 3 Bantul Yogakarta. Populasi pada penelitian ini yaitu kelas XI Agama 1 dan XI Agama 2. Adapun teknik pengambilan sample menggunakan simple random sampling dengan sampel yang didapatkan berjumlah 42 siswa. Instrumen yang digunakan dalam penelitian ini menggunakan angket mengenai kecerdasan emosional dan tes tertulis hasil belajar yang keduanya telah lolos dalam uji validitas isi dan uji reliabilitas. Teknik analisis data dalam penelitian ini menggunakan analisis regresi sederhana yang telah melalui uji asumsi klasik seperti uji normalitas, uji heteroskedastisitas, dan uji liniearitas kemudian dilanjutkan dengan uji hipotesis seperti uji t, koefisien determinasi, dan interpretasi model. Analisis data dilakukan dengan bantuan aplikasi software SPSS 25. Hasil penelitian ini menunjukkan bahwa terdapat pengaruh positif kecerdasan emosional terhadap hasil belajar matematika siswa dengan besarnya pengaruh kecerdasan emosional terhadap hasil belajar sebesar 12,8% sedangkan sisanya 87,8% dipengaruhi oleh faktor lain diluar penelitian.
Kata Kunci: Kecerdasan Emosional, Hasil belajar, Matematika, Pengaruh.

ABSTRACT

Students with good emotional Intelligence have adaptability and can develop social relationships with teachers and other students more easily. It is predicted to have an impact on student academic achievement. The study aims to determine whether there is a positive influence of emotional Intelligence on the mathematics learning outcomes of students at one of MAN in Yogyakarta on geometric lines and series. This study uses a quantitative approach to the type of correlational research. This research was conducted at one of MAN in Yogyakarta. The population in this study was class XI Agama 1 and XI Agama 2. The sampling technique used simple random sampling with a sample of 42 students. The instrument used in this study is a questionnaire of emotional Intelligence and a written test of learning outcomes, both of which had passed the content validity and reliability tests. The data analysis technique in this study uses simple regression analysis that has gone through classical assumption tests such as the normality test, heteroscedasticity test, and linearity test, followed by hypothesis testing such as t-test, coefficient of determination, and model interpretation. Data analysis was carried out with the help of the SPSS 25 software application. The results of this study indicate a positive influence of Emotional Intelligence on students' mathematics learning outcomes, with the

magnitude of emotional Intelligence on learning outcomes of 12.8%, while other factors outside of this research influence the remaining 87.8%.
Keywords: Emotional Intelligence, Learning Outcomes, Mathematics, Effect.

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INTRODUCTION

Mathematics is a knowledge science that students from elementary school must study to the university level (Arviana & Antosa, 2020). The word mathematics comes from the *Latin* word mathematics in Greek (*mathematike*), which means to study. The word *mathematike* is also related to other almost the same words, namely *mathein* or *mathenein* which means learning or thinking. According to Ibrahim and Suparni (2012), mathematics is a structured and organized science that develops from undefined elements to defined elements, from axioms to theorems. In this case, mathematics has an important role because mathematics is a useful discipline for theoretical and practical interests (Dewi, 2020). Mathematics subjects aim to improve students' abilities such as counting, measuring, and thinking mathematically, which are indispensable in everyday life (Hendra, 2018).

Hasamah (in Utami, 2020) said that learning outcomes are the result of the level success or success of a student in mastering the subject after following a learning process. Learning outcomes are an indicator of student success in mastering a subject area. Thus, in a study, students are expected to have good learning outcomes to achieve complete learning (Hendra, 2018). According to data from the Mathematics Teacher Association in Indonesia, in 2018, the mathematics learning outcomes obtained in secondary schools were ranked 34th out of 38 countries (Fitroh, 2018). Meanwhile, according to the results of PISA test scores in 2018, mathematics was ranked 72 out of 78 countries that participated in PISA (Anggraena, 2022). This indicates that mathematics learning outcomes are relatively low.

Getting good learning outcomes, especially in mathematics, is not as easy. According to Setiawan (2018), learning outcomes are influenced by external and internal factors. External factors come from outside the student, including the family environment, school environment (school friends, teaching teachers, or class environment), and the outside background (playmates, neighbors, and the state of the home environment). At the same time, internal factors come from within students, including the ability to master related fields of study, interests, motivation, learning independence, and student intelligence (Setiawan, 2018). According to Shah (in Mirnawati & Basri 2018), one's Intelligence is one of the spiritual factors that can affect learning outcomes.

It is one of the causes of the failure of students to enter university even though they are good at the subject. According to Behera (2016), psychologists, educators, scientists, and others

have started studying why standardized Intelligence is insufficient to predict individual performance. They realized that there is another type of Intelligence unrelated to standard cognitive Intelligence called Emotional Intelligence. Emotional Intelligence is a person's ability to motivate oneself, regulate moods, control impulses, not exaggerate pleasure, and survive in frustration (Goleman, 2015). Emotional Intelligence involves a combination of competencies that allow a person to be aware of, understand, and be in control of their own emotions, to recognize and understand the emotions of others, and to use this knowledge to foster their success and the success of others (Behera, 2016). According to Mirnawati and Basri (2018), emotional Intelligence is a person's ability to recognize, control, motivate themself, and build relationships with others. Riyanto (in Prafitriani, 2019) states that emotions are the link between self-awareness or the ability to focus on ourselves and how our actions, thoughts, or emotions do or don't align with our internal standards and survival skill. Emotions also show information about the needs of the main human attitudes, such as enthusiasm, motivation, self-control, and one's tenacity.

In the learning process, emotional Intelligence is needed by students to know and respond to their own feelings well so that individuals with good emotional skills can be motivated to achieve achievements (Laelasari, 2014). Research conducted by Andrei Cotrus shows that someone with a high level of emotional Intelligence has reasonable control over the emotional reactions of others (adjustment). In this fact, it can be interpreted that someone with good self-awareness too will be able to understand the feelings of others (Cotruş, Stanciu, & Bulborea 2012). They can control their moods to prevent frustration, which can hamper their ability to think and empathize (Arora, 2017).

In a learning process, students are not enough to rely on intellectual abilities alone. Students also need emotional appreciation or Intelligence that creates positive emotions in each subject (Setyawan & Simbolon, 2018). Students also need emotional Intelligence to understand the lessons the teacher delivers (Ibrahim, 2012). Mc Caan states that emotional Intelligence affects students' academic performance, so students with good emotional Intelligence can develop social relationships with other students and teachers much more quickly. It will also affect student learning outcomes (MacCann, 2020). It is supported by research conducted by Sukriadi (2016), which states that emotional Intelligence has a significant positive effect on mathematics learning outcomes for junior high school students. For mathematics subjects, good emotional intelligence skills are needed to appreciate the material even though mathematics is a science and not humanity. With good emotional Intelligence, students are always motivated and have an attitude of not giving up on understanding abstract mathematics subject matter

Based on the researcher's observations, students had difficulty doing math problems, especially on geometrical lines and series. It is in line with research conducted by Gracia et al. (2020), which states that students still have difficulty understanding the concepts of geometric series, cannot distinguish between types of arithmetic and geometric sequences and have problems constructing individual formulas. Line material and geometric series are materials in which there are everyday problems where solving the problem requires the ability to master concepts, operations, and mathematical language to conclude (Wibowo, 2018). So that in studying the material for geometric lines and series, students need a good understanding of the

concept, considering that the material for geometric lines and series is the material taught in high school.

As for emotional Intelligence, there are still many students who do not seem to believe in their self-worth and capabilities, not being flexible with change, rare striving to improve or maintain excellent standards, which are characteristics of students who lack emotional Intelligence. From the statement above, the researcher is interested in researching the effect of emotional Intelligence on student learning outcomes at one of MAN in Yogyakarta on geometric lines and series. The problem formulation was determined: "Is there an influence of emotional intelligence on the mathematics learning outcomes of students at one of MAN in Yogyakarta on the material of geometric lines and series?"

METHODS

This research is a causal relationship study used to identify the extent of the cause-and-effect relationship between two variables. In this study, there are two variables. It's the independent variable (emotional Intelligence) and the dependent variable (mathematical learning outcomes). This study aims to find the effect of emotional Intelligence on mathematics learning outcomes. The study population was students of one of MAN in Yogyakarta class XI Religion 1 and XI Religion 2. The sample subject used was 42 students with a simple random sampling technique that each member of the subset has an equal probability of being chosen.

The instrument is an emotional intelligence scale in the form of a questionnaire with 30 questions referring to 5 aspects adapted by Daniel Goleman: self-awareness, self-regulation, motivation, empathy, and social skills. The written test of mathematics using instruments in the form of 5 questions about line material descriptions and geometric series. The analysis of the two research instruments used the content validity test from the experts, and the reliability test used the Cronbach Alpha formula by SPSS 25 software. The validity test was tested by two experts from mathematics education lectures who are used to researching types of Intelligence, and 1 is from a mathematics teacher of one of MAN in Yogyakarta, with the results that both instruments were valid. For reliability test was tested by 35 students of the XI IPA class, with the results showing that both instruments were reliable. At the same time, the data analysis used in this research uses simple linear regression analysis. This study uses the assumptions of normality, heteroscedasticity, linearity, and hypothesis testing using a t-test, coefficient of determination, and model interpretation. The data testing uses the help of the RAR software application.

RESULT AND DISCUSSION

Descriptive analysis

In the early stages of this research, a descriptive analysis was conducted regarding the level of emotional intelligence and student learning outcomes in mathematics. This descriptive analysis aims to provide an overview of the variables used in the study. The data in this study were arranged into a frequency table and grouped based on scale conversion guidelines (Widoyoko, 2015).

Table 1. Component Assessment Criteria

Criteria	Category
$X > (Mean + 1\ SD)$	High
$(Mean - 1\ SD) < X \leq (Mean + 1\ SD)$	Medium
$X < (Mean - 1\ SD)$	Low

Table 1 of the component assessment criteria above explains the categorization of each variable. The average and standard deviation are calculated from the data on emotional intelligence and mathematics learning outcomes. Emotional intelligence data averages 87.961 with a standard deviation of 12.746. At the same time, the learning outcomes data have an average of 64,190 with a standard deviation of 10.917. From the average and standard deviation obtained, determine the group of emotional intelligence data and learning outcomes data divided into three categories, namely high, medium, and low. The results of grouping categories can be seen in Table 2.

Table 2. Categories of Emotional Intelligence and Student Mathematics Learning Outcomes

No.	Category	Emotional Intelligence		Learning Outcomes	
		Frequency	Percentage	Frequency	Percentage
1	High	10	23,8%	10	23,8%
2	Medium	26	62%	26	62%
3	Low	6	14,2%	6	14,2%
	Total	42	100%	42	100%

Based on the table above, the percentage of students' emotional intelligence levels is a medium category. The medium category is a category that controls more than 2/3 of the percentage. It is in line with the learning outcomes in the medium category.

Emotional Intelligence in this study adapts from Goleman's theory, where emotional Intelligence is divided into five aspects: self-awareness, self-regulation, motivation, empathy, and social skills. These aspects are described based on three categories: high, medium, and low. The division of the category groups is shown in Table 3.

Table 3. Self-awareness Aspect

No.	Category	Frequency	Percentage
1	High	4	9.50%
2	Medium	37	88.1%
3	Low	1	2.40%
	Total	42	100%

Table 3 above shows that in the aspect of self-awareness and emotional awareness, the majority of students are in the medium category.

Table 4. Self-regulation Aspect

No.	Category	Frequency	Percentage
1	High	3	7.14%
2	Medium	30	71.43%
3	Low	9	21.43%
	Total	42	100%

Table 4 above shows in the aspect of self-regulation, the majority of students are in the medium category and ten times the number of students belonging to the medium category when compared to the high category. In the table there are three students (7.14%) in the high category, 30 students (71.43%) in the medium category, and 9 students in the low category (2.4%).

Table 5. Motivation Aspect

No.	Category	Frequency	Percentage
1	High	1	2.40%
2	Medium	22	52.40%
3	Low	19	45.20%
	Total	42	100%

From Table 5 above shows that in the aspect of student motivation, the majority of students are in the medium category. However, the results in the medium category and low category were not much different, only 3 students differed. Based on the table it can also be seen that there is 1 student (2.40%) got the high category, 22 students (52.40%) in the medium category, and 19 students (45.20%).

Table 6. Empathy Aspect

No.	Category	Frequency	Percentage
1	High	8	19%
2	Medium	33	78.60%
3	Low	1	2.40%
	Total	42	100%

Table 6 above shows that in the empathy aspect, the majority of students are in the medium category. In the table it can also be seen that the medium category is the majority while 8 students (19%), in the high category, 33 students (78.60%), and 1 student (2.40%) got the low category.

Table 7. Social Skill Aspect

No.	Category	Frequency	Percentage
1	High	0	0%
2	Medium	35	83.30%
3	Low	7	16.70%
	Total	42	100%

From Table 7 above shows that in the aspect of empathy the majority of students are in the medium category who get the high category are 0 students (0%), the medium category is 35 students (83.30%), and the low category is 7 students (16.70%).

Classic assumption test

The data that has been collected is then tested for classical assumptions including normality test, heteroscedasticity test, and linearity test. Normality test is a test that aims to

determine whether the data are in a normal distribution. This normality test uses the Kolmogorov-Smirnov test using the RAR application.

Table 8. Normality Test

		Unstandardized Residual
N		42
Normal Parameters	Mean	.000000
	Std. Deviation	9.92876667
Test Statistics		0.080
Asymp. Sig. (2-tailed)		0.200

The results of the normality test of the data in Table 8 show that the data is normally distributed the Asymp value. Sig. (2-tailed) of 0.200. This value is greater than the value of = 0.05 so that it is in accordance with the basis of decision making. The next classic assumption test is heteroscedasticity test. Heteroscedasticity test was conducted to determine whether the regression model found the variance inequality of the residual observations. This test uses the Glesjer test.

Tabel 9. Heteroscedasticity Test

Model		Unstandardized Coefficients		Standardized Coefficients Beta	T	Sig.
		B	Std. Error			
1	(Constant)	16.312	6.237		2.615	.013
	Kecerdasan Emosional	-.095	.070	-.209	-1.352	.184

The results of the heteroscedasticity test in Table 9 showed that there is no symptom of heteroscedasticity the value of sig. is 0.184. Where the value is greater than = 0.05. The last classical assumption test is a linearity test with the aim of knowing whether there is a linear relationship between variables.

Table 10. Linearity Test

			Sum of Squares	df	Mean Square	F	Sig.
HASILBELAJAR * KECERDASANEMOSI	**Between Groups**	**(Combined)**	3992.976	38	105.078	.493	.874
		Linearity	591.179	1	591.179	2.771	.195
		Deviation from Linearity	3401.797	37	91.940	.431	.909
	Within Groups		640.000	3	213.333		
	Total		4632.976	41			

Table 10 above it can be concluded that there is a linear relationship between emotional intelligence and learning outcomes. The next analysis is to test the hypothesis using simple regression analysis. The hypothesis are H_0= There is no influence of emotional Intelligence on mathematics learning outcomes of students at one of MAN in Yogyakarta and H_1= There is a

positive influence of emotional Intelligence on mathematics learning outcomes of students at one of MAN in Yogyakarta.

In this hypothesis using a t-test by RAR. The t-test is used to determine whether or not there is an influence on the independent variable, namely emotional Intelligence and the dependent variable, namely learning outcomes

Table 11. t-test

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	37.857	10.929		3.464	.001
	KECERDASAN EMOSI	.297	.123	.357	2.419	.020
a. Dependent Variable: HASILBELAJAR						

Based on Table 11, it can be concluded that emotional Intelligence has a positive effect on learning outcomes in mathematics. The significance value of emotional Intelligence is 0.020 while the t_{count} value is 2.419. In the t-test if the significance value is <0.05 $t_{count} > t_{table}$, it can be concluded that 0.020 <0.05 and t_{count} (2.419)> t_{table} (2.021). From this, it shows that the simple regression equation obtained is Y = 37.857 + 0.297X. The next analysis is the coefficient of determination test. This test was to know how much the effect of emotional Intelligence on mathematics learning outcomes.

Tabel 12. Coefficient of Determination

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.357[a]	.128	.106	10.052
a. Predictors: (Constant), KECERDASANEMOSI				

Table 12 The aspects of emotional Intelligence that affect learning outcomes consist of aspects of self-awareness, self-regulation, motivation, empathy, and social skills. In each aspect of emotional Intelligence has a role in affecting learning outcomes. So that it can be interpreted that emotional Intelligence has an influence proportion of 12.8%. While the remaining 87.2% is influenced by other variables not examined by researchers. So from the hypothesis test, it proves that emotional Intelligence affects students' mathematics learning outcomes.

Based on the results of the data analysis, it can be interpreted that the emotional Intelligence of students is included in the moderate category. Furthermore, students' emotional Intelligence which consists of 5 aspects, namely self-awareness, self-regulation, motivation, empathy, and social skills show their respective categories such as aspects of self-awareness which are also included in the moderate category. This is in line with research from (Yulika et al., 2019) that there is a positive and significant impact of emotional Intelligence and learning motivation on student performanc and research from (Wahyuni et al., 2021) there is significant relationship between emotional Intelligence and student achievement.

One of the visible aspects of emotional Intelligence is motivation. Emotional Intelligence and motivation to learn are factors that influence student performance (Yulika et al., 2019). The

higher the student's emotional Intelligence, the better they can understand and react to their own emotions. Students with high emotional Intelligence are more likely to succeed in learning and have the motivation to achieve good learning outcomes. Students with low emotional Intelligence, on the other hand, find it difficult to withhold emotional control and experience internal conflicts that impair their ability to focus on tasks, resulting in poor learning outcomes. Learning motivation motivates students to achieve their learning goals and objectives. Motivation for learning is very important. Because it can guide student behavior in a positive direction so that all the demands and challenges of learning can be met. Motivation can determine whether or not a goal is achieved, so the greater the motivation, the better the learning outcomes.

Based on the research results obtained also based on research results from (Yusri et al., 2020), it was found that emotional Intelligence has an effect on achievement. This can be seen from the research results from Table 4, it is found that the self-regulation aspect is included in the medium category. This is in line with research from Mascia et al. (2020) bahwa Findings confirm the positive effects of self-regulation and emotional well-being. Self-regulation strategies facilitate students' pre-learning planning and goal setting by enhancing the attentional focus and self-monitoring (introspection) processes during learning or task performance.

As for social attitudes, it is obtained in Table 5 that it is included in the medium category, this is in line with research from (di Lorenzo et al., 2019) that components of emotional Intelligence and social skills were positive predic-tors of psychological well-being in elderly. The elderly who have the ability to regulate their own emo-tions are those who are more compatible more hopeful and look at the bright side of life. Therefore, they have appropriate social skills to interact with others, and on the other hand, communication with others can be con-sidered as a source of support for them in dealing with potential problems.

Furthermore, in the table, the table also shows that emotion is in the medium category. This is in line with research from (Mofradnezhad & Tafti, 2018) emotional Intelligence implies the ability to accurately perceive, evaluate and express emotions: the ability to generate and/or access to feelings when they facilitate thought, the ability to understand emotions and emotional knowl-edge, and the ability to manage emotions to promote emo-tional and intellectual growth. Another limitation is represented by the reduced number of variables selected for the students, other variables could have allowed us to highlight factors which influence emotional skills. Our study, albeit with the limits mentioned above, permitted us to in-vestigate essential aspects of health professions, invit-ing us to reflect on the possibility that these can be learned and improved

CONCLUSION

Based on the results of research on the influence of emotional Intelligence on student mathematics learning outcomes at one of MAN in Yogyakarta, the researchers can conclude that the emotional Intelligence of students is included in the moderate category. Furthermore, students' emotional Intelligence which consists of 5 aspects, namely self-awareness, self-regulation, motivation, empathy, and social skills show their respective categories such as aspects of self-awareness which are also included in the moderate category. There is a effect of

emotional Intelligence on learning outcomes of students of one of MAN in Yogyakarta on geometrical line and series material. The implication obtained is that emotional Intelligence is a factor that can affect the level of mathematics learning outcomes obtained by students at one of MAN in Yogyakarta. This study proves that the higher the emotional Intelligence of students, the higher the mathematics learning outcomes obtained.

Aspects of emotional Intelligence such as self-awareness, self-regulation, motivation, empathy, and social skills each have an impact on their learning outcomes. The efforts of teachers and parents in improving students' emotional Intelligence are by paying attention, providing a stimulus to increase students' emotional Intelligence. With the conclusions and implications that have been mentioned, the results of this study are expected to contribute to teachers, parents, students and other school components in an effort to improve learning outcomes. The suggestions that can be put forward are that teachers are expected to pay attention to the importance of aspects of emotional Intelligence that exist in students with the hope that students also have awareness regarding the importance of emotional Intelligence that affects learning outcomes in mathematics. Teachers are also expected to apply learning methods that can foster student motivation in learning mathematics.

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