



Emotional Quotient and Students' Mathematical Problem-Solving Proficiency: A Meta-Analysis

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ABSTRACT

Mathematical problem-solving proficiency is one of the proficiencies that students must have to learn mathematics. The emotional quotient is one of the variables that influence pupils' capacity students mathematical problem-solving proficiency. Many research publications show that emotional quotient is closely related to students' mathematical problem-solving proficiency. This study aims to prove and validate the correlation between emotional quotient and students' Mathematical problem-solving proficiency. The data was obtained from a search on the Google Scholar database from 2013 to 2021. 23 research publications in Indonesia and Nigeria that met the criteria required as samples. Data analysis used a quantitative meta-analysis approach with a correlation meta-analysis. The findings reveal a positive and substantial correlation (5% significance level) between students' emotional quotient and students' mathematical problem-solving proficiency. The mean effect size is 0.761 (high category) in the range of 0.578 and 0.944. This result demonstrates the coherence of the findings of the examined studies.

Keywords: emotional quotient, mathematical problem-solving, mathematics, meta-analysis

ABSTRAK

Kemampuan pemecahan masalah matematis merupakan salah satu kemampuan yang harus dimiliki siswa untuk mempelajari matematika. Kecerdasan emosional merupakan salah satu variabel yang mempengaruhi kemampuan pemecahan masalah matematis siswa. Banyak publikasi penelitian menunjukkan bahwa kecerdasan emosional berkaitan erat dengan kemampuan pemecahan masalah matematis siswa. Berpondasikan hal tersebut, penelitian ini bertujuan untuk membuktikan dan menguatifikasikan besar atau kecilnya korelasi kecerdasan emosional dan kemampuan pemecahan masalah matematis siswa. Data diperoleh dari pencarian di database Google Scholar dalam tahun 2013 sampai dengan 2021. Didapatkan 23 publikasi penelitian di Indonesia dan Nigeria yang memenuhi kriteria yang dipersyaratkan sebagai sampel. Analisis data menggunakan pendekatan meta analisis kuantitatif dengan meta analisis korelasi. Temuan mengungkapkan korelasi positif dan substansial (tingkat signifikansi 5%) antara kecerdasan emosional dan kemampuan pemecahan masalah matematis siswa. Rata-rata efek size 0,761 (kategori tinggi) dalam kisaran 0,578 dan 0,944. Temuan ini menunjukkan konsistensi kesimpulan penelitian-penelitian yang dianalisis.

Kata Kunci: kecerdasan emosional, matematika, meta analisis, pemecahan masalah matematis

INTRODUCTION

Mathematical problem-solving proficiency (MPSP) is an essential proficiency for students to learn mathematics (Novita, et al., 2012; Widodo, et al., 2018). Many factors can support students'



MPSP. One of the factors is the emotional quotient (Khoirunisa & Hartati, 2017; Ningsih, et al., 2021). The existence of students' emotions functionally has an important meaning and correlates with students' cognitive proficiency (Windayani, et al., 2021). While the intellectual and emotional growth of students is supported by the problem-solving process experienced by students (Maryani, et al., 2019). This indicates that students' emotional quotient has meaning for the development of students' cognitive proficiency and on the other hand the problem-solving process supports the development of students' emotional quotient. After searching through the Google Scholar database, research was found on the correlation of emotional quotient with students' mathematical problem-solving proficiency in Indonesia and Nigeria. Many research in Indonesia and Nigeria have looked at the correlation between emotional quotient and students' MPSP (Julius et al., 2018; Suryani, 2019; Irawati et al., 2020). However, as shown in Table 1 the correlation coefficient values (R_{xy}) were found to be very diverse (some were categorized as high, medium, and low). Based on this, there is a need for meta-analysis research.

Meta-analysis is research that uses existing studies that are carried out systematically and quantitatively to arrive at findings based on the study's framework (Haidich, 2010; Borenstein et al., 2021). The meta-analysis uses statistical analysis (Enwemeka et al., 2004) and contains a complete analysis of the literature (Junhua et al., 2007). Meta-analysis where existing study sets are then analyzed with different standards and plans from that study set (Koricheva et al., 2013). Thus, meta-analytical studies can generate and explain a broad phenomenon (Green, 2005; Stanley et al., 2013;). Meta-analytical studies allow data sets to be reported in detail, and selectively, and avoid publication bias (Riley et a., 2010). In addition, meta-analytical studies are more objective, focus on effect sizes, and evaluate critically to conclude the various studies analyzed (Akobeng, 2005; King & He, 2006). The educational significance differs from the statistical significance. There are instances where a statistically significant association is discovered, yet this correlation has little borne on schooling. Some examples appear to be unimportant because they fall short of the statistical threshold for significance. In the sphere of education, the variable shouldn't be disregarded, though. This is why the effect size matters instead of the level of significance (Khadijah et al., 2021). An effect size is used to determine whether the sample size or coefficient significantly affects the outcome (Cohen et al., 2007).

Many studies and publications related to the correlation of emotional quotient with problem-solving proficiency have been carried out (Rospitasari, 2017; Yulianto, 2019; Raharjo et al., 2019). However, the findings of this study suggest that learning mathematics has no negative implications. As a result, it is vital to expand on existing research. As a result, this meta-analysis was carried out. Reflecting on this, this study aims to find the effect size of the correlation of emotional quotient with students' problem-solving proficiency and to test or prove the correlation of emotional quotient with students' problem-solving proficiency.

METHOD

This study makes use of earlier research that has previously been done and used by other academics, and that has been done consistently and statistically to arrive at correct results. Based

on this, the design of this study is a quantitative meta-analysis (Hunter & Schmidt, 2004). The analysis of empirical studies that have been carried out by previous researchers is related to the correlation between emotional quotient and students' MPSP. The following Figure 1 is the meta-analysis steps used in this study.

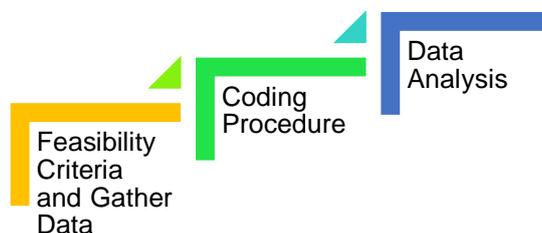


Figure 1. Research Steps (Borenstein, Hedges, & Rothstein, 2007; Pigott, 2012)

Figure 1 shows that there are 3 research steps used in this study, including establishing criteria and gathering data, coding procedure, determining the effect size, statistical rationale, and data analysis. The following is a more detailed explanation related to the research steps.

Feasibility Criteria and Gathering Data

Some of the eligibility criteria used in this study to select research publications on the Google Scholar database from 2013 to 2021, namely the first publication format, consists of journals (accredited or unaccredited), proceedings (international or national), undergraduate theses, master's theses, and doctoral dissertations. Second, research can be conducted in any country and can be accessed online on the Google Scholar database. Third, the research variables consist of emotional quotient and mathematical solving proficiency. Then fourth, it has a correlation value (R_{xy}) which explains the correlation between emotional quotient and students' MPSP.

The data collected or selected must be related to the correlation between emotional quotient and students' mathematical solving proficiency. The keywords used to search the data are emotional quotient, emotional quotient in learning mathematics, mathematical problem solving, mathematproblem-solvingliving proficiency, as well as emotional quotient and students' mathematproblem-solvingliving proficiency. Through the process of collecting data, 23 studies related to emotional quotient and mathematical problem-solving proficiency were obtained. A total of 1576 elementary, secondary, and higher education students were involved in this study. The smallest sample size is 11 students. While the largest sample size is 277 students. More detailed sample characteristics can be seen in Table 1.

Coding Procedure

The coding stage helps researchers to process and analyze data. The codes consist of the year of publication (Y), sample size (N), and correlation (R_{xy}) between variables of emotional quotient and student's MPSP.

Data Analysis

The data analysis process used Jeffrey's Amazing Statistics Program (JASP) version 0.16. 2. The steps of data analysis consisted of (1) determining the characteristics of the sample; (2)

performing a heterogeneity test; (3) checking for publication bias; (4) determining the effect size and effect size summary; (5) analysis of forest plots; (6) and determining the value of the hypothesis test (Grasman, 2017; Borenstein et al., 2009; Hunter & Schmidt, 2004). One of the obstacles to meta-analysis and important concern is the suspicion that some investigators did not report findings that were not statistically significant (Greenwald, 1975). To find out whether there is publication bias, a file drawer analysis is needed (Ma & Kishor, 1997). According to Rosenthal (1986) file drawer analysis can be done with the formula for the value of Fail-safe $N > 5K + 10$, where K is the number of reported effect sizes and N is the number of publications analyzed. If the calculation results show Fail-safe $N > 5K + 10$, it can be said that there is no publication bias in the meta-analysis study. In addition to using file drawer analysis, publication bias in this study also uses funnel analysis and egger's test.

RESULT AND DISCUSSION

Result

There are 6 steps of analysis to achieve the objectives of this meta-analysis. The first step is to describe the characteristics of the research sample. The following is a presentation of sample data (see Table 1).

Table 1. Sample characteristics

Year	Author	Publication	N	R_{xy}	Characteristics
2017	Rospitasari et al.	Journal	13	0,658	JHS students
2019	Innasyithoh	Bachelor's thesis	78	0,915	ES students
2021	Ningsih et al.	Journal	21	0,454	JHS students
2019	Inda et al.	Journal	39	0,792	ES students
2019	Hasanah et al.	Journal	58	0,224	JHS students
2020	Irawati	Undergraduate thesis	62	0,254	JHS students
2015	Agustin	Journal	277	0,133	Mathematics education students
2016	Lasabuda	Bachelor's thesis	20	0,673	VHS students
2015	Wahyuni	Bachelor's thesis	21	0,595	ES students
2017	Amalia	Bachelor's thesis	186	0,736	SHS students
2014	Pradani	Bachelor's thesis	107	0,332	VHS students
2020	Pasangka	Journal	89	0,837	JHS students
2021	Dini	Proceeding	31	0,877	JHS students
2020	Ashari et al.	Journal	87	0,404	JHS students
2019	Hapsyah et al.	Journal	60	0,522	JHS students
2020	Khoiri	Bachelor's thesis	11	0,597	JHS students
2019	Maryani et al.	Journal	20	0,968	JHS students
2018	Julius et al.	Journal	100	0,490	JHS students
2017	Ariati & Hartati	Journal	58	0,630	SHS students
2019	Suyani	Bachelor's thesis	64	0,586	JHS students
2019	Elvira	Bachelor's thesis	22	0,655	JHS students
2013	Arifuddin	Bachelor's thesis	100	0,632	JHS students
2021	Ramadhan et al.	Bachelor's thesis	52	0,578	JHS students

Annotation: ES = Elementary School; JHS = Junior High School; SHS = Senior High School; VHS = Vocational High School

There are 23 publications (22 publications from Indonesia and a publication from Nigeria) sampled in this study (see Table 1). The publication of the research was carried out from 2013 to 2021. A total of 1576 elementary school students, high school students, and college students were

involved in this research. The strength of the relationship between emotional quotient and students' MPSP can be seen in the correlation coefficient (R_{xy}) of each publication. The correlation coefficient values in 23 publications ranged from 0.133 (weak category) to 0.968 (strong category). Meanwhile, the data analysis of the year of publication and the form of publication can be seen in Table 2.

Table 2. Publication Year and Publication Form

		Frequency (F)	Percentage (%)
Publication year	2013	1	4,48%
	2014	1	4,48%
	2015	2	8,69%
	2016	1	4,48%
	2017	3	13,04%
	2018	1	4,48%
	2019	7	30,43%
	2020	4	17,39%
	2021	3	13,04%
	Publication form	Bachelor's thesis	10
Proceeding		1	4,48%
Journal		12	52,17%

The highest publication year occurred in 2019 as many as 7 out of 23 publications or around 30.45% were published in that year (see Table 2). The most form of publication is about 52.17% in the form of journals. While the smallest form of publication is around 4.48% in the form of proceedings. The second step is to find out which model is suitable for estimating the mean effect size from 23 studies, using heterogeneity test. The presentation of the heterogeneity test results is shown in Table 3.

Table 3. Fixed and Random Effects

	Q	df	p
Omnibus test of model coefficients	66.637	1	< .001
Test of residual heterogeneity	268.930	22	< .001

Table 3 shows that the 23 effect sizes of the investigated studies are heterogeneous, based on the results of the analysis (because the p-value is 0.001 lower than 0.05). Thus, the Random Effect model is more suitable to be used to estimate the mean effect size of the 23 analyzed studies. The findings of this study also suggest that moderating variables should be investigated further that influence the relationship between emotional quotient and students' MPSP. Next is the third step, to check the bias of the 23 publications that were analyzed using the funnel plot shown in Figure 2.

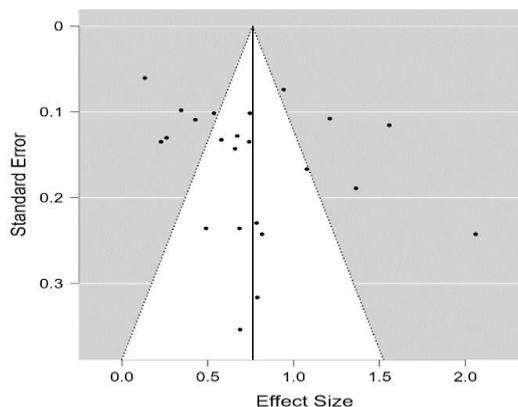


Figure 2. Funnel Plot

The results of the funnel plot shown in Figure 2 are difficult to conclude whether the funnel plot is symmetrical or not, so an Egger test is needed to test whether the funnel plot is symmetrical or not. The following is Table 4 which displays the results of the egger's test.

Table 4. Regression Test for Funnel Plot Asymmetry ("egger's test")

	z	P
sei	1.226	0.220

It can be seen in Table 4 that the p-value of 0.220 is more than 0.05, so the funnel plot is symmetrical. Thus, it can be concluded that there is no publication bias problem in this meta-analysis study. To strengthen the egger's test results, file drawer analysis is used. The results of the file drawer analysis can be seen in Table 5 below.

Table 5. File drawer analysis

Fail-safe N	Target significance	Observed significance
Rosenthal 5437.000	0.050	< .001

Because $K = 23$, so $5K + 10 = 5(23) + 10 = 125$. Fail-safe N values obtained are 5437 (see Table 5), with a target significance of 0.05 and $p < 0.01$. Due to the Fail-safe N value $> 5K + 10$, it can be concluded that there is no publication bias problem in the meta-analysis study. Then the fourth step is to determine the effect size and effect size summary. The average effect size weights of the 23 analyzed studies can be seen in Table 6 below.

Table 6. Coefficients

	Estimate	Standard error	z	p	95% Confidence interval	
					Lower	Upper
Intercept	0.761	0.093	8.163	< .001	0.578	0.944

The results of the analysis using the Random Effect model show that there is a positive correlation (because the estimate of 0.761 is positive, see Table 6) which is significant (because the p-value is 0.001 lower than 0.05 see Figure 6) between emotional quotient and students' MPSP. The correlation of emotional quotient on students' MPSP is included in the high category, namely 0.761, based on the criteria of Cohen et al., (2007). Meanwhile, to see the weight of the effect size of each analyzed study, it can be seen in Figure 3 (fifth step).

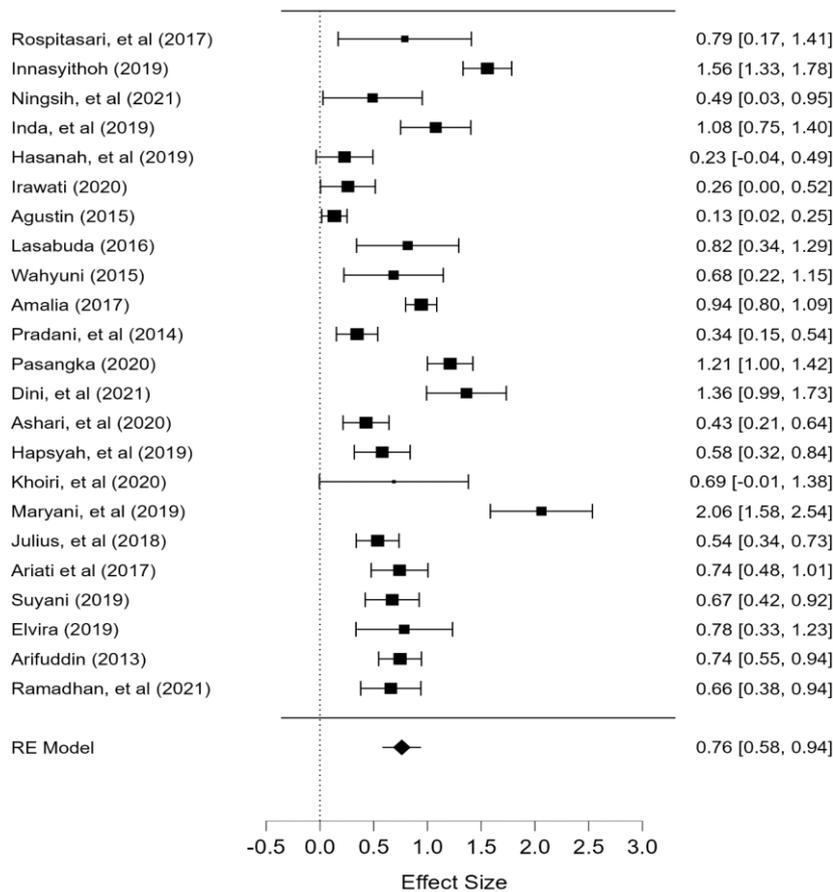


Figure 3. Forest plot

Referring to the forest plot (see Figure 3), the effect size of the analyzed studies varies from 0.13 to 2.06. The highest effect size is 2.06 which lies in the interval from 1.58 to 2.54. Meanwhile, the lowest effect size is 0.13 which is located at an interval from 0.02 to 0.25. The average effect size analyzed is 0.76. Meanwhile, the variance value is 0.0086 and the standard error value is 0.093. The next stage is to test the research hypothesis.

H_0 : There is no significant correlation between emotional quotient and students' mathematical problem-solving proficiency

H_1 : There is a significant correlation between emotional quotient and students' mathematical Problem-solving proficiency

The results of the calculation resulted in a Z value of 8.163. The Z value obtained is then substituted into the equation for the value of $p = 1 - \text{NORMSDIST}(Z)$ in a one-sided test approach with a significance level of 95%. Furthermore, the p-value is lower than 0.05. This causes H_0 to fail to be accepted. This means that there is a significant correlation between emotional quotient and students' MPSP.

Discussion

The results of data analysis of 23 research publications on the correlation of emotional quotient and MPSP of students in Indonesia and Nigeria through a meta-analysis study approach, found an average effect size weight of 0.76. This value based on Cohen et al., (2007) is included in the high category. The variance value of 0.0086 and the standard error value of 0.093 are inextricably linked

to the magnitude of the average effect size value. In addition, no publication bias was found. This means that the research sample used is valid. It also signifies that no research publication was lost throughout the study, hence no more research publications were required.

The average effect size value shows a positive value. These results indicate that emotional quotient is one of the factors that is positively correlated with students' MPSP. This positive correlation means that students' low emotional quotient will result in low students' MPSP. On the contrary, the high emotional quotient of students will support the development of students' proficiency to solve mathematical problems for the better. Therefore, the emotional quotient will offer each person the power they need to succeed. The intelligence quotient is vital, but the emotional quotient is much more crucial since the emotional quotient genuinely influences a person's disposition, capacity to perceive issues, capacity to bounce back from failure, and the likelihood of success (Aunurrahman, 2009). Positive emotions will influence students to concentrate on learning activities and problem-solving activities (Khoirunisa & Hartati, 2017). Students who have a high emotional quotient will strive for the realization of a balance between the environment and themselves, seek to be happy, replace bad things with better things, and have good cooperation proficiency with students who have heterogeneous backgrounds (Agustin, 2015).

The average effect size value discovered had a positive correlation, which was consistent with the findings of the research hypothesis test, which revealed a substantial association between emotional quotient and students' MPSP. Based on these findings, Teachers who want to teach mathematics must foster an emotional quotient in their students. There are several ways that mathematics teachers can do to develop students' emotional quotient. First, teachers can use ICT (Information and Communication Technology) to teach mathematics. ICT-assisted mathematics learning facilitates students to motivate themselves, train and manage their own emotions, get to know others, and build relationships with others (Ibrahim, 2012). The overall dimensions that can be facilitated are dimensions of emotional quotient formulated by Goleman (2001). The second is developing mathematics learning tools that are integrated with the emotional quotient. The study's findings demonstrated that emotional quotient-based mathematics learning aids are successful in enhancing students' emotional quotient. (Syawahid & Retnawati, 2014; Sugianto & Ilyas, 2020). And thirdly is applying the cooperative learning model to teach mathematics. Through cooperative learning, students can maximize and balance social relationships with other students, teachers, and the environment (Ilyas et al., 2020). Through these social relationships, students will learn to manage their emotions toward themselves and others (Mortiboys, 2013).

CONCLUSION

Assessing the urgency of emotional quotient to support the development of students' problem-solving proficiency is important. This has an impact on research that examines these problems and can contribute to mathematics education research. Through a meta-analysis approach, it was found that there was a significant positive correlation between emotional quotient and students' MPSP. This finding is based on the findings of the research employing the Random Effect model which shows that the average effect size is 0.761 (high category) in the range of 0.579 and 0.944. And no

publication bias was found. The findings of this research support the existing theory and show that there is consistency in the conclusions of the results of the analyzed studies.

This research contributes to teachers, schools, and parents to develop mathematical problem-solving proficiency. It is necessary to pay attention to students' emotional quotient as a supporting factor. One of the characteristics is the emotional quotient, which has been shown to have a favorable impact on the development of pupils' mathematical problem-solving abilities. Moving on, more research on additional subjects is required to generalize the findings. Other researchers who are interested in similar topics can develop by looking at other possible factors that affect students' mathematical problem-solving proficiency or other mathematical proficiencies that are influenced by students' emotional quotient.

ACKNOWLEDGEMENT

The success of this study is undoubtedly due to the contributions of a number of individuals. We appreciate everyone who helped with data collecting and processing.

REFERENCES

- Agustin, R. D. (2015). Deskripsi Hubungan Komunikasi dan Kecerdasan Emosional Mahasiswa Pendidikan Matematika dalam Memecahkan Masalah Matematis. *PEDAGOGIA: Jurnal Pendidikan*, 4(2), 153-160.
- Akobeng, A. K. (2005). Understanding Systematic Reviews and Meta-Analysis. *Archives of Disease in Childhood*, 90(8), 845–848.
- Aunurrahman, D. (2009). Belajar dan Pembelajaran. Bandung: Alfabeta.
- Borenstein, M., Hedges, L., & Rothstein, H. (2007). Meta-Analysis Fixed Effect Vs Random Effects. *Test*, 162. <https://doi.org/10.1002/9780470743386>.
- Borenstein, M., Hedges, L. V., Higgins, J. P., & Rothstein, H. R. (2021). *Introduction to Meta-Analysis*. John Wiley & Sons.
- Borenstein, M., Cooper, H., Hedges, L., & Valentine, J. (2009). Effect Sizes for Continuous Data. *The Handbook of Research Synthesis and Meta-Analysis*, 2, 221–235.
- Cohen, L., Manion, L., & Morrison, K. (2007). Observation. *Research Methods in Education*, 6, 396–412.
- Enwemeka, C. S., Parker, J. C., Dowdy, D. S., Harkness, E. E., Harkness, L. E., & Woodruff, L. D. (2004). The efficacy of Low-Power Lasers in Tissue Repair and Pain Control: A Meta-Analysis Study. *Photomedicine and Laser Therapy*, 22(4), 323–329.
- Hunter, J. E., & Schmidt, F. L. (2004). *Methods of Meta-Analysis: Correcting error and bias in research findings*. Sage.
- Ibrahim, I. (2012). Pembelajaran Matematika dengan ICT Sebagai Sarana Pengembangan Kecerdasan Emosional Siswa Menuju Pembangunan Karakter Bangsa. *Jurnal Fourier*, 1(2), 47-51.
- Ilyas, M., Ma'rufi, M. R., & Ashari, N. W. (2020). *Model Pembelajaran Matematika Berbasis Kooperatif Terintegrasi Kecerdasan Emosional*. Global Research and Consulting Institute.
- Irawati, T., Murtadlo, A., & Wulanda, M. N. (2020). *Hubungan Kecerdasan Emosional Siswa dengan Kemampuan Pemecahan Masalah Matematika di Sekolah Menengah Pertama Negeri 17 Kabupaten Tebo* (Undergraduate Thesis, UIN Sulthan Thaha Saifuddin Jambi).
- Grasman, R. (2017). *Meta-Analysis in JASP. Web publication/site, JASP*.
- Greenwald, A. G. (1975). Consequences of Prejudice Against the Null Hypothesis. *Psychological Bulletin*, 82, 1-20.
- Goleman, D. (2001). Emotional Intelligence: Issues in Paradigm Building. *The Emotionally Intelligent Workplace*, 13, 26.
- Green, S. (2005). Systematic Reviews and Meta-Analysis. *Singapore Medical Journal*, 46(6), 270.
- Haidich, A. B. (2010). Meta-Analysis in Medical Research. *Hippokratia*, 14(Suppl 1), 29.

- Julius, E., Abdullah, A. H., & Suhairom, N. (2018). An Analysis of The Relationship Between Emotional Quotient and Algebraic Problem-Solving Ability of Secondary School Students in Sokoto State, Nigeria. *International Journal of Engineering & Technology*, 7(3), 1899-1903.
- Junhua, Z., Hongcai, S., Xiumei, G., Boli, Z., Yaozu, X., Hongbo, C., & Ming, R. (2007). Methodology and Reporting Quality of Systematic Review/Meta-Analysis of Traditional Chinese Medicine. *The Journal of Alternative and Complementary Medicine*, 13(8), 797– 806.
- Khadijah, K., Suciati, I., Khaerani, K., Manaf, A., & Sutamrin, S. (2021). Schools' Character Education Values and Students' Mathematics Learning Achievement: A Meta-Analysis. *Cakrawala Pendidikan*, 40(3).
- Khoirunisa, L., & Hartati, L. (2017). Kemampuan Pemecahan Masalah Matematika Ditinjau dari Kreativitas dan Kecerdasan Emosional. *Jurnal Analisa*, 3(2), 106-114.
- King, W. R., & He, J. (2006). A Meta-Analysis of The Technology Acceptance Model. *Information and Management*, 43(6).
- Koricheva, J., Gurevitch, J., & Mengersen, K. (Eds.). (2013). *Handbook of Meta-Analysis in Ecology and Evolution*. Princeton University Press.
- Ma, X., & Kishor, N. (1997). Assessing the Relationship Between Attitude Toward Mathematics and Achievement in Mathematics: A Meta-Analysis. *Journal for research in mathematics education*, 26-47.
- Maryani, S., Pramudya, I., & Slamet, I. (2019). The Effects of Emotional Quotient on Students' Mathematical Problem Solving Ability. *International Journal of Multicultural and Multireligious Understanding*, 6(5), 912-918.
- Mortiboys, A. (2013). *Teaching with Emotional Intelligence: A Step-By-Step Guide For Higher And Further Education Professionals*. Routledge.
- Ningsih, R. S., Rif'at, M., & Hartoyo, A. (2021). Hubungan Kecerdasan Emosional dengan Kemampuan Pemecahan Masalah Matematika. *Jurnal AlphaEuclidEdu*, 2(1), 129-136.
- Novita, R., Zulkardi, & Hartono, Y. (2012). Exploring Primary Student's Problem-Solving Ability by Doing Tasks Like PISA's Question. *IndoMS. J.M.E*, 3(2), 133- 150. <https://doi.org/10.22342/jme.3.2.571.133-150>
- Pigott, T. (2012). *Advances in Meta-Analysis*. Springer Science & Business Media.
- Raharjo, S., Hasanah, N. F., Ramadani, N. A., & Alkikipa, F. (2019). Hubungan Kecerdasan Emosional Terhadap Kemampuan Pemecahan Masalah Soal HOTS. *Prosiding Seminar Nasional Pendidikan Universitas Subang (SENDINUSA)* (Vol. 1, No. 1, pp. 153-159).
- Riley, R. D., Lambert, P. C., & Abo-Zaid, G. (2010). Meta-Analysis of Individual Participant Data: Rationale, Conduct, and Reporting. *Bmj*, 340.
- Rosenthal, R. (1986). Meta-Analytic Procedures for Social Science Research Sage Publications: Beverly Hills, 1984, 148 pp. *Educational Researcher*, 15(8), 18-20.
- Rospitasari, M. (2017). Hubungan Kecerdasan Emosional dan Kemampuan Menyelesaikan Masalah Matematika Siswa di SMP Bumi Khatulistiwa. *Jurnal Pendidikan dan Pembelajaran Khatulistiwa*, 6(8).
- Stanley, T. D., Doucouliagos, H., Giles, M., Heckemeyer, J. H., Johnston, R. J., Laroche, P., Nelson, J. P., Paldam, M., Poot, J., & Pugh, G. (2013). Meta-Analysis of Economics Research Reporting Guidelines. *Journal of Economic Surveys*, 27(2), 390–394.
- Sugianto, L., & Ilyas, M. (2020). Peningkatan Hasil Belajar Matematika Melalui Pengembangan Perangkat Pembelajaran Berbasis Masalah Terintegrasi Kecerdasan Emosional dan Karakter. *Al-Khwarizmi: Jurnal Pendidikan Matematika dan Ilmu Pengetahuan Alam*, 8(1), 61-76.
- Suryani, Y. Y. (2019). *Hubungan Antara Kecerdasan Emosional dengan Kemampuan Pemecahan Masalah Matematika pada Siswa Kelas VIII SMP Negeri 3 Kecamatan Teras Kabupaten Boyolali Tahun Pelajaran 2018/2019* (Undergraduate Thesis, IAIN SALATIGA).
- Syawahid, M., & Retnawati, H. (2014). Pengembangan Perangkat Pembelajaran Matematika Terintegrasi dengan Pengembangan Kecerdasan Emosional dan Spiritual. *Jurnal Riset Pendidikan Matematika*, 1(1), 12-21
- Widodo, S. A., Darhim, & Ikhwanudin, T. (2018). Improving Mathematical Problem-Solving Proficiency Through Visual Media. *Journal of Physics: Conference Series* (Vol. 948, No. 1, p. 012004). IOP Publishing.
- Windayani, N. L. I., Widyastuti, A., Herlina, E. S., Chamidah, D., Yusuf, R. N., Weya, I., ... & Karwanto, K. (2021). *Pengantar Teori Perkembangan Peserta Didik*. Yayasan Kita Menulis.
- Yulianto, A. (2019). Hubungan Kecerdasan Emosional terhadap Kemampuan Pemecahan Masalah Matematika Siswa Kelas V SD Muhammadiyah I Remu Kota Sorong. *Jurnal Papeda: Jurnal Publikasi Pendidikan Dasar*, 1(1), 23-28.