

The impact of executive function on emotional dysregulation in early childhood: A correlational analysis

Jhoni Warmansyah ^{1*}, Restu Yuningsih ², Meliana Sari³, Wilma Rahmah Hidayati ⁴, Retno Wulandari ⁵

¹Early Childhood Islamic Education, Universitas Islam Mahmud Yunus Batusangkar, Indonesia.

²Early Childhood Islamic Education, Universitas Islam Mahmud Yunus Batusangkar, Indonesia.

³Early Childhood Islamic Education, Universitas Islam Mahmud Yunus Batusangkar, Indonesia.

⁴Early Childhood Islamic Education, Universitas Islam Mahmud Yunus Batusangkar, Indonesia.

⁵Early Childhood Islamic Education, Universitas Islam Mahmud Yunus Batusangkar, Indonesia.

*Corresponding author:

jhoniwarmansyah@uinmybatusangkar.ac.id

Article Information:

Submission : June 02, 2024
Revision : July 09, 2024
Accepted : July 09, 2024
Available Online : July 11, 2024
doi : [10.33086/cej.v6i1.5926](https://doi.org/10.33086/cej.v6i1.5926)

Abstract

This study aims to evaluate the impact of early childhood executive function on emotional dysregulation. Participants were parents of children aged 5 to 6. Primary data was acquired by sending surveys via a Google Form. A correlational quantitative research approach was used. The research findings indicate that there is a relationship between executive function and emotional dysregulation in early childhood, particularly in Tanah Datar Regency. With a hypothesis test, the obtained value of r is 0.156, while the critical value (r_{tabel}) for a sample size of 162 individuals is 0.148 at a significance level of 5%. The correlation test using SPSS 21 yields a significance value of 0.161, indicating a strong correlation between the two variables. The results showed that children's emotional dysregulation was highly influenced by their level of executive function in early childhood. This study emphasizes the need of recognizing and fostering executive function in early children to promote healthy emotional regulation, providing parents with vital insights into understanding and supporting their children's emotional development.

Keywords: Executive Function, Emotional Dysregulation, Early Childhood.

INTRODUCTION

Early childhood is regarded as the most important and significant phase in a child's growth and development (Bisma et al., 2023; Desmita et al., 2023; Hadisi, 2015;Innes et al., 2023; Warmansyah et al., 2024; Warmansyah, Faradila, et al., 2022; Warmansyah, Komalasari, et al., 2023). This era, which runs from birth to six years old, is commonly referred to as the golden age. The age range influences the phases of development that children will experience in their later years (Islam and Padang,

2022; Maharani and Warmansyah, 2022; Oktaviana et al., 2021; Priyanti and Warmansyah, 2021). Developmental phases range from early childhood to maturity. During this era of development, a child's moral ideals, religious beliefs, socio-emotional skills, cognitive ability, linguistic competence, physical motor skills, and creativity begin to emerge (Febriani et al., 2023; Murni et al., 2023; Nurqodriah et al., 2023).

During this period, children need to be engaged by developing interactions with their peers, which is critical for their socio-emotional development (Utami, 2019; Gunawan and Hoerudin, 2022; Warmansyah, Zalzabila, et al., 2023). Peer relationships have a substantial impact on children's socio-emotional development (Cadima et al., 2015; Haryani et al., 2021). Negative social interactions can lead to emotional dysregulation in youngsters (A. R. H. Putri and Rahmasari, 2021; Schmeer and Yoon, 2016). Emotional dysregulation in children might impair other elements of their development.

Early childhood emotional dysregulation is a serious problem that has a big impact on a child's future wellbeing and general development. The term "emotional dysregulation" describes a child's inability to control and express their emotions in a healthy way, which can lead to a variety of behavioral and psychiatric issues. The American Academy of Pediatrics (2017) states that emotional problems at an early age can contribute to long-term problems such as behavioral disorders, anxiety, and depression. For example, a study by Cole & Hollenstein, (2018) found that emotionally dysregulated children are more prone to experience behavioral disorders and other emotional issues as they become older.

Severe behavioral problems in schools are one striking illustration of the effects of emotional dysregulation. According to a research by Hong et al., (2023) kids who struggle with emotional dysregulation are more likely to act aggressively and have trouble forming relationships with their peers, which can have a big impact on their social and academic success. According to the National Institute of Mental Health (NIMH), up to 20% of young children have serious emotional and behavioral difficulties, which are frequently precursors to more serious disorders (Illness, 2022).

Furthermore, a number of developmental difficulties are linked to emotional dysregulation in early children. Children who suffer with emotional control are more likely to struggle academically because they may find it difficult to focus in class and handle stress (Graziano et al., 2007). According to Eisenberg et al. (1998), these early emotional problems may recur throughout puberty and adulthood, posing new psychological and social problems.

Emotional dysregulation is a major concern for young children, with 15-20% of preschoolers showing behaviors like tantrums and aggression (CDC, 2021). For example, Calkins et al. (1999) found 18% of children displayed poor emotional regulation behaviors. Perry et al., (2016) reported that about 16% of children aged 3-5 years struggle with managing anger and frustration. Addressing these issues early is crucial as early problems can predict future mental health issues (Thümmeler et al., 2022).

Childhood emotional dysregulation is a child's incapacity to manage their emotions efficiently (C. I. H. Putri and Primana, 2018; Warmansyah, Ismandela, et al., 2023). Initial feelings may cause unfavorable reactions as a result of encounters, exacerbating emotions even further. The more unstable emotional strain children face from both internal and external sources, the more difficult it is for them to maintain equilibrium in their everyday lives (Turk et al., 2005). As a result, early emotions have the potential to develop into more complicated diseases later on.

The development of difficulties caused by early emotional dysregulation has resulted in several examples of misbehavior and crime among young children (A. R. H. Putri and Rahmasari, 2021; Warmansyah, Monalisa, et al., 2022). The National Commission for Child Protection stated on an internet media portal that the rising frequency of juvenile delinquency is a major source of worry. Such incidents cannot be ignored since they constitute a huge threat to children's futures, especially in this modern day. The National Commission for Child Protection (Komnas PA) says that juvenile crime cases continue to climb year after year, with a 38% increase in 2020 compared to the previous

year (KPAI, 2023).

Such abnormalities can be caused by a variety of variables, one of which is executive function, a collection of mental functions necessary for decision-making, attention, impulse control, and problem solving (Rahmahtrisilvia et al., 2021). The ability to self-regulate, dismissing distractions, helps youngsters manage their emotions and preserve self-control. Susanti & Hasmira (2023) describe how maintaining adequate executive function allows youngsters to keep focus and attention while controlling their emotions.

Self-control, attentional concentration, decision-making, problem-solving, and flexible thinking are all examples of executive function skills (Hassinger-Das et al., 2017). Executive function has three common components: working memory, cognitive flexibility, and inhibition (Ayomi et al., 2021). These components directly support activities like problem solving, learning, and goal-directed planning. This means that a child's capacity to remember knowledge and govern self-regulation directly involves brain regions connected with executive function. The development of executive function is critical for resolving emotional dysregulation in early children, particularly those who struggle with self-control and emotional regulation. A child's capacity to start activities or ideas is a strong predictor of cognitive development (Zelazo and Müller, 2002).

The failure to appropriately detect and express emotions results in emotional imbalance, which impairs a child's executive function. There is a link between executive function and emotional dysregulation, with children with high executive function having greater ability in regulating emotions, whilst those with executive function disorders may struggle to manage and express their feelings.

This study fills a significant knowledge vacuum on the precise relationship between emotional dysregulation and executive function in early childhood (birth to age six), also known as the "golden age." This study employs a rigorous correlational analysis to focus on the fundamental components of executive function—working memory, cognitive flexibility, and inhibition—and their direct correlation with emotional dysregulation, in contrast to prior studies that span a wide range of developmental periods. In doing so, it draws attention to the possibility of using early intervention to improve emotional regulation and avert persistent behavioral problems like juvenile delinquency, offering a focused method of enhancing kids' socio-emotional development in their early years.

More study is needed to better understand the link between executive function and emotional dysregulation in children. It is critical to research this link further in early life in order to find elements that contribute to emotional dysregulation and improve children's emotional regulation skills. This study intends to give a more in-depth knowledge of the elements driving the connection. Currently, research on the association between executive function and emotional dysregulation in early infancy is sparse, thus the findings of this study will be useful in understanding how executive function effects children's capacity to control emotions.

Theoretical Study

Emotional Dysregulation

Puspitasari Hidayat (Puspitasari and Hidayat, 2023) define childhood emotional dysregulation as the child's inability to successfully control emotions, particularly negative ones. This can lead to a variety of behavioral expressions, including verbal and physical hostility, chronic anxiety, heightened sensory sensitivity, and difficulties focusing on tasks or activities.

Childhood emotional dysregulation is defined as the inability to control or regulate emotional reactions to provoking stimuli (Warmansyah, Monalisa, et al., 2022), which includes a child's capacity to notice, interpret, and manage their own emotions. This refers to a child's awareness of their feelings, comprehension of the origins of their emotions, and ability to express and manage emotions in a healthy way (Rachmat et al., 2021).

Executive Function

Baptista (2016) defines executive function as a set of top-down processes that provide con-scious and goal-directed control over thoughts and behaviors. Executive function refers to men-tal processes that are required to focus or concentrate attention when answers cannot be based on intuition or instinct. It is a skill set that is essential for a child’s emotional and physical well-being, as well as their academic, social, and cognitive development. Children begin to acquire executive function between the ages of 2 and 5 years old, corresponding with the maturity of the prefrontal cortex, which allows various brain processes to advance more quickly. High levels of executive function development throughout the preschool age make it an ideal time for parents to boost their children’s executive function through engaging activities (Akmalia, 2020).

According to Sa’ida (2018), children with high executive function have greater ability to regulate their emotions. In contrast, children with executive function difficulties may struggle to manage and express their emotions, resulting in emotional dysregulation. However, the study discovered that children who can regulate and manage their talents have lower levels of emotional dysregulation (Wahyudi et al., 2020). In other words, children with good executive function skills can plan and manage their emotions when they get overpowering.

Furthermore, Ferrier et al. (2014) found that emotions play an important role in appraising experiences and settings, guiding thoughts and behaviors. Furthermore, executive function and emotional dysregulation have received a lot of attention, not only for their favorable effects on children’s socio-emotional functioning, but also for their implications in a variety of social and emotional circumstances.

MATERIALS AND METHOD

Research Method

This study employs quantitative research methodologies, namely a correlational approach. The purpose of utilizing a correlational research design is to explain and predict the influence of exogenous factors on endogenous variables. Correlational research investigates the link and effect of two or more variables. The data was analyzed statistically, using the SPSS Program Version 21. SPSS is used to demonstrate the link between each component and its latent variables and test hypotheses.

Participants

This research gathered data from 162 parents in Batusangkar Regency. The respondents were parents with young children aged 5 to 6 years. Table 1 shows the demographic characteristics of the research subjects, including gender, age, and study location. The information was gathered through interviews with parents and the completion of a pre-research questionnaire.

Table 1. Demographic Characteristics of Research Subjects

Demographic Characteristic	Category	Number of Respondents
Gender		
Male	45	27.8%
Female	117	72.2%
Age of Parents		
30-35 years	68	42.0%
36-40 years	52	32.1%
41-45 years	30	18.5%
> 45 years	12	7.4%
Study Location		
Batusangkar Regency	162	100%

Data Analysis

The data analysis technique employed in this research involves conducting tests for normality, homogeneity, and linearity using SPSS software, followed by hypothesis testing using the Pearson Product Moment correlation. The hypothesis in this study is that there is a relationship between teachers’ self-efficacy in using technology and their readiness to teach online. This statistical test is also carried out using SPSS software.

The correlation coefficient is a value that indicates the strength of the relationship between two or more variables. Additionally, the correlation coefficient can determine the direction of the relationship between the variables. The value of the correlation ranges from -1 to 1. A coefficient of -1 indicates a perfect negative correlation, meaning there is an inverse relationship between the two variables. Meanwhile, a correlation coefficient of 1 indicates a perfect positive correlation, signifying a direct relationship between the two variables.

Calculating the correlation coefficient is done using the Pearson Product Moment correlation formula as follows:

$$r_{xy} = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{*(n \cdot \sum x^2) - (\sum x)^2 + *n \cdot \sum y^2 - (\sum y)^2}}$$

Table 2. Correlation Levels and Strength of Relationship between Variables

No	Correlation Coefficient (r)	Relationship Level
1	0,0 r < 0,2	Very weak
2	0,2 r < 0,4	Weak
3	0,4 r < 0,6	Moderate
4	0,6 r < 0,8	Strong
5	0,8 r < 1,0	Very strong

RESULT AND DISCUSSION

Results

The research was carried out using normally distributed data. This can be seen by the normality test which can be seen in Table 3.

Table 3. One-Sample Kolmogorov-Smirnov Test

Unstandardized Residual		
N		
Normal Parameters ^{a,b}	Mean	.0000000
	Std.Deviation	5.41987060
Most Extreme Differences	Absolute	.085
	Positive	.085
	Negative	-.075
Test Statistic		1.085
Asymp. Sig. (2-tailed)		.190c

- a. Test distribution is Normal.
- b. Calculated from data.

The normality test used in this study used the Kolmogorov-smirnov method. Based on the results of the normality test, it is known that the significance value is 0.174 > 0.05. It can be concluded that these two research variables have a normal distribution of data. The data used in this study proved to be homogeneous or had variations in data derived from populations that had the same variant. This can be seen in Table 4

Table 4. Test of Homogeneity of Variances

Levene Statistic	df1	df2	Sig.
2.127	22	134	.159

Based on the homogeneity test results shown in the table above, it is evident that the obtained value for the homogeneity test is 0.159, which is greater than 0.05. Therefore, it can be concluded that the data has equal variance. Based on the homogeneity test results shown in the table above, it is evident that the obtained value for the homogeneity test is 0.159, which is greater than 0.05. Therefore, it can be concluded that the data has equal variance.

Table 5. ANOVA

		Sum of Squares	Df	Mean Square	F	Sig.
x* Between	(Combined)	2129.349	36	59.149	2.273	.000
Y Groups	Linearity	652.601	1	652.601	25.080	.028
	Deviation from Linearity	1476.748	35	42.193	1.621	.028
	Within Groups	3252.626	125	26.021		
	Total	5381.975	161			

Based on the displayed table, it can be inferred that the variables examined in this study demonstrate linearity since the probability value and reliability test are both 0.028, surpassing the significance threshold of 0.05. Furthermore, the correlation between executive functions on early childhood emotional dysregulation was carried out using the SPSS 21 program.

Table 6. Descriptive Statistics

	N	Mean	Std. Dev
Executive Function	162	65.15	12.725
Emotional Disregulation	162	57.99	5.782
Valid N (listwise)	162		

Table 7. Correlations

		Executive Function	Emotional Disregulation
Executive Function	Pearson Correlation	1	-.161*
	Sig. (2-tailed)		.040
	N	162	162
Emotional Disregulation	Pearson Correlation	-.161*	1
	Sig. (2-tailed)	.040	
	N	162	162

*. Correlation is significant at the 0.05 level (2-tailed).

From the table above, you can see the Pearson correlation coefficient number of 0.161*. This means that the correlation between Executive Function and Early Childhood Emotional Dysregulation is 0.161 or enough because it is close to number 1. The one-star sign (*) means a significant correlation at a significance number of 0.05 and has a two-way (2-tailed) possibility.

Based on the conditions seen from the value of r_{table} , the value of $r_{calculate}$ must be greater than the value of r_{table} . It can be seen from the calculation results using SPSS that the calculated value of 0.156 is greater than the r_{table} value of 0.148 with a significance level of 0.05. Based on the existing criteria, the relationship between the two variables is significant because the significance number is $0.000 < 0.005$ (= 5%). The correlation coefficient number is negative, which is 0.161, so the correlation between the two variables is unidirectional. That is, if the higher the Executive Function children have, the lower the Emotional Dysregulation of early childhood.

Discussion

The research findings demonstrate a relationship between executive function and emotional dysregulation in early childhood. This study is in line with Sa'ida's research (Saída, 2018), which revealed that children with good executive function tend to have better abilities in regulating emotions. Conversely, children with executive function problems tend to have difficulties in controlling and expressing emotions, known as emotional dysregulation. However, other research also suggests that children who can control their abilities better tend to have lower emotional dysregulation (Wahyudi et al., 2020). Furthermore, research conducted by Ferrier et al. (2018) states that emotions play a crucial role in assessing experiences and environments to guide thoughts and actions. Additionally, executive function and emotional dysregulation have received considerable attention, not only for their positive associations with children's social-emotional functioning.

There are two theories and approaches supporting the relationship between executive function and emotional dysregulation in early childhood: 1) the self-regulation asserts that children's abilities to regulate behavior, attention, and emotions are closely related to the development of executive function. 2) the emotion integration theory by Akhtar (2019) states that emotions and cognition are intertwined and mutually influence each other. Executive function has a significant direct influence on emotional dysregulation in early childhood. Based on the research findings, this can serve as evidence and strengthen theories put forward by previous experts, thus confirming the validity of existing theories.

The results of this study will benefit the field since they provide a thorough analysis of the relationship between emotional dysregulation and executive function, which has not been thoroughly studied in the setting of early infancy. Policymakers, psychologists, and educators who work on early intervention program creation will find this research useful. The goal of this research is to provide information for the development of focused therapies intended to enhance young children's emotional regulation abilities by identifying critical executive function components that affect emotional regulation.

Furthermore, the study's results will give practical advice for parents and educators on how to promote children's emotional development throughout these critical years. This study is likely to serve as a platform for future studies and treatments focused at reducing emotional and behavioral issues in children, helping children, families, and educational professionals.

CONCLUSION

Based on the research findings and discussions above, it can be concluded that there is a significant relationship between executive function and emotional dysregulation in early childhood in Tanah Datar Regency. This is evidenced by the direct correlation between executive function abilities and emotional dysregulation in young children. With a sample size of 162 respondents, a strong correlation between the two variables was observed, as the calculated r value of 0.156 exceeded the critical value of 0.148 at a significance level of 0.05%. The Pearson Product Moment correlation

analysis using SPSS 21 yielded a correlation coefficient of 0.161, indicating a strong correlation between executive function and emotional dysregulation. The double asterisks (**) denote a strong correlation at a significance level of 0.01%. Based on the hypothesis results presented above, it can be understood that there is a relationship between variable X and variable Y, which is the relationship between executive function and emotional dysregulation in early childhood. Based on the hypothesis testing conducted on both research variables, it can be concluded that executive function significantly influences emotional dysregulation in young children.

AUTHOR CONTRIBUTION STATEMENT

The authors of this study declare that they have NO affiliation or involvement in any organization or entity with any financial interest (such as honoraria; educational grants; participation in speaker's bureaus; membership, employment, consulting, stock ownership, or other equity interests; and expert testimony or patent licensing arrangements), or non-financial interest (such as personal or professional relationships, affiliations, knowledge or beliefs) in the subject matter or materials discussed in this manuscript.

DECLARATION

The authors of this study certify that they have NO affiliations with or involvement in any organization or entity with any financial interest (such as honoraria; educational grants; participation in speakers' bureaus; membership, employment, consultancies, stock ownership, or other equity interest; and expert testimony or patent-licensing arrangements), or non-financial interest (such as personal or professional relationships, affiliations, knowledge or beliefs) in the subject matter or materials discussed in this manuscript.

DATA AVAILABILITY

The dataset generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

ACKNOWLEDGMENT

We are grateful to all respondents involved in this research project. We are also grateful to participants, colleagues, and family for their support. Couldn't have done it without you. Thank you.

REFERENCES

- Akmalia, R. Y. B. (2020). *Peningkatan executive function pada anak usia 5-6 tahun melalui outdoor play di tk islam as-salam depok tahun ajaran 2019/2020* [B.S. thesis]. Jakarta: FITK UIN Syarif Hidayatullah Jakarta.
- Ayomi, A. T. R., Widyorini, E., & Roswita, M. Y. (2021). Hubungan inteligensi dengan fungsi eksekutif pada anak gifted relationship between intelligence and executive function to gifted children. *Jurnal Ilmiah Psikologi Candradiwu*, 6(2), 136.
- Bisma, N., Desmita, D., Diyenti, A. K., Karim, N. A., Zalabila, Z., Yulia, N., Warmansyah, J., & Sulong, K. (2023). The influence of audio stories on enhancing digital literacy in early childhood: A survey study. *Indonesian Journal of Early Childhood Educational Research (IJE CER)*, 2(2), 57-70.
- Cadima, J., Doumen, S., Verschuere, K., & Buyse, E. (2015). Child engagement in the transition to school: Contributions of self-regulation, teacher-child relationships and classroom climate. *Early Childhood Research Quarterly*, 32, 1-12.
- Desmita, D., Rahmadani, S., Diyenti, A. K., Warmansyah, J., Silvanetri, S., & Fakaruddin, N. A. A. B. (2023). The relationship of parent-child interaction in developing effective communication in early childhood. *Indonesian Journal of Early Childhood Educational Research (IJE CER)*, 2(2), 47-56.
- Febriani, H., Mashudi, E. A., & Tewari, V. (2023). The importance of the roles of parents and teachers in cultivating honesty in early childhood characters. *Indonesian Journal of Early Childhood Educational Research (IJE CER)*, 2(2), 71-79.
- Graziano, P. A., Reavis, R. D., Keane, S. P., & Calkins, S. D. (2007). The role of emotion regulation in children's early academic success. *Journal of school psychology*, 45(1), 3-19.
- Gunawan, M. T. R., & Hoerudin, C. W. (2022). Kesadaran emosi anak usia dini. *Izzan: Jurnal Pendidikan Islam Anak Usia Dini*, 1(1), 1-11.
- Hadisi, L. (2015). Pendidikan karakter pada anak usia dini. *Al-Ta'dib*, 8(2), 50-69.
- Haryani, R. I., Dimiyati, D., & Fauziah, P. Y. (2021). Peranan pengasuhan kakek dan nenek terhadap perilaku prososial anak usia dini. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, 6(1), 173-181.
- Illness, M. (2022). Available online: <https://www.nimh.nih.gov/health/statistics/mental-illness>. Accessed Mar, 13.

- Innes, R. M., Priyanti, N., Warmansyah, J., Siregar, R. Y., & Aribasoye, M. (2023). Crafting dexterity: Enhancing fine motor skills in 4–5-year-olds through the art of paper folding origami. *Indonesian Journal of Early Childhood Educational Research (IJECEER)*, 2(1), 1–9.
- Islam, M. P., & Padang, I. B. (2022). Manajemen layanan pembelajaran anak usia dini berbasis ict pada pembelajaran tatap muka terbatas. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, 6(5), 4067–4076.
- Maharani, D., & Warmansyah, J. (2022). Pengembangan video pembelajaran untuk pengenalan kosa kata bahasa arab anak usia dini berbasis aplikasi inshot. *JOSTECH Journal of Science and Technology*, 2(1), 61–74.
- Murni, S., Desmita, D., Diyenti, A. K., Silvianetri, S., & Buddike, W. D. (2023). Utilizing effective communication in interactions with same-age peers: Children aged 4–5 years. *Indonesian Journal of Early Childhood Educational Research (IJECEER)*, 2(2), 90–96.
- Nurqodriah, Y., Widjayatri, R. D., & Kiwonde, F. M. (2023). Educational word box game tool to enhance cognitive development in early childhood. *Indonesian Journal of Early Childhood Educational Research (IJECEER)*, 2(2), 80–89.
- Oktaviana, W., Warmansyah, J., & Trimelia Utami, W. (2021). The effectiveness of using big book media on early reading skills in 5–6 years old. *Al-Athfal: Jurnal Pendidikan Anak*, 7(2), 157–166.
- Priyanti, N., & Warmansyah, J. (2021). The effect of loose parts media on early childhood naturalist intelligence. *Jurnal Pendidikan Usia Dini*, 15(2), 239–257.
- Puspitasari, I., & Hidayat, M. (2023). Pengembangan alat ukur regulasi emosi pengasuhan anak usia dini berdasarkan strategi regulasi emosi j. gross. *Indonesian Journal of Early Childhood: Jurnal Dunia Anak Usia Dini*, 5(1), 42–49.
- Putri, A. R. H., & Rahmasari, D. (2021). Disregulasi emosi pada perempuan dewasa awal yang melakukan self injury. *Character: Jurnal Penelitian Psikologi*, 8(6), 1–16.
- Putri, C. I. H., & Primana, L. (2018). Gambaran perilaku disregulasi emosi anak prasekolah usia 3–4 tahun. *Jurnal Ilmiah Psikologi Terapan*, 6(1), 102–110.
- Rachmat, I. F., Hartati, S., & Erdawati, E. (2021). Family cohesion, interpersonal communication, and smartphone addiction: Does it affect children's emotional dysregulation? *Jurnal Cakrawala Pendidikan*, 40(2), 279–291.
- Rahmahtrisilvia, R., Setiawan, R., Fatmawati, F., & Sopandi, A. (2021). Asesmen gaya belajar anak gangguan spektrum autisme.
- Saida, N. (2018). Perkembangan regulasi diri anak usia dini: Peranan kemampuan berbahasa dan regulasi diri pada pembelajaran. *Jurnal PG PAUD Trunojoyo*, 5(2), 110–115.
- Schmeer, K. K., & Yoon, A. J. (2016). Home sweet home? home physical environment and inflammation in children. *Social science research*, 60, 236–248.
- Thümmler, R., Engel, E.-M., & Bartz, J. (2022). Strengthening emotional development and emotion regulation in childhood—as a key task in early childhood education. *International journal of environmental research and public health*, 19(7), 3978.
- Turk, C. L., Heimberg, R. G., Luterek, J. A., Mennin, D. S., & Fresco, D. M. (2005). Emotion dysregulation in generalized anxiety disorder: A comparison with social anxiety disorder. *Cognitive Therapy and Research*, 29, 89–106.
- Utami, N. R. (2019). Pengembangan instrumen kecerdasan emosional usia 5–6 tahun. *Jurnal Pelita PAUD*, 4(1), 124–138.
- Wahyudi, E. K., Herfanda, E., ST, S., Keb, M., Satriyandari, Y., ST, S., et al. (2020). Literature review gambaran temper tantrum pada anak autisme.
- Warmansyah, J., Faradila, T., Sari, M., & Yuningsih, R. (2022). Correlation study between teacher–child relationships and social skills for 5–6 years old. *Jurnal Pendidikan Anak*, 8(2), 94–102.
- Warmansyah, J., Ismandela, A., Nabila, D. F., Wulandari, R., Wahyu, W. P., Komalasari, E., Sari, M., Yuningsih, R., Masril, M., et al. (2023). Smartphone addiction, executive function, and mother–child relationships in early childhood emotion dysregulation. *Jurnal Pendidikan Usia Dini*, 17(2), 241–266.
- Warmansyah, J., Komalasari, E., Fitriani, W., Permatasari, D., Ismandela, A., Nabila, D. F., & Daud, N. B. (2024). Training on digital teaching aids for early childhood education for the diploma association of early childhood education at universiti sultan idris, malaysia. *Jurnal Pengabdian Masyarakat Ilmu Pendidikan*, 3(1), 40–51.
- Warmansyah, J., Komalasari, E., Yuningsih, R., Sari, M., Wita, A., Mardiah, U., Ismandela, A., & Nabila, D. F. (2023). Pelatihan penguatan pendidik paud dalam layanan pembelajaran kreatif dan inovatif melalui pembelajaran steam. *Journal of Social Outreach*, 2(1), 78–90.
- Warmansyah, J., Monalisa, S., Khairunnisa, K., Fadillah, L., Ismandela, A., Dinda Fatma, N., & Widya Putri, P. (2022). Relationship between smartphone addiction and emotional dysregulation on early childhood. *Annual Conference on Islamic Early Childhood Education (ACIECE)*, 6, 149–154.
- Warmansyah, J., Zalzabila, Z., Yuningsih, R., Sari, M., Helawati, V., & Sari, E. N. (2023). Educational technology applications for enhancing religious and moral values in early childhood development: A bibliometric analysis. *at-Tarbiyah al-Mustamirah: Jurnal Pendidikan Islam*, 4(2), 185–200.
- Zelazo, P. D., & Müller, U. (2002). Executive function in typical and atypical development. *Blackwell handbook of childhood cognitive development*, 445–469.