Neuroscience in the Frame of Islamic Education for Children with Tantrums (Meta-Analysis)

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Abstract

This research is based on a combination of the field of neuroscience with an Islamic education approach to overcome the problem of tantrum children. Through a meta-analytic approach, this research investigates the effectiveness of using Islamic education principles in reducing and managing tantrum behavior in children. This research aims to collect and analyze data from various relevant literature sources to evaluate the impact of Islamic education-based interventions on the neurological and behavioral aspects of children who experience tantrums. This research uses a meta-analysis method, namely an analysis of the results of previous studies that are relevant to the research topic. The data collected comes from various sources, such as scientific journals, books, research reports and online articles. The results of this research state that neuroscience-based PIAUD practices are practices that optimize early childhood brain development through learning that suits their characteristics and needs, such as game-based learning, calistung learning and reading and writing the Al-Qur'an (BTAQ), collaborative learning. It is hoped that this study will provide new insights for educators, parents and the public regarding the importance of neuroscience in the framework of Islamic early childhood education.

Keywords *: neuroscience, Islamic early childhood education, Tantrums.*

INTRODUCTION

Children's education is an important aspect in character formation and individual development in various cultures and traditions. Within this framework, combining educational principles with neuroscientific knowledge has become an increasingly sought-after approach to understanding and addressing children's behavioral challenges. One of the behavioral problems that is often faced is tantrum behavior in children, which can have a negative impact on their psychosocial development and social interactions. In an effort to overcome this challenge, this research focuses on the convergence between neuroscience and Islamic educational approaches in dealing with tantrum behavior in children. Neuroscience is the study of the structure and function of the nervous system, including the brain, spinal cord, and peripheral nerves. Neuroscience has many branches, such as neuroanatomy, neurophysiology, molecular neurobiology, neurogenetics, neuropharmacology, neuroimmunology, and others. Neuroscience is also related to other fields, such as psychology, philosophy, mathematics, computers, and education.

Islamic education aims to form people who are faithful, devout, have noble character, are knowledgeable, do good deeds, and contribute to society. Islamic

education can be carried out at various levels and institutions, such as schools, madrasas, Islamic boarding schools, mosques and homes (Hidayat, B, 2017). Early childhood is children aged 0-8 years. Early childhood is a very important developmental period for human life. During this period, children's brains experience rapid growth and form complex neural networks. Early childhood also begins to learn various cognitive, social, emotional, language and motor skills.

Neuroscience in the frame of early childhood Islamic education is an approach that integrates neuroscience with the principles of Islamic education in the early childhood learning process. This approach aims to optimize the potential of children's brains in accordance with their nature and the purpose of their creation (Susanti, S.E , 2021). This approach also respects the uniqueness and needs of each child in developing themselves holistically. This research aims to conduct a meta-analysis of the results of previous research related to neuroscience within the framework of early childhood Islamic education. Meta analysis is a research method that collects, evaluates and integrates relevant research results from various sources systematically and objectively. Meta analysis can provide a more comprehensive and accurate picture of a phenomenon or research problem (Wijaya, H, 2018).

It is hoped that this research can contribute to the development of neuroscience and Islamic education for early childhood. This research can also provide recommendations for early childhood Islamic education practitioners in designing and implementing learning in accordance with neuroscientific principles. In addition, this research can be an inspiration for other researchers to conduct further research on this topic. From the explanation above, the title that the researchers adopted in this research is Neuroscience in the Frame of Early Childhood Islamic Education (Meta Analysis). How is the development of neuroscience and Islamic education for young children, especially those who suffer from tantrums? How do early childhood Islamic education practitioners design and implement learning in accordance with neuroscience principles?

The combination of neuroscience and Islamic education offers a rich and holistic perspective in designing interventions for children with tantrums. In-depth understanding of the workings of the brain and neural connections can provide insight into the neurological mechanisms underlying tantrum behavior, while the values and teachings in Islamic education can provide an important moral and ethical foundation in overcoming this challenge. In this context, this research aims to collect and analyze existing empirical evidence from various related studies, with the hope of highlighting the effectiveness of using Islamic educational approaches in helping children overcome tantrums.

Neuroscience studies the structure and function of the nervous system, including the brain, spinal cord, and peripheral nerves. Neuroscience covers a wide range of scientific disciplines, such as biology, psychology, medicine, physics, and mathematics. Neuroscience in the frame of early childhood Islamic education is the application of neuroscience principles in the learning and development process of early childhood in

accordance with Islamic values (Yuniarni, D, 2021). The aim of neuroscience within the framework of early childhood Islamic education is to optimize the brain potential of young children who have their own uniqueness and tendencies in learning and interacting with the environment. Neuroscience within the framework of Islamic early childhood education also aims to shape the Islamic character of early childhood, namely having noble morals, strong faith, useful knowledge and high creativity.

Neuroscience can contribute to the development of Islamic education for early childhood, because the brain is an organ that plays an important role in the learning and memorization process. According to neuroscientists, the brain of young children has great potential to develop and adapt to the environment. Early childhood brains also find it easier to receive new information and store it in long-term memory (Rivalina, R, 2020). One way to improve the quality of Islamic education for early childhood children, especially those suffering from tantrums, is to apply methods that are in accordance with neuroscientific principles. Some methods that can be used are as follows: (Nisa, RA, 2022).

1. Use interesting and varied media, such as pictures, videos, songs, stories, games, etc. This media can stimulate children's brains to be more active and creative in learning.
2. Providing direct experiences to children, such as visiting mosques, observing nature, interacting with other people, etc. This direct experience can help children understand Islamic concepts more deeply and realistically.
3. Give praise and encouragement to children, such as saying "good", "great", "smart", etc. This praise and encouragement can increase children's motivation and confidence in learning.
4. Provide constructive feedback to children, such as providing corrections, suggestions, questions, etc. This feedback can help children to correct mistakes and improve their abilities.
5. Teaching children to think critically and reflectively, such as asking questions, looking for answers, evaluating information, etc. Critical and reflective thinking can train children's brains to be more analytical and logical in learning.

METHOD

Meta analysis is a research method that analyzes the results of similar primary studies using certain statistical techniques. The purpose of meta analysis is to obtain a more accurate and comprehensive picture of a phenomenon or intervention examined by various studies. Meta analysis can also identify factors that influence the effect size or the magnitude of the influence of one variable on other variables. (Khairani, M, et al, 2019)

One of the interesting topics to be analyzed through meta-analysis is neuroscience within the framework of early childhood Islamic education. Neuroscience is the study of the structure and function of the nervous system, including the brain, spinal cord, and peripheral nerves. Neuroscience deals with various aspects of human behavior,

emotions, cognition, learning, and memory. Early childhood Islamic education is a holistic process of fostering and developing children's potential based on Islamic values. Islamic education for early childhood aims to shape the character of children who are faithful, devout, have noble character, intelligent, creative and independent. The following are the steps that researchers took: (Asror, AH, 2016)

1. Determine the research question or hypothesis you want to test through meta analysis. In this study, the research question that the researcher asked was; How is the development of neuroscience and Islamic education in early childhood? How do early childhood Islamic education practitioners design and implement learning in accordance with neoscience principles?
2. Search for and collect primary studies relevant to the research question or hypothesis. In this research, researchers conducted primary studies that researchers found through online databases, libraries, or other trusted sources.
3. Coding important information from selected primary studies into data tabular form. Important information may include sample characteristics, study variables, effect sizes, confidence intervals, p values.
4. Calculate the combined or average effect size of all primary studies using a statistical model that is appropriate to the research being studied. In this case the fixed effects model or random effects model.
5. Test heterogeneity or variation between primary studies using statistical tests such as the Q-test. If heterogeneity is high, then subgroup analysis or meta-regression can be carried out to determine the factors causing the heterogeneity.
6. Test the sensitivity or robustness of meta-analysis results by carrying out re-analysis by changing initial assumptions or eliminating certain studies that have the potential to be biased.
7. Testing for publication bias or the possibility of studies not being published because the results were not significant.

RESULTS AND DISCUSSION

A. RESULTS

The author conducted a literature search using the keywords neuroscience, Islamic education, and early childhood in various scientific databases such as Google Scholar, Sinta, Garuda, and others. The author found several articles that were relevant to the research topic and met the inclusion and exclusion criteria. The author then analyzed the data using Comprehensive Meta Analysis (CMA) software version 4.0. combined with data from *Google Trends.*

The meta-analysis results show that neuroscience has a positive and significant relationship with early childhood Islamic education. The author concludes that neuroscience can be an effective approach to developing the potential of early childhood holistically in accordance with the principles of Islamic education. The author also provides several recommendations for further research, such as conducting empirical studies using quantitative or qualitative methods, examining other aspects of neuroscience related to early

childhood Islamic education, and developing neuroscience-based curricula and learning models.

The strength of this journal is that the author succeeded in identifying a research gap that is still rarely researched, namely the relationship between neuroscience and early childhood Islamic education. The author also uses a meta-analysis method which can provide a more comprehensive and objective picture of the results of previous research. In addition, the author presents the research results clearly and systematically, and provides theoretical and practical implications that are useful for the development of early childhood Islamic education.

Children's education is an important stage in individual development, where character formation and behavior development are the main focus. In this context, combining educational principles with neuroscience has become an attractive and promising approach to address children's behavioral challenges. One of the behavioral problems that often occurs is tantrum behavior in children. In an effort to overcome these challenges, Islamic educational approaches have emerged as a promising alternative, combining religious teachings with an understanding of neuroscience. This research aims to conduct a meta-analysis of various studies that have been carried out previously in the context of using an Islamic educational approach in dealing with tantrum behavior in children, as well as to analyze its impact from a neuroscience and child behavior perspective. Meta analysis was carried out on a total of 20 studies that had been conducted previously in relation to the use of Islamic education approaches to overcome tantrum behavior in children.

The results of this analysis reveal that the Islamic education approach plays an important role in reducing the frequency and intensity of tantrum behavior in children. The principles of Islamic education such as empathy, self-control, moral development and responsibility have been proven to have a positive impact in shaping children's thinking and behavior patterns. Through meta-analysis, it was found that interventions based on Islamic education can significantly reduce the duration and frequency of tantrums, as well as increase children's ability to manage negative emotions.

Not only that, analysis from a neuroscience perspective also found that the Islamic education approach has a real impact on children's neurological aspects. Practices in Islamic education, such as meditation, dhikr, and other spiritual practices, were able to improve emotional regulation and reduce the activity of the amygdala, which is responsible for intense emotional responses. These findings indicate a close correlation between the principles of Islamic education and changes in brain structure that support better emotional management.

B. Discussion

The results of this research provide an important contribution in understanding the potential of Islamic education approaches in dealing with tantrum behavior in children. The integration of Islamic principles in education has a positive impact, not only on children's behavior, but also on their neurological aspects. These findings provide significant implications for designing more effective and holistic interventions to address behavioral challenges in children.

It is important to note that the success of interventions depends not only on the principles of Islamic education themselves, but also on their implementation in children's daily lives. Factors such as family support, social environment, and overall educational approach also play an important role in forming an environment that supports a child's positive development. However, it should be noted that the results of this study also have several limitations. Some of the analyzed studies may have had different methodological designs, as well as differences in child populations and cultural contexts. Therefore, further research with a more uniform and representative methodology is needed to strengthen these findings.

Neuroscience is the study of the structure and function of the brain and its relationship to behavior and learning. Neuroscience makes an important contribution to the development of early childhood education (PAUD), especially early childhood Islamic education (PIAUD), because the brain is the main organ that determines a child's potential and abilities. Early childhood Islamic education must pay attention to neuroscientific principles in designing and implementing learning that is appropriate to the characteristics and needs of children's brain development.

PIAUD learning from a neuroscience perspective must meet several criteria, including: (Dewi, CT, et al, 2018).

1. Fun, namely learning that creates feelings of joy, happiness and interest in children, so that it can stimulate the release of the hormone dopamine which plays a role in the process of memory formation and motivation.
2. Meaningful, namely learning that is relevant to the child's experiences, interests and needs, so that it can activate the prefrontal cortex which functions in understanding, reasoning and decision making.
3. Diverse, namely learning that uses various methods, media, sources and activities that attract attention and involve all of the child's senses, so that it can increase connectivity between neurons and enrich neural networks.
4. Repetitive, namely learning that provides opportunities for children to repeat, remember and apply what they have learned, so that they can strengthen synapses and retain information in long-term memory.
5. Moral content, namely learning that integrates Islamic values in every learning material and activity, so that it can form noble character and morals in children.

Early childhood education learning from a neuroscience perspective must also avoid several things that can inhibit or damage a child's brain development, including:

1. Pressure, namely conditions that cause feelings of fear, anxiety, anger or sadness in children, which can damage nerve cells in the hippocampus which play a role in memory formation.
2. Boredom, namely a condition that causes feelings of boredom, boredom, or disinterest in children, which can reduce brain activity and hinder the learning process.
3. Violence, namely actions that cause pain or trauma to children, both physically and psychologically, so that they can disrupt the child's emotional and social development.
4. Malnutrition, which is a condition caused by a lack of nutritional intake needed by the brain to grow and develop optimally.

In conclusion, this research provides a comprehensive view of how Islamic educational approaches can play a role in overcoming tantrum behavior in children, with support from neuroscientific understanding. The practical implication of this research is the importance of integrating Islamic educational values in intervention approaches for children with tantrums, taking into account both behavioral and neurological aspects to achieve more effective and sustainable results in supporting children's holistic development.

Thus, neuroscience can be a frame for early childhood Islamic education to create effective and enjoyable learning for children. Early childhood education learning from a neuroscience perspective not only aims to develop children's cognitive potential, but also children's affective and psychomotor potential. Early childhood education learning from a neuroscience perspective is not only oriented towards children's learning outcomes, but also children's learning processes. PIAUD learning from a neuroscience perspective also does not only rely on conventional methods such as calistung or BTAQ, but also innovative methods that are in line with current developments.

CONCLUSION

This research has explored the depth of the relationship between neuroscience and Islamic educational approaches in dealing with tantrum behavior in children. By conducting a meta-analysis of various studies that have been carried out previously, this research succeeded in summarizing and synthesizing the findings which show that the Islamic education approach has great potential in reducing the frequency, intensity and duration of tantrum behavior in children. From the results of the analysis, it is clear that the principles of Islamic education, such as empathy, self-control, moral development and responsibility, have a positive impact in shaping children's thought patterns and behavior. Interventions based on Islamic education significantly contribute to

overcoming the challenges of tantrum behavior, while increasing children's ability to manage negative emotions.

In addition, neuroscientific analyzes confirm that practices in Islamic education, such as meditation and dhikr, affect children's neurological aspects by producing changes in emotional regulation and reducing amygdala activity. This proves that there is a close connection between the principles of Islamic education and the modulation of brain activity that supports better emotional control. Thus, this research provides a comprehensive picture of the effectiveness of the Islamic education approach in reducing tantrum behavior in children through the integration of neuroscience. The practical implications of this research underscore the importance of integrating Islamic educational values in the development of intervention strategies for children with tantrums. By considering neurological and behavioral aspects simultaneously, this approach can provide a more holistic and sustainable solution.

However, it should be acknowledged that this study has several limitations, such as variations in the methodological design of the studies analyzed and differences in child populations and cultural contexts. Therefore, recommendations for future research are to adopt a uniform and representative methodology, and involve more diverse samples to corroborate these findings.

Thus, this research has provided a valuable contribution in enriching understanding of the combination of neuroscience and Islamic educational approaches in overcoming behavioral challenges in children. It is hoped that the practical and theoretical implications of this research will encourage the development of more effective and sustainable interventions, as well as enrich insight into designing more holistic and inclusive education for children with tantrums.

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