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Child cognitive development based on the maternal education

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Abstract

This quantitative research explores the differences in early childhood cognitive development levels based on the mother's educational background. Using observation-based performance assessments, the measurement of children's cognitive development through 3 aspects: child social interaction, understanding of symbols, and reasoning involving samples. This study involved 30 children aged 5-6 years divided into two groups. The first group was children who had mothers with university-level education, while the other group was children with a high school-. The collected data was analyzed to describe the demographic char samples' demographic characteristics using an independent t-test to measure cognitive differences between the two groups of children. Significantly the educated mother results showed differences in cognitive development between the groups. Children with highly educated mothers have better cognitive abilities than children with mothers from a lower level of education. This research has implications for the importance of parental education to optimize children's cognitive development.

A. INTRODUCTION

Development in humans is a series of changes that affect each other's birth and form a harmonious unity; therefore, at this time, the child urgently needs the right stimulus, namely through fun games or entertainment (Novitasari, 2018). In the Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 137 of 2014, it is explained that the scope of development according to the age level of children includes aspects of religious and moral values, motor physique, cognitive, language, socio-emotional, and artistic (Peraturan

Menteri Pendidikan Dan Kebudayaan Republik Indonesia Nomor 137 Tahun 2014 tentang Standar Nasional Pendidikan Anak Usia Dini, 2014).

Cognitive is one aspect of early childhood development (Mu'min, 2013). Cognitive ability is defined as children's potential to think in complex ways and reasoning and good problem-solving skills (Novitasari, 2018). In the aspect of cognitive development, learning outcomes and competencies that are focused on children are capable children and have the intelligence to think in a structured, careful, and can provide reasons, find causal relationships when solving problems encountered, and able to solve problems (Yamin & Sanan, 2010). Thus, this ability will help children master knowledge more broadly as a provision to grow and function normally in life as a maid (Marinda, 2020).

In early childhood, this cognitive development is essential for getting attention and stimulation (Veronica, 2018) because it is closely related to other aspects of development, such as aspects of language development (Sa'ida, 2018) and psychosocial. If the cognitive apart parts develop well, other aspects of development also develop optimally. A variety of essential factors determines optimal cognitive development. Setyaningrum, Triyanti, and Indrawani (2014) found that cognitive development was related to learning. The role of parents in the process of learning and playing can have an impact on the optimization of cognitive development. (Herentina & Yusiana, 2012; Novita, 2018). In addition, the behavior shown by parents also contributes to the child's cognitive ability (Mamesah et al., 2018).

Other studies mention several factors that contribute to cognitive development, including parenting (Ashari et al., 2017; Ryan et al., 2006). These studies argue that authoritative parenting is a good atmosphere for cultivating a child's cognitive abilities. Furthermore, Diananda (2020) deals with the influence of attachment on cognitive development. In addition, warm communication patterns and following the level of development are also a catalyst for cognitive development in children. (Junaidin & Hartono, 2020).

Through the discussion above, we can conclude how much parents play in helping their child's cognitive development, and it is related to treatment or guidance for their children in the family environment. Several studies prove that one factor contributing significantly to cognitive development is the level of knowledge parents have about cognitive development (Kosegeran et al., 2013; Setyaningrum et al., 2014).

Parents as caregivers but also as educators should know that children from an early age begin to bring up new skills, both physical skills, and mental skills. Parents need to understand what is happening to the child and recognize what the child needs for his development. In addition, they also need to know what things must be done to meet these needs. Thus, parents can decide what actions can optimize the child's development. Good knowledge of ways, activities, or materials that can make children interested and pack them in an exciting activity program before stimulating child development is vital because it can support good parenting behavior towards child development. Thus, parents' knowledge becomes essential in the child's care.

Proof of the influence of parents' education levels on children's cognition has also been carried out by Fitri and Sembiring (2018). However, the research is still reviewed descriptively, so further searches are needed to get more complete results. This study aims to look more deeply at the differences in the level of cognitive development of children aged 5-6 years based on the level of maternal education.

B. METHOD

This quantitative study involved 30 children aged 5-6 years (40% boy, 60% girl). Through the total population sampling technique, the sample was selected based on the age range of 5-6 from all children studying at Raudhatul Athfal Perwanida 1 Palembang, South Sumatra, Indonesia. Data collection was carried out from 10 January 2022 to 20 February 2022.

The instrument used in this study is an observation-based performance assessment sheet consisting of 3 aspects: children's social interaction, understanding of symbols, and reasoning. Aspects of social interaction consist of 6 observations: 1) able to mention family members in the child's home, 2) able to remember the name of a classmate, 3) able to mention the name of a classmate, 4) able to mention the characteristics in classmates, 5) able to know the name of the profession of the person around the child, and 6) able to mention the work of a profession of people who are around children.

The aspect of understanding symbols is measured through 4 observations, namely: 1) able to connect the line with the number of images on the problem according to the existing number symbol, 2) able to mention the name of the number when shown the number symbol, 3) able to mention the symbol of the number designated in the order, and 4) able to mention the symbol of a randomly designated number. While the aspect of reasoning is observed through the items: 1) able to sort stationery from short to long, 2) able to measure the length of the hand using the arm's inch, 3) able to compare the amount of water in a glass, 4) able to show the same amount of a collection of two objects, and 5) able to compare the number of more and fewer than two sets of objects. This measurement instrument is reported to have an acceptable level of reliability. ($r \geq 0.858$) with the validity of instrument items ranging from 0.433 to 0.704 ($r \geq 0.374$).

Scoring uses a scale of 1-4, with the lowest score (point 1) for children who have not been able to show the expected performance and the highest score (point 4) for children who have been able to display the assessment criteria well. After the data is collected, the data is divided into two groups, namely the children who have mothers with higher education and groups with educated mothers only up to the high school level. The data was analyzed through an independent sample t-test using Jamovi Statistic Software. Frequency statistics are used to describe data based on accumulated demographic characteristics.

C. RESULT AND DISCUSSION

1. RESULT

Table 1 shows descriptive data from the sample based on existing demographic characteristics. The number of children with highly educated mothers is as many as 15 people (50.0%), while children with mothers from a lower level of education are as many as 15 people (50.0%).

Table 1 Descriptive Statistic of Demographic Characteristics

Variable	Total	
	n	%
Gender		
Boy	12	40,0
Girl	18	60,0
Maternal Education Level		
High school level	15	50,0
University level	15	50,0

According to the analysis based on the observational aspects of cognitive development in Figure 1, it can be seen that in the aspect of child social interaction (aspect 1), there are 16.7% of children at the intermediate level, and 83.3% of children are at a high level. In the aspect of understanding symbols (aspect 2), 20.0% of children at the intermediate level, and 80.0%. In the aspect of reasoning (aspect 3), there are 3.3% at the intermediate level and 96.7% at a high level. From the description, it can be concluded that cognitive development is dominated at a high level. Further data is shown in Figure 2 below.

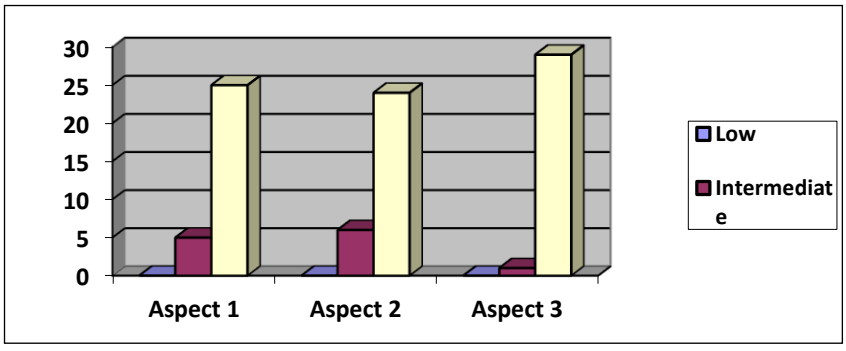

Figure 1 Level of Cognitive Development Based on Measurement Aspects

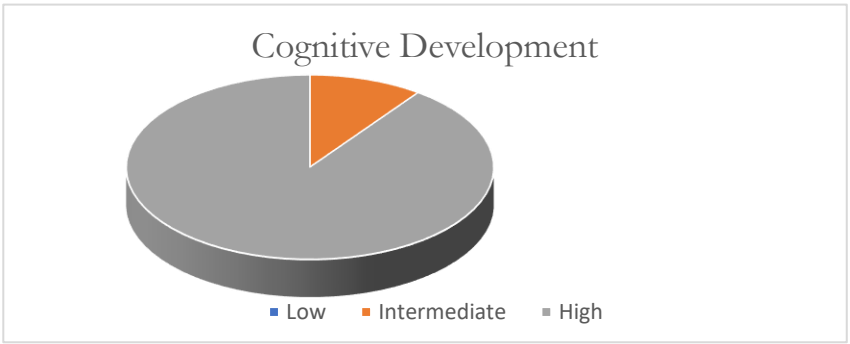

Figure 2 Level of Cognitive Development

Analysis through independent t-tests showed that there was a significant difference in cognitive development between children who had mothers with education at the university level and children who had mothers with education at the high school level *(t (30) = -10.5, p<0.01)*. The cognitive development of children with higher-educated mothers (M=54.6, SD=2.23) is compared to children with lower-educated mothers (M=44.5, SD= 3.02). This finding suggests that maternal education influences the child's cognitive development. The difference in the cognitive development of children in both groups was 22.69%.

2. DISCUSSION

The study's primary purpose was to test differences in children's cognitive development because of the mother's educational background. An essential finding of this study is that there are cognitive differences in children based on parental education. These findings confirm previous research examining the relationship of parental education with cognitive development conducted by Filtri & Sembiring (2018), which found that descriptively, the average cognitive development scores of children who have mothers with an excellent educational background tend to be higher. The level of education of mothers in the undergraduate category is higher than that of mothers with the level of education in junior high and high school in terms of optimizing the child's cognitive development.

Similarly, Maria (2015) found a significant positive relationship between maternal education and cognitive development. The primary key to high success and achievement formed from the child's cognitive development process is the presence of attention and affection from both parents, not from school and the environment (Langgulung, 1995). Education from parents who come from home becomes the determinant of the foundation of the child's personality and character (Indragiri, 2010). According to Setiawan (2010), parents are the principal teachers and, most notably for the child, where parents have the most opportunity to affect the child's cognitive, especially when they are still susceptible to its influence. The higher the mother's education level, the better her child's cognitive development.

Furthermore, this research was strengthened by Latifah, Ina, and Suryati (2016) in their research as they concluded that one of the factors that affect children's cognition is the educational background of parents, especially mothers. This study provides a different point of view from research that directly links parental education and maternal intelligence with children's cognitive abilities. Danish National Birth Cohort longitudinal research shows that parental education and maternal IQ are predictors that significantly predict a child's IQ by 24%. Therefore, it is recommended to be a routine procedure in research on children's cognitive development (Eriksen et al., 2013).

Corroborating the results of this study, Novita (2018) argued that children's cognitive development is maximized in accordance with the level of education that parents have. This case can be easily understood because the mother, as one of the crucial actors in the family, is one of the sources of learning (Rolina, 2006). In order to be an effective source of learning, families must certainly have broad insights into early childhood education, understand the child, and the stimulation given to the child must be in harmony with that given by the school (let there be a contradiction between the lessons and experiences received at school and home). Thus, the one who has the most arduous task in educating and nurturing children is the family,

especially the parents. As Montessori points out in Andriana (2005), the environment greatly influences the child's development and learning. Families are expected to create a home setting conducive to the child's learning process. The expected family is a harmonious family. A caring family of children will produce a child who is attentive to the surrounding environment, and there are many other lessons that children can receive in the family environment.

The role of parents is vital in supporting growth and development and realizing the best education for children. A good education can involve the role of parents. Primary education starts from home; whatever happens in it can affect development and learning. The more significant the role of the family in children's learning, the greater the child gets a quality education (Morrison, 2012). The higher the education a mother has, the higher the role of parents in stimulating child development (Christiari et al., 2013; Fauziana, 2013; Saadah et al., 2020). Soedjatmiko (2001) mentioned that the development of infants and toddlers is mainly influenced by the microenvironment (mother) and the mini-environment (family). As the closest child-caregiver, the mother should know more about the process of growth and development of the child and the factors that influence that process. The quality of the child is strongly influenced by the mother's understanding, awareness, and ability to handle the child (Pramusinta & Sunartini, 2002). Mothers with low education tend not to be able to provide optimal developmental stimulation, so their children are not able to achieve optimal development as well. (Khofiyah, 2020). The better and more prosperous the stimulation is the more optimal the child's cognitive development (Kristina & Sari, 2021; Rahmaulina & Hastuti, 2008). The child's cognitive development can develop if given proper stimulation that supports early childhood cognitive and language development. Of course, providing this stimulus requires skills based on knowledge ranging from child care, healthy parenting, and a supportive environment. Parents who always stimulate the abilities stored in the child's brain continuously follow the stimulation program, showing an improvement in the aspect of cognitive abilities compared to those who did not follow it because the abilities that are not given stimulation will gradually disappear (Pertiwi et al., 2021).

D. CONCLUSION

Conclusively, this research shows the importance of education owned by parents to develop the potential of children, one of which is the cognitive ability. However, as a limitation, this study did not look at other factors that also influenced children's cognitive development. Some intermediate factors that can influence the effect of the mother's education on the child's cognitive abilities are the interaction between mother and child, communication patterns, environmental conduciveness, and other external factors. The study recommends further tracing the relationship between maternal education levels and a child's cognitive development with attention to other demographic characteristics. By involving more complex factors, the influence of maternal education on the child's cognitive development can be comprehensively identified.

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