

## The Effect Of Puzzle Games On Reducing Impulsive Behavior In Hyperactive Children Aged 5-6 Years

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### ABSTRACT:

The study problems are: "Is there a significant effect of puzzle games on reducing impulsive behavior in hyperactive children aged 5-6 years at TK Al-Khairat Kindergartens, Gorontalo City?" The study aims to determine the impact of puzzle games on reducing impulsive behavior in hyperactive children aged 5-6 years at TK Al-Khairat Kindergartens, Gorontalo City. The study employed a quantitative approach using an experimental method with a pre-test and post-test design, where tests were conducted before and after the treatment. The subjects were four hyperactive children aged 5-6 years in Group B at TK Al-Khairat Kindergarten, Gorontalo City. The study focused on reducing impulsive tendencies in hyperactive children through puzzle games. Data collection for the pre-test and post-test was conducted using research instruments and analyzed statistically. The results showed a significant difference in hyperactive children's average impulsive behavior scores before and after the intervention, with pre-test and post-test scores of 16.00 and 23.50, respectively. The findings confirm a significant effect of the intervention. The t-test results showed a sig. (2-tailed) value of  $0.000 < 0.05$ , leading to the rejection of  $H_0$  and acceptance of  $H_1$ . It can thus be concluded that there is a significant difference in impulsive behavior between the pre-test and post-test data, indicating that the X variable significantly affects the y variable.

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## 1. Introduction

The Great Dictionary of the Indonesian Language states that "early childhood is an individual resident aged 0-6 years". Law on the National Education System Number 20 of 2003, Article 1, paragraph 1, states that early childhood includes children who are in the age range of 0-6 years. Fadillah states that "early childhood is a group of children who are in the process of growth and "unique development". Early childhood is an individual who is experiencing a very rapid growth and development process, even said to be a developmental leap (Fadillah, 2014:19).

Aziz stated that the category of early childhood or early kindergarten is preschool which is included in the 2 to 6 year group (Aziz, 2017:2). Ahmad stated that early childhood is a child who is in the age range between one to five years who experiences very rapid development and growth. Children exhibit many activities at different times and on different occasions, and these activities seems tireless. Young children are not used to other activities, but they do not do these activities, this causes problems. One of the problems in the field is that all children can go through all the processes of developing their emotional and social abilities well, even though kindergarten children also greatly determine their level of development (Ahmad, 2018:1).

Children with special needs, including Children with Special Needs, are young children who have unique characteristics and are different from other children. Children with special needs require special education services that are tailored to their capacity and potential due to their characteristics and deficiencies. Various disorders of children with special needs can generally be classified into blindness, deafness, mental retardation, physical disabilities, hearing disorders, learning difficulties, behavioral disorders, gifted children, and children with health problems. A common type of problem called attention deficit hyperactivity disorder is part of the problem general. Attention deficit hyperactivity disorder is a developmental disorder that increases children's motor movements, which is a tendency to do activities. Excessive motor activity and inability.

Interaction with others is what differentiates children with attention deficit hyperactivity disorder. attention from normal children. Children realize that attention deficit hyperactivity disorder displays impulsive behavior, which is behavior that cannot be controlled. They are usually shunned by their friends because of this behavior. Children who experience attention deficit hyperactivity disorder present poor communication, very active behavior, and consist of the inability to maintain their behavior, very borrowed learning, especially for exercises that lie in daily activities, and are no longer prone to emotional problems of anxiety and problems in relationships with friendships in class (Nevid, 2005).

When children suffering from attention deficit hyperactivity disorder enter society, their behavior This impulsiveness can cause problems. Children who are new to attention deficit hyperactivity disorder when they develop their emotional capacity and face all the difficulties they experience, aggression, pressure, and attraction. Children who suffer from attention deficit hyperactivity disorder will feel in the opposite position, and disrupt the atmosphere, which is the entry of disruptive conflict (Nevid, 2005).

These genes are not the main cause of attention deficit hyperactivity disorder. This is evident from the condition of most of the child's family members who are generally hyperactive children. Meanwhile, psychological, social, and biological facts can be secondary facts. Attention deficit hyperactivity disorder is a genetic pattern that is unreasonable activity in the front of the cerebral cortex, part of the brain.

According to Barkley, attention deficit hyperactivity disorder is a behavioral disorder that occurs in children with a pattern of symptoms such as being unable to sit still and fidgeting for a moment in their seat (hyperactive), unable to concentrate. Attention is a lack of concentration on something, and impulsive behavior is behavior that follows one's heart, causing one to act on his own accord without thinking first.

According to Santrock, play is a very useful form of human adaptation, helping children to master anxiety and conflict. Play allows children to release excess physical energy and release pent- up feelings (Santrock, 1995). According to Dolphio, games can be therapeutic so that they can be used as an alternative to cure impulsive behavior for children with attention deficit hyperactivity disorder (Dolphio, 2009). In addition, playing is also believed to be able to resolve psychosocial difficulties and encourage children to achieve optimal growth and development (Veskariyanti, 2008).

Jeffre stated that the impulsive behavior of children with attention deficit hyperactivity disorder is very disturbing and can cause them to be shunned by others (Dolphio, 2009). Therefore, they need to play that emphasizes socialization or interaction with their friends. The type of socialization game is an effort that can lead the child concerned through certain games to be able to master new skills which are then developed into special skills. In socialization games, children will be invited to interact with their playmates.

Socialization games, this also has advantages that are not obtained by others, namely children will tend to feel comfortable during the play session. Another advantage, playing is also one of the treatments that can be done at home, at school, or in therapy. However, many teachers or therapists who treat children with attention deficit hyperactivity disorder focus more on their hyperactive behavior and less on their impulsive behavior. Often this is due to the misunderstanding that children with this disorder are hyperactive children. Another equally important

characteristic of hyperactivity is impulsivity. This is one of the reasons for this study. Impulsive behavior cannot be left alone without special attention from those around..

Games are tools for children to explore their world from what they do not know to what they know and from what they cannot do, to being able to do it (Semiawan, 2002:20). While educational game tools are means that can stimulate children's activities to learn something without the child realizing it, using either modern technology or simple technology or even traditional (Ismail, 2006:155).

Puzzle games are games that involve putting together messy picture pieces into a whole. a complete picture. (Srianis, 2014). According to Faruq puzzles are educational game tools that can stimulate children's abilities, which are played by disassembling and reassembling puzzle pieces based on their pairs. Puzzles are games that require children's patience and perseverance in assembling them (Faruq, 2007: 36). By getting used to playing puzzles, children's mentality will gradually get used to being calm, diligent, and patient in completing something. The satisfaction they get when they complete a puzzle is also one of the motivators to try new things for them. In playing puzzles, parents need to pay attention to the different abilities of each child. Usually, children who are introduced to puzzles from an early age will be more skilled and accustomed to playing puzzles. Therefore, parents who will choose puzzles for their children, do not base it on age, but depend on the child's abilities.

Puzzle is a simple form, the picture is not too complicated and is suitable for preschoolers up to 6 years old. This puzzle is a form of team game that tasks players to combine or reassemble irregularly shaped pieces of paper into a certain shape or form such as a square, rectangle, and triangle (Mayadikra,2011). According to Patmonodewo that puzzle comes from English which means puzzle or dismantle and assemble. Puzzle media is an educational game tool that can stimulate children's mathematical abilities which is played by dismantling and reassembling puzzle pieces based on their pairs (Muzamil, 2010).

The benefits of this puzzle game can reduce anxiety levels, puzzles can also help children's psychosocial development, mental development and creativity. The benefits of this puzzle play therapy in addition to reducing anxiety in children, children can also socialize with other children rather than children just staying in the room and looking apathetic to their surroundings (Fitriani et al, 2017). The results of Fitriani research, This puzzle game proves that this game has a significant influence on reducing the anxiety response of preschool children during hospitalization. Research conducted by Kaluas also states that playing puzzles can reduce anxiety in children (Kaluas, 2015). This is because when playing puzzles children are required to be patient and diligent in assembling them. Gradually this will have an impact on the child's mentality so that the child is used to being calm, diligent and patient in dealing with something.

Impulsive is a behavior that tends to act without thinking. This condition may have been encountered or even experienced by yourself. For example, when saying something, buying something unplanned or running across the street without looking. Impulsive is a behavior that is often associated with undesirable outcomes. This type of behavior is common, especially in children or teenagers and is not necessarily a sign of a problem. Usually they act impulsively because their brains are still developing. But in some cases, this behavior can be part of a certain condition. Impulsive behavior more often has a negative impact. From making decisions that rushing to the point of quarreling, impulsive behavior can be detrimental to oneself and those around you. In addition to damaging relationships and a person's sense of well-being, impulsive behavior can also cause financial loss and can even lead to legal action if left unchecked.

Impulsive behavior can be recognized by several signs or symptoms. Signs or symptoms of impulsive behavior among others, such as acting spontaneously, not considering the impact of their actions on themselves and others, and only thinking about the current situation and not thinking about the long-term impact of their actions. Some examples of impulsive children's behavior are as follows:

- a. ignoring danger: running into the street without checking traffic or jumping into a pool even though they can't swim

- b. interrupting: often interrupting conversations
- c. physical violence: pushing another child or throwing something when upset
- d. grabbing: taking what they want instead of asking or waiting their turn
- e. become vocal: shout out of frustration

## 2. Method

This research was conducted at Al-Khairat Kindergarten, Gorontalo City. This research was conducted with the aim of how much influence puzzle games have on reducing impulsive behavior in hyperactive children aged 5-6 years. This research was conducted for 2 months, starting from the preparation stage, implementation of the research, to the final report preparation stage. This research uses quantitative research with experimental methods. The research design used in this study is one group pretest-posttest design. The design shown in table 1. This research was conducted on only one group of 4 children. In this group, a performance test was given.

**Table 1. one grup pretest-posttest design**

Pre-test	Treatmen	Post test
X1	T	X2

Information:

X1 = Pre-test (before treatment) reduction of impulsive behavior in hyperactive children before being given treatment

X2 = Post-test (after treatment) reduction of impulsive behavior in hyperactive children after being given treatment

T = Puzzle Game

## 3. Result

The research findings completed before starting the treatment were used to first assess the level of reduction in impulsive behavior in hyperactive children group B at Al-Khairat Kindergarten, Gorontalo City through a pre-test or before treatment. The results of the pre-test are as follows in table 2:

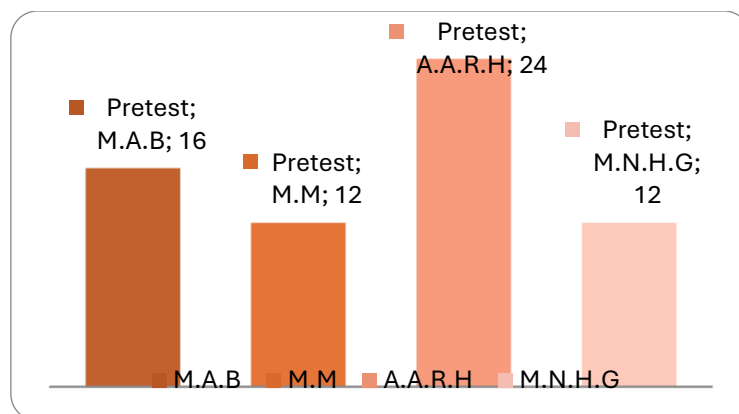
**Table 2. Statistical Test Results before being given puzzle game treatment**

Description	Statistic	Std. Error
Mean	16.00	2.828
95% Confidence Interval for Mean	Lower Bound	7.00
	Upper Bound	25.00
5% Trimmed Mean	15.78	
Median	14.00	
Variance	32.000	
Std. Deviation	5.657	
Minimum	12	
Maximum	24	
Range	12	
Interquartile Range	10	
Skewness	1.414	1.014
Kurtosis	1.500	2.619

It is known that for statistical calculations on pre-test and post-test scores, namely for the pretest, the average value (mean) is 16.00, 95% confidence interval for lower bound is 25.00, Median value (middle value) is 14.00 and the maximum value (highest value) is 24 and the minimum value (lowest value) is 12, and the range value (range of values) is 12, and the interquartile range value (quartile range) is 10, and the skewness value is 1.414, and the kurtosis value is 1.500.

The description of the pretest results is a summary or description of the initial conditions of impulsive behavior in hyperactive children. before the intervention of puzzle game treatment is given. Pretest is a form of evaluation conducted by researchers before the research material or treatment is given to students. The results of the pre-test aim to measure the level of impulsive behavior in hyperactive children before the intervention is carried out. Based on the results of the calculation of the value of children in group B at Al Khairat Kindergarten, Gorontalo City, the researcher found a total score of 64 with a total of 4 students in the pre-test. So the average value that the researcher found was 16.00. Based on the tabulation of pre-test data attached in Appendix 8, when viewed from the frequency of occurrence of values per item from P1-P12, the data shows a dominant value at value 1, which means that from the 12 statement indicators, the researcher found that most of the children involved in the study showed a certain response or level of impulsive behavior that was at a high or moderate level on the assessment scale used. it can be concluded that the scale that appears most often is scale 1 which can be explained as an indication that most children have a high level of impulsivity during the pre-test. The following are the pre-test scores of students.

Figure 1. Pretest results diagram



Based on the diagram in Figure 1, it can be clearly seen that the value before the application of puzzle game media to hyperactive children aged 5-6 years with a total score of 64, the child's lowest score was 12 and the highest score was 24. The following is the calculation of the pre-test average.

$$Mx = \frac{\sum Mx}{N} = \frac{64}{4} = 16,00$$

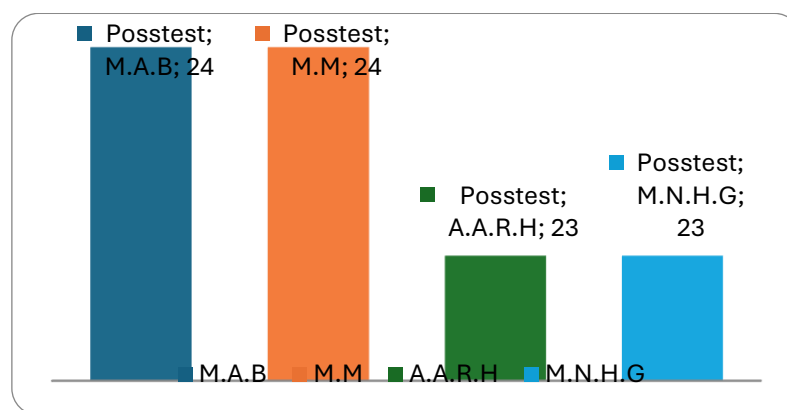
Calculations based on the pre-test showed an average score of 16.00 of the total value.

At this stage, the researcher prepares a planning schedule, compiles a daily learning program design (read RPPH) that will be implemented according to the schedule. In addition, the researcher also presents learning media that will be used in the learning process activities for children in the form of puzzle games, and also prepares a camera as a tool for documenting activities during learning activities. This research was conducted in group B of Al-Khairat Kindergarten, Gorontalo City with a total of 4 children aged 5-6 years. This study only used one treatment group so that impulsive behavior was measured before being given treatment (pre-test) which was carried out on July 26, 2024

and was re-measured after the children were given treatment playing with puzzle games (post-test) which was carried out on July 29. The provision of treatment using puzzle game media was carried out 8 times, namely on July 29 - August 9, 2024.

The description of the post-test results is a summary or description of changes in impulsive behavior in hyperactive children. after receiving intervention or treatment. Post-test was conducted after the intervention period involving puzzle games, evaluation was conducted to assess the impact on impulsive behavior in hyperactive children. Post-Test aims to measure changes in impulsive behavior after treatment. Based on the results of the calculation of the value of group B children at Al Khairat Kindergarten, Gorontalo City, the researcher found that the total post-test score was 94 with a total of 4 students. So that the average value that the researcher found was 23.50. Based on the tabulation of post-test data attached in Appendix 9 when viewed from the frequency of occurrence of the value per item from P1-P12, the data shows a dominant value at value 2, in this data it can be shown that the impulsive behavior of children tested after the puzzle game intervention is at a very low level. Showing that impulsive behavior is greatly reduced or almost non-existent. then it can be concluded that the scale that appears most is scale 2 which is dominant indicating that after being given a puzzle game intervention, most children experienced a significant decrease in their impulsive behavior. Here are the post-test scores of students:

Figure 2. Post-test results diagram



Based on the diagram in Figure 4.2 above, it is clearly seen that the value after the application of puzzle game media to hyperactive children aged 5-6 years in Al Khairat Kindergarten, Gorontalo City. The post-test results show a total value of 94, the lowest value of the child is at 23 and the highest value is at 24. The following is the calculation of the post-test average.

$$Mx = \frac{\sum Mx}{N} = \frac{94}{4} = 23,50$$

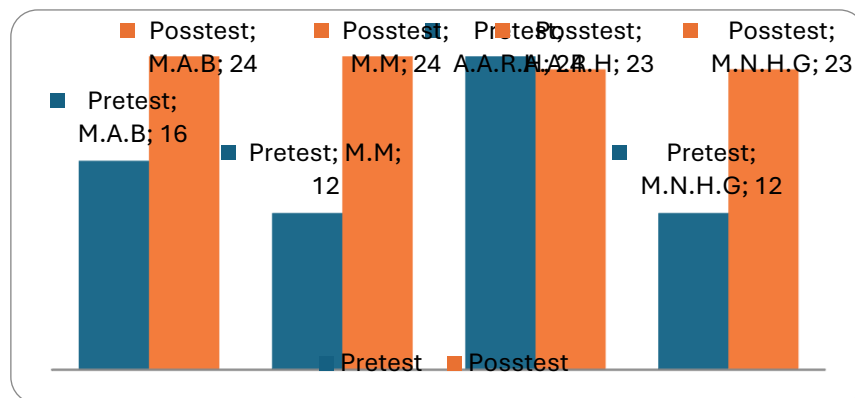
The calculation of the post-test mean showed an average value of 23.50 of the total value.

Table 3. Statistical test results after being given puzzle game treatment

Descriptives	Statistic	Std. Error
Mean		23.50
95% Confidence Interval for Mean	Lower Bound	22.58
	Upper Bound	24.42
5% Trimmed Mean		23.50
Median		23.50
Variance		.333
Std. Deviation		.577
Minimum		23
Maximum		24
Range		1
Interquartile Range		1
Skewness		.000
Kurtosis		-6.000

It can be seen in table 3 above, where the post-test obtained an average value (mean) of 23.50, the confidence interval for the lower bound is 22.58, the upper bound is 24.42, the median value is 23.50 and the maximum value is 24 and the minimum value is 23, and the range value is 1, and the interquartile range value is 1, and the skewness value is 0.000, and the kurtosis value is 6.000. Analysis and assessment results in the form of pre-test and post-test of impulsive behavior in hyperactive children, when viewed from the average value, there is a decrease in value from the pre-test (16.00) to the post-test (23.50).

Figure 3. Comparison diagram of pretest and post-test results



The blue color table diagram is Pre-test while the orange color table is post-test. Based on the bar chart above, researchers can describe how impulsive behavior in hyperactive children decreases from pretest to posttest.

#### 4. Discussion

Based on the research data on the effect of puzzle games on impulsive behavior in hyperactive children group B at Al-Khairat Kindergarten, Gorontalo City. This study shows that puzzle games on impulsive behavior in hyperactive children group B at Al-Khairat Kindergarten, Gorontalo City experienced a maximum decrease. Because the researcher obtained data from the results of observations before the application of puzzle game media (pre-test) and the results of observations after the application of puzzle game media (posttest). The results of the study obtained showed the average value of impulsive behavior in hyperactive children before the application of puzzle game media

was 16.00 and decreased to 23.50 after treatment. This shows that puzzle games have a very significant influence on impulsive behavior in hyperactive children Group B at Al-Khairat Kindergarten, Gorontalo City.

There are several things that cause puzzle games to have a significant influence on behavior. impulsive in hyperactive children aged 5-6 years at Al-Khairat Kindergarten, Gorontalo City. This puzzle game proves that this game has a significant effect on reducing the anxiety response of preschool children during hospitalization (Fitriani, *et.all*, 2017). Research conducted by Kaluas also states that playing puzzles can reduce anxiety in children. This is because when playing puzzles, children are required to be patient and diligent in assembling them. Gradually this will have an impact on the child's mentality so that the child is used to being calm, diligent and patient in dealing with something (Kaluas, *at.all*, 2015).

Pavlov's theory states that to produce a desired reaction is called a response, therefore Pavlov said that there needs to be repeated stimuli so that it can be called habituation. Habituation essentially contains experience. Habituation is something that is practiced (Sapti et al, 2017:57). Therefore, the core of habituation is repetition. Habituation is very effective in fostering attitudes because it will train good habits in early childhood. It is said to be very effective because early childhood has the nature of easily imitating what is done by the people around them.

According to Notoatmodjo, behavior from a biological perspective is an activity or activity of the organism concerned. Human behavior can be interpreted as an activity that is very complex in nature, including behavior in speaking, dressing, walking, perception, emotion, thought and motivation. According to Skinner formulates a person's response or reaction to external stimuli or stimulation. This behavior occurs through the process of stimulus to the organism and then the organism responds, so Skinner's theory is called "SOR" or Stimulus Organism Response (Notoadmodjo, 2014).

Handayani, stated that puzzle games help children learn to regulate emotions and self-control, thus reducing impulsivity. Children who play puzzles show an increase in their ability to regulate their emotions. They learn to stay calm and focused when completing challenges, which helps them in emotional situations. Puzzle games require concentration and perseverance, which encourages children to practice self-control. As a result, children who engage in this activity show a reduction in impulsive behavior. Puzzle games can be an effective tool to help hyperactive children learn to regulate emotions and improve self-control, thus reducing their impulsive behavior (Handayani, 2019).

Sulistyawati revealed that positive reinforcement through puzzle games can change the behavior of hyperactive children, making them more focused and less impulsive. Children who receive positive reinforcement show an increase in their ability to focus. They become more interested in completing puzzles without being tempted to behave impulsively. With praise and rewards, children are more motivated to control their actions, which reduces the impulsive behavior that usually occurs in hyperactive children. Positive reinforcement through puzzle games is effective in changing the behavior of hyperactive children. By giving rewards for focus and effort, children learn to pay more attention to tasks and manage their impulsivity (Sulistyawati, 2020).

Setiawati found that educational games, including puzzles, can reduce disruptive behavior. impulsive and improve children's focus (Setiawati, 2018). Nurjanah, showed that play activities such as puzzles can improve concentration skills and reduce impulsive behavior in early childhood (Nurjanah, 2020). Rizal concluded that puzzle games can be an effective tool to help children manage their impulsivity (Rizal, 2021).

## 5. Conclusion

Based on the research results that have been explained in the previous discussion, it can be concluded that there is an effect of puzzle games on reducing the tendency of impulsive behavior in hyperactive children Group B at Al-Khairat Kindergarten, Gorontalo City. Pre-test data can show the highest score of 24 and the lowest score of 12, after analysis, an average value of 16.00 was obtained. While the post-test data showed the highest score of 24 and the lowest score of 23, an analysis was carried out to obtain an average value of 23.50. This shows that the respondents who were the samples in this study experienced a decrease with an average result from the initial test to the final test. Based on the results of the statistical analysis of the t-test hypothesis test, it can be concluded 0.05, this

indicates that  $H_0$  is rejected or accepted, meaning that there is an influence of puzzle games on reducing the tendency of impulsive behavior in hyperactive children in Group B. Of course, this shows that implementing puzzle game media has a very significant influence on the tendency of impulsive behavior in hyperactive children in Group B at Al-Khairat Kindergarten, Gorontalo City.

The implication of puzzle games into educational and therapeutic interventions for children presents a multifaceted approach to addressing cognitive, emotional, and behavioral challenges. In addition to mitigating impulsivity, puzzle games facilitate the development of essential life skills, including attention regulation, problem-solving abilities, emotional regulation, self-esteem enhancement, and collaborative competencies. Consequently, puzzle games serve not only as an efficacious tool for managing impulsive behaviour symptomatology but also as a valuable resource for promoting comprehensive cognitive and social development. Puzzle games are increasingly recognized as a valuable tool in various contexts, including education and therapy, due to their capacity to engage attention, promote cognitive development, and address behavioral challenges. The repetitive nature of many puzzles can incrementally extend a child's ability to maintain focus on a single task for extended periods, providing opportunities for progressive improvement. Puzzle games offer a platform for emotional regulation, as children develop strategies to manage frustration when encountering difficulties in puzzle-solving. The problem-solving process allows children to experience trial and error in a controlled environment, fostering persistence through challenges and facilitating the experience of achievement upon successful completion.

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