

THE EFFECT OF MINI BILLIARD GAMES ON THE CONCENTRATION OF AUTISTIC CHILDREN AT THE MITRA ANANDA KARANGANYAR AUTISM CENTER

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Abstract

This research aims to examine the effect of mini billiards games on the concentration of autistic children at the Mitra Ananda Karanganyar Autism Center. This study uses a quantitative research method with a Single Subject Research (SSR) approach that applies an A-B-A design. The subjects of this study are 12-year-old children with autism spectrum disorder at the Mitra Ananda Karanganyar Autism Center. Data collection was conducted using an observation sheet with 10 items that assessed the children's lack of concentration in terms of concentration. The data obtained were analyzed using descriptive statistical techniques with visual data analysis, including analysis within and between conditions. The results of the data analysis showed that subject T had an average duration of non concentration behavior of 393.55 seconds in the baseline-1 phase (A1), 365.27 seconds in the intervention phase (B), and 278.44 seconds in the baseline-2 phase (A2). These data indicate a decrease in non-concentration behavior in subject T after using the mini billiard game intervention. The results of the study show a low percentage of overlap, indicating that the mini billiard game has an effect on the concentration of autistic children at the Mitra Ananda Karanganyar Autism Center.

Keywords: autism; concentration; game media; lack of concentration; mini billiard

Abstrak

Penelitian ini bertujuan untuk mengkaji pengaruh media permainan mini billiard terhadap konsentrasi anak autisme di Autism Center Mitra Ananda Karanganyar. Penelitian ini menggunakan metode penelitian kuantitatif dengan pendekatan Single Subject Research (SSR) yang menerapkan desain A-B-A. Subjek penelitian ini anak dengan gangguan spektrum autisme berusia 12 tahun di Autism Center Mitra Ananda Karanganyar. Pengumpulan data dilakukan menggunakan lembar observasi dengan 10 aitem yang menilai perilaku tidak konsentrasi pada anak dalam aspek konsentrasi. Data yang diperoleh dianalisis menggunakan teknik statistik deskriptif dengan analisis data visual meliputi analisis dalam kondisi dan antar kondisi. Hasil analisis data menunjukkan bahwa subjek T memiliki rata – rata durasi perilaku tidak konsentrasi sebesar 393,55 detik pada fase baseline-1 (A1), 365,27 detik pada fase intervensi (B), dan 278,44 detik pada fase baseline-2 (A2). Data ini mengindikasikan adanya penurunan perilaku tidak konsentrasi pada subjek T setelah menggunakan intervensi dengan media permainan mini billiard. Hasil penelitian menunjukkan diperoleh persentase overlap yang tergolong rendah sehingga media permainan mini billiard berpengaruh terhadap konsentrasi anak autisme di Autism Center Mitra Ananda Karanganyar.

Kata kunci: autisme; konsentrasi, media permainan; mini billiard; perilaku tidak konsentrasi

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INTRODUCTION

According to the Badan Pusat Statistik (BPS), the current population is around 270.2 million, with the number of children with autism growing to around 3.2 million (Statistics, 2023). Data from the Special School Statistics Data Center shows that in 2019, the number of children with autism spectrum disorders in Indonesia reached 144,102 children, with 10,000 of them experiencing concentration problems (Pusdatin Kemendikbud Indonesia, 2020). Children with autism spectrum disorder can be characterized by three main characteristics, communication barriers, social relationships, and limited interests and repetitive behaviors. Furthermore, in addition to these three main characteristics, there are also characteristics related to children's understanding and attention, namely: visual learning style, attention or concentration problems, and characteristics of information processing, joint attention, theory of mind, and difficulties in interpreting the behavior and moods of others (Nurfadhillah et al., 2021). It is also explained that children with autism spectrum disorder have several obstacles in their activities, namely the inability to capture and interpret information, obstacles in social interaction, and obstacles in focusing attention or concentration on a task (Valencia, Viera Luis Felipe Giraldo, 2019).

This study aims to examine the effect of mini billiards games on the concentration of autistic children at the Mitra Ananda Karanganyar Autism Center. One activity that can be used to improve children's concentration is game play. Playing is a child's main activity anywhere and anytime. In addition to being exciting and causing feelings of happiness, playing can be a unique learning medium, so that through play activities, children can be facilitated to develop many things (Hendrifika, 2016). There are many sources that explain that playing has a positive impact on children who do it. Playing is a means of training the skills needed for children to become competent individuals as well as a means of learning how to learn (Tisnawati, 2020). When playing, children tend to focus, which helps regulate attention, build perseverance, learn to take risks, and develop concentration.

Based on the results of preliminary observations conducted on August 25-28, 2025, at the Mitra Ananda Karanganyar Autism Center, there were indications of cognitive impairments in a child with autism, identified only as T, particularly in T's ability to focus or concentrate on an activity. This can be seen when the child is working on a task; the child's attention span tends to be short and easily distracted. The child is able to complete the activity once started but always needs help to refocus their attention. As a result, the child is unable to complete the given activity until the end. Based on the observation results, activities that can trigger the child's interest in focusing attention or concentration are needed, so that the child's concentration ability develops further and the child is able to complete activities more accurately and even achieve maximum results.

Autism comes from the Greek word *autos*, which means "alone," meaning oneself or interested only in one's own world. The DSM V - TR (Diagnostic and Statistical Manual of Mental Disorders – fifth edition) explains that Autism Spectrum Disorder (ASD) or Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder characterized by impairments in social communication and social

interaction, as well as repetitive behaviors, restricted interests, or repetitive activities. Autism is a disorder of behavior and social interaction resulting from abnormal brain development (Daulay, 2021). Autism is a highly complex neurobiological developmental disorder in life that includes impairments in social interaction, communication and language, behavior, emotional and sensory perception, and even motor skills (Dewi & Morawati, 2024). Based on several definitions of children with autism spectrum disorder that have been explained, it can be concluded that children with autism spectrum disorder have a very complex neurobiological developmental disorder that can affect the attitude and concentration of autistic children. The increasing number of children with Autism Spectrum Disorder (ASD) in Indonesia is not merely a statistical issue, but a concrete reflection of the thousands of children who struggle daily to understand the world around them. National data shows that millions of children face serious barriers to communication, social interaction, and maintaining attention and concentration in even simple activities. This condition not only impacts their cognitive and academic development but also affects their independence, self-confidence, and future quality of life. Initial observations at the Mitra Ananda Karanganyar Autism Center further confirm that poor concentration makes it difficult for children to complete tasks, even those with the potential to do so. Without appropriate, engaging, and sustainable interventions, these barriers risk widening the developmental gap between children with ASD and their peers. Therefore, an innovative, play-based approach is needed that is not only enjoyable but also stimulates children's focus, perseverance, and active engagement, so they have a fairer opportunity to develop optimally in both educational and social settings.

Concentration is one of the factors that influence the learning and teaching process. Concentration is focusing the mind on a particular object by setting aside things that are unrelated to the learning and teaching process being carried out (Durin et al., 2022). The research findings (Durin et al., 2022) state that concentration is the focus of attention in the process of behavioral change in the form of mastery and use of knowledge found in various fields of study. Based on this explanation, it can be understood that concentration is one of the factors that influence the success of the learning process. The higher the level of concentration, the more effective the learning process becomes. Based on several definitions related to concentration that have been mentioned by the experts above, it can be concluded that concentration is a person's ability to focus their attention on an activity or task being carried out without being distracted by other thoughts. Activities that can be done to train concentration in children include games. Piaget states that games are a medium that can develop children's cognitive abilities (Marinda, 2020). Therefore, through play activities, in addition to developing children's cognitive abilities, it can also be a fun activity. Games can also increase children's attention (Masrukah et al., 2020), improve creative thinking skills (Anastasya et al., 2021), and improve children's learning outcomes (Miftahuddin et al., 2020). In line with this statement, Tejaningrum (in Tisnawati, 2020) describes play as an activity that children can do anywhere, which makes them feel happy. Play is a means of exploring learning experiences that are very useful for children and a means of developing creativity and inventiveness

(Vivianti & Ratnawati, 2019). Based on several definitions that have been put forward by experts above, it can be concluded that game media is an activity that can be done anywhere and is an activity that can improve cognitive abilities and creative thinking. This research aims to examine the effect of mini billiards games on the concentration of autistic children at the Mitra Ananda Karanganyar Autism Center.

METHOD

This study used a quantitative research method with a Single Subject Research (SSR) approach that applied an A-B-A design. The research subjects were children with autism spectrum disorder aged 12 years at the Mitra Ananda Karanganyar Autism Center. Data collection was conducted using an observation sheet with 10 items that assessed the child's lack of concentration in terms of concentration. The data obtained was analyzed using descriptive statistical techniques with visual data analysis, including analysis within and between conditions.

RESULTS AND DISCUSSION

The subject of this study was a 12-year-old child with autism spectrum disorder, initialed T, who had low concentration due to frequent excessive behavior, resulting in suboptimal participation in learning. Based on the analyzed data, it was found that the use of mini billiards had an effect on the subject's concentration.

Concentration data were obtained from measurements in three conditions with a total of 12 sessions, namely three sessions in the baseline-1 phase (A1), six sessions in the intervention phase (B) and three sessions in the baseline-2 phase (A2). In the baseline-1 phase (A1), the average duration of subject T's non-concentration behavior was 393.55 seconds. In the intervention phase (B), the average duration of non-concentration behavior decreased from the previous baseline-1 phase (A1), reaching a duration of 365.27 seconds. Finally, in the baseline-2 phase (A2), the average duration of inattentive behavior obtained again decreased from the intervention session (B), reaching a duration of 278.44 seconds.

The phenomenon of low concentration in children with autism spectrum disorder is due to the fact that children often exhibit excessive behavior that can distract their concentration on the task at hand which creates obstacles in performing activities that require focus on a specific object. One effective method to reduce hyperactivity in autistic children and improve concentration is by providing activities that attract their attention. This is in line with Rusiana's statement (in Oktafianto, 2018) who said that one method to reduce excessive behavior in autistic children who have difficulty maintaining behavior is to keep them busy, one of which is through mini billiard games.

After using mini billiards as a game medium, there was a notable increase in the subjects' concentration. This was evident in the increased measurement values during the intervention phase (B).

This phenomenon proves that mini billiards is suitable as a game medium for training the concentration and focus abilities of children with autism spectrum disorders. The mini billiard game played by the subjects was a set that had been modified according to the needs of children with autism spectrum disorder. The mini billiard table with smaller dimensions, smaller billiard balls, and shorter push sticks attracted the attention of children with autism spectrum disorder. This game medium helps children understand explanations, instructions, and researchers' questions, thereby generating data for each assessment indicator as it sparks the subjects' interest in using the intervention medium. This is in line with Sivakumar's (2020) statement that game media can improve the ability of children with autism spectrum disorders to listen, generate motivation, and develop cognitive skills in children. This is proven by the subjects' sustained concentration due to their interest in the media used.

CONCLUSION

This study is expected to reinforce the results of previous studies by providing differences to determine whether there is a relevant influence of other forms of game media studied on subjects with different conditions. Several studies that serve as references for this research include a study by Okafianto (2018) which discusses the influence of educational games in the form of floor puzzles on the ability to focus the attention of autistic students by providing enjoyment as an alternative to overcome the cognitive problems of children who have poor concentration. Finally, research by Maulidazani, et al., (2024) discusses the use of tiered task strategies in improving the learning concentration of children with ADHD, measured by calculating the duration of learning concentration. Based on data analysis and discussion of the research results that have been conducted, the results of data analysis in the study prove that mini billiards games have an impact on the inattention behavior of children with autism spectrum disorders. Therefore, it can be concluded that mini billiard games affect the lack of concentration in children with autism spectrum disorder at the Mitra Ananda Karanganyar Autism Center.

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We would like to express our gratitude for the support received from Sebelas Maret University and the Mitra Ananda Karanganyar Autism Center. The weakness of this study is that the classroom was filled with various media, making it easy for children to become distracted. The limited space also caused the subjects to become distracted by the presence of the research team during the observation. During the data collection process, on several occasions the subjects were not interested in the mini billiard game media due to their poor mood. This study only provides a limited picture of the effect of mini billiard game media on the concentration of a single subject, making it impossible to generalize the results to other types of disabilities or problems. Therefore, it is hoped that this study can be used as material for evaluation and learning for future research.

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