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Impact of Play Therapy on Learning Outcome in Attention Deficit Hyperactivity Disorder Pupils: An Experimental Approach

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Abstract: *The study examined the impact of play therapy on learning outcome on attention deficit hyperactivity disorder pupils in Port Harcourt Metropolis, Rivers State. Quasi experimental design within which the Solomon four group design was employed. Using purposive sampling technique, a sample of 60 primary three pupils who met the criteria for ADHD were randomly assigned into the four groups which was made up of two experimental groups and two control groups. Two valid instruments titled: Conners' Rating Scales-Revised (CRS-R) for assessment of Attention Deficit Hyperactive Disorder and Mathematics Achievement Test (MAT) were used for collection of data in the study. The research questions were answered with mean and standard deviation. Hypotheses were tested for significance at 0.05 using dependent sample t-test, Analysis of Covariance (ANCOVA) and One-way analysis of Variance (one-way ANOVA). The result revealed that play therapy is effective in the improvement of learning outcome of attention deficit hyperactivity pupils. There was a significant difference of play therapy on learning outcome among the groups (experimental group 1, control group 1, experimental group 2 and control group 2). Based on these findings' recommendations were made.*

Keywords; Play therapy, Attention Deficit Hyperactivity Disorder (ADHD), and Learning Outcome

INTRODUCTION

Children with ADHD consistently face academic challenges, leading to underachievement, poor grades, increased rates of academic failure, and long-term educational and vocational difficulties (DuPaul & Stoner, 2014; Langberg et al., 2013; Barbaresi et al., 2007; Frazier et al., 2007; Biederman et al., 2004; DuPaul, Weyandt, & Janusis, 2011). Attention Deficit Hyperactivity Disorder is one of the most commonly diagnosed neurodevelopmental disorders, affecting approximately 5-7% of school-aged children worldwide (Thomas et al., 2022; Polanczyk et al., 2018). Characterized by persistent patterns of inattention, hyperactivity, and impulsivity that significantly impair social, academic, and occupational functioning (American Psychiatric Association, 2022).

Children with ADHD often struggle to maintain focus, follow instructions, organize tasks, and sustain effort and these challenges directly impact their academic performance and learning outcomes (Rajendran et al., 2021). These persistent challenges often lead to higher risks of academic underachievement, diminished self-esteem, and social difficulties within school settings (Evans et al., 2020). Learning outcomes are further impaired due to the core difficulties associated with ADHD, such as attention deficits, impulsivity, and executive functioning issues, which can hinder a child's ability to focus, retain information, and complete tasks essential for academic success (Raggi & Chronis, 2006; Barkley, 2015).

Attention difficulties reduce engagement with learning materials, while impulsivity leads to rushed and often inaccurate work, disrupting classroom participation (Barkley, 2015). Executive functioning challenges, including deficits in working memory and organizational skills, further complicate learning by making it hard for students to follow multi-step instructions or manage academic tasks effectively (Willcutt et al., 2005). Additionally, the emotional and social challenges that many children with ADHD face, such as frustration, low self-esteem, and difficulties with peer relationships, can foster academic disengagement and contribute to a cycle of avoidance particularly when these students encounter repeated academic setbacks (Hoza, 2007). Addressing these issues through supportive interventions is crucial to helping students with ADHD bridge academic gaps and achieve greater learning outcomes.

Learning is often described as a relatively permanent change in behaviour resulting from practice or experience which can be inferred through performance (Mayer, 2008; Nwankwo, 2015; Schunk, 2012), encompassing the accumulated knowledge an individual gain over time (Onnachi, 2009). Gagne (1986), views learning as a series of actions or tasks that move an individual from one state to another, improving both capability and performance. He, propose five major categories of learning outcome namely; verbal information, intellectual skills, cognitive strategies, attitudes and motor skills. Suvin (2019), also, assert that quantified learning becomes a "learning outcome," representing the knowledge or skills acquired, often assessed through core subjects like English and Mathematics. Learning outcomes gauge how well a student has assimilated the material, and their effectiveness is measured by the student's performance against defined standards, ensuring teaching effectiveness.

Learning outcomes are central in assessing educational effectiveness, allowing teachers to refine instructional methods based on student performance. High learning outcomes often reflect student engagement, sustained attention, and positive attitudes toward school, contributing to classroom management and increased school enrollment. Conversely, low outcomes may indicate issues like inattention or behavioral challenges, such as those presented by students with attention deficit hyperactivity disorder (Nworgu, 2015). ADHD students, may struggle more with learning outcomes, making classroom management challenging and requiring specialized strategies to support their educational journey (Grant, 2018. Scholars has also viewed that learning outcome may not be dissociated with the level of school adjustment Ogbogo & Amaechi-Udogu, 2019).

In primary education, mathematics achievement is a vital learning outcome that supports cognitive development, logical thinking, and future academic success (Pandley, 2017). Pupils be it those with ADHD and those without would need to excel in core subject as it serves as a vital springboard for further academic achievement. However, this subject of mathematics is one very abstract subject that most pupils both ADHD and non-ADHD alike struggles to excel in. Thus research in this area over time has suggested various interventions that can help deal with having a successful learning outcome in this very vital as well as other areas. One of the very innovative interventions as suggested by research is the use of play therapy. Introducing play therapy in mathematics offers an innovative way to boost engagement and comprehension, making math more approachable and reducing anxiety. Play therapy employs games, puzzles, and interactive activities, which help children visualize abstract concepts and foster a positive attitude toward mathematics (Landreth et al., 2006). By providing a supportive, play-based environment, students enhance their problem-solving skills, spatial reasoning, and self-confidence, cultivating a growth mindset and resilience in learning. Play therapy is thus recognized as an effective method for enhancing mathematical skills in primary education.

Play therapy is grounded in child-centered and developmental theories and has become a promising intervention for improving academic and social outcomes in children with ADHD (Landreth, 2012). This approach leverages the natural medium of play to help children express emotions, develop coping skills, and modify maladaptive behaviours within a safe environment (Bratton et al., 2021). Techniques such as symbolic play, storytelling, and role-playing promote emotional regulation, cognitive growth, and social skills (Homeyer & Morrison, 2023). Studies indicate that play therapy can enhance self-regulation, attention span, and impulse control, which are critical for academic achievement in children with ADHD (Garrido et al., 2023). Lin et al. (2022) conducted a meta-analysis revealing that play therapy effectively reduces inattention and hyperactivity, leading to better classroom engagement. Additionally, play therapy has been shown to improve executive functions like working memory and cognitive flexibility, which are essential for learning but often impaired in ADHD (Mehta et al., 2023; Bakhshayesh & Mirhosseini, 2015; Massengale & Perryman, 2021). Studies has also revealed that play therapy is effective on learning outcome and academic achievement (Bakhshayesh & Mirhosseini 2015; Bianco 2009; Bianco et al 2015; Bianco et al 2018; Bianco et al 2019; Massengale & Perryman 2021). With the effectiveness of play therapy on learning outcome as

identified in research, studies on how this therapy is effective in treating learning outcome of ADHD pupils in Port Harcourt Rivers seems almost non- existent to the best of the researcher's knowledge. Hence the need to fill this identified gap which formed the backdrop against which this study was established to investigate the effectiveness of play therapy on learning outcome of ADHD pupils.

Research Questions

The following research questions stated guided this study.

1. What is the effect of play therapy on working memory of attention deficit hyperactivity disorder pupils as measured by the difference in the pretest and posttest mean scores of pupils in the experimental group 1?
2. What is the effect of play therapy on learning outcome of attention deficit hyperactivity disorder pupils as measured by the difference in the mean scores of pupils in the groups (experimental group 1 and control group 1)?
3. What is the effect of play therapy on learning outcome of attention deficit hyperactivity disorder pupils on the basis of their groups (experimental group 1, control group 1, experimental group 2 and control group 2)?

Hypotheses

The following postulated null hypothesis were tested for significance at 0.05

1. There is no significant effect of play therapy (toy and object play and role play technique) on learning outcome of attention deficit hyperactivity disorder pupils as measured by the difference in the pretest and posttest mean scores of pupils in the experimental group
2. There is no significant effect of play therapy on learning outcome of attention deficit hyperactivity disorder pupils as measured by the difference in the mean scores of pupils in the groups (experimental group 1 and control group 1).
3. Play therapy no significant effect of (Toy and Object Play Technique) on learning outcome of attention deficit hyperactivity disorder pupils on the basis of their groups (experimental group 1, control group 1, experimental group 2 and control group 2).

Theoretical Underpin for Play Therapy

Vygotsky's sociocultural theory emphasizes the fundamental role of social interaction and culture in cognitive development. This theory posits that learning is inherently a social process and that cognitive functions are developed through interpersonal interactions. There are key components of Vygotsky's sociocultural theory, its implications for education, and its relevance to ADHD and play therapy which includes social interaction, zone of proximal development and Cultural Tools and Mediated Learning. Vygotsky believed that social interaction is crucial for cognitive development. He asserted that learning is primarily a social process where individuals construct knowledge through their interactions with others. This perspective

contrasts sharply with individualistic approaches that emphasize solitary learning. Vygotsky emphasized the importance of dialogue and collaboration. According to him, communication plays a vital role in shaping thought processes and understanding. For example, children learn through guided interactions with more knowledgeable peers or adults, who help them navigate complex concepts. This process not only helps learners acquire new skills but also fosters their understanding of the world around them (Vygotsky, 1978). Vygotsky's emphasis on social interaction suggests that collaborative learning environments are beneficial for cognitive development. Educators can foster group work, peer tutoring, and cooperative learning to promote interaction among students. Research indicates that collaborative learning enhances engagement and fosters deeper understanding (Johnson & Johnson, 2009). By working together, students can share perspectives, challenge each other's thinking, and build collective knowledge. This collaborative approach aligns with Vygotsky's assertion that learning is a social process.

One of the central tenets of Vygotsky's theory is the concept of the Zone of Proximal Development (ZPD). The ZPD refers to the range of tasks that a learner can perform with the guidance of a more knowledgeable individual but cannot yet perform independently. This concept underscores the potential for cognitive development when learners are supported appropriately. The ZPD highlights the importance of tailored instruction, where educators assess the learner's current abilities and provide the necessary support to facilitate growth. This supportive interaction can take various forms, such as scaffolding, where teachers or peers provide assistance that is gradually removed as the learner becomes more proficient (Wood, Bruner, & Ross, 1976). Educators can use the concept of scaffolding to provide tailored support to students. By assessing the ZPD, teachers can design instruction that meets individual needs, ensuring that learners receive appropriate guidance as they tackle new concepts. Differentiated instruction, which considers students' diverse backgrounds and learning styles, aligns well with Vygotsky's theory. Educators can modify content, process, and products based on students' readiness levels, interests, and cultural backgrounds (Tomlinson, 2001). This approach allows for a more inclusive learning environment where all students can thrive.

Vygotsky emphasized that culture significantly influences cognitive development through the use of cultural tools and symbols. These tools include language, art, and technological devices that mediate learning and shape thought processes. Language, in particular, is seen as a primary tool for thought and communication. Mediated learning refers to the process where individuals use cultural tools to interact with their environment and others. Through language and other symbolic systems, learners can internalize knowledge and cognitive processes. Vygotsky argued that cognitive development is inherently linked to cultural context, as different cultures provide various tools and frameworks for understanding the world (Vygotsky, 1986). Vygotsky's theory encourages educators to incorporate students' cultural backgrounds into the learning process. Recognizing the influence of culture on cognition allows teachers to create relevant and meaningful learning experiences. Culturally responsive pedagogy emphasizes the importance of connecting curriculum content to students' lived experiences and cultural identities (Ladson-Billings, 1994). By integrating cultural context, educators can enhance student engagement and motivation, leading to improved learning outcomes.

Understanding ADHD through the perspective of Vygotsky's sociocultural theory offers great insights into effective intervention strategies. Children with ADHD often face challenges in social interactions due to impulsivity and difficulties in focusing on tasks. Vygotsky's emphasis on social interaction highlights the need for structured peer interactions that can support these children in developing social skills and emotional regulation. Collaborative learning environments that emphasize peer support can help children with ADHD navigate social dynamics while learning. Children with ADHD may struggle with self-regulation, impacting their ability to stay focused and organized. Scaffolding strategies can be particularly beneficial in supporting these learners. Educators can implement strategies that help students manage their attention and behaviour, such as breaking tasks into smaller, manageable components and providing clear, concise instructions. Research indicates that structured interventions, such as positive behavioural support and individualized instruction, can enhance self-regulation skills in children with ADHD (Barkley, 2015). By understanding the ZPD, educators can design supports that gradually promote independence and self-regulation. Play therapy aligns with Vygotsky's concept of mediated learning, where interactions during play can facilitate cognitive and emotional development. Through play, children express themselves, explore social roles, and develop problem-solving skills in a safe environment. For children with ADHD, play therapy can serve as an effective intervention that provides opportunities for social interaction and emotional regulation. Research has shown that play therapy can significantly improve behavioural and emotional outcomes for children with ADHD (Landreth, 2012). By using play as a medium for interaction and learning, therapists can help children navigate their emotions and develop essential social skills.

METHODS

This study adopted a quasi-experimental research design. Quasi- experimental research design is an investigation that uses designs suitable in estimating situations of true experiment in a circumstance that does not allow the direct manipulation of relevant variables (Kaplan et al, 2001). Thus, when total randomization cannot be applied to manage all extraneous variables necessary for a true experiment, a quasi-experimental research design is the most suitable research design. Quasi experimental study is seen as that in which some threats to validity cannot be appropriately controlled due to unavoidable situations associated with the study when human beings are used for experimental study (Nwankwo, 2013). He is of the view that amongst other conditions, when subjects for a study are selected and randomization of the subject is not feasible, so that intact classes are used, such study is quasi-experimental. This research design is appropriate as it provides opportunity to investigate the effect of the independent variables on the dependent variables of the study. This experimental design is a combination of between subject before-after designs and between subject after-only designs to determine the effect of the independent variable (Play Therapy) on the dependent variables (Learning Outcome). This design contains two experimental groups and two control groups. One experimental group takes both the pretest and posttest, while the other experimental group takes only posttest. One control group takes both the pretest and posttest while the other control group takes just the post test. The population for the consisted of all primary three pupils in government owned schools. Purposive sampling techniques was used to draw the sample of 60

pupils with ADHD using the Conners' Teacher Rating Scales-Revised for ADHD and Learning Outcome Test (Mathematics Achievement Test) were the two instruments used for data collection. The Conners' Rating Scales-Revised (CRS-R) is a 28-item screening questionnaire for ADHD assessment, using a four-point response scale, measuring Oppositional, Cognitive Problems, Hyperactivity, and ADHD Index subscales, with severity indicated by T-scores above 60. The Mathematics Achievement Test (MAT) is a 20-item, multiple-choice assessment created by mathematics experts to evaluate learning outcomes in topics like arithmetic operations, place value, and Roman numerals, with one correct answer per question and a scoring range of 0 to 20, where higher scores indicate better learning outcomes. Experts in Measurement and Evaluation judgments and multivariate statistical method of factor analysis were used to determine the face, content and construct validity for both instruments. To ensure the reliability of the instruments for internal consistency, the two instruments were pilot tested on 35 primary three pupils; for Conners' Rating Scales-Revised (CRS-R) teachers' version a Cronbach alpha reliability coefficient of .722 while for the Mathematics Achievement Test to measure for Learning Outcome Kuder Richardson 20 was used to obtain a coefficient of .78. Both scales possess high reliability index and are therefore suitable for the study. Data obtained were analyzed using mean, Standard Deviation, Independent samples t-test, Analysis of Co-variance (ANCOVA) and One-way Analysis of Variance (ANOVA)

Experimental Procedure

The experimental procedure involved five stages, beginning with obtaining consent from parent and schools, briefing the participants and research assistant, training research assistants on the experimental procedure, selection and random assignment of students with ADHD, followed by pretesting, an eight-week play therapy treatment, and concluding with a post-test to measure changes in learning outcomes. The play therapy, provided two session of 40 minutes daily three times weekly in structured sessions for 8 weeks, aimed to enhance learning for pupils with ADHD. The play therapy technique employed was the Toy and Object Play Technique (Ball Play, Block Building, and Roleplay)
Materials used included colorful soft balls (foam balls, sock balls), assorted shapes (blocks in different shapes and colors), colorful balloons, clean wastebaskets, shape flashcards, cardboards with simple math questions and fun school facts.

RESULT

Research question 1: What is the effect of play therapy (toy and object and role play techniques) on learning outcome of attention deficit hyperactivity disorder pupils as measured by the difference in the pretest and posttest mean scores of pupils in the experimental group 1?

Hypothesis 1: There is no significant effect of play therapy (toy and object and role play techniques) on the learning outcome of attention deficit hyperactivity disorder pupils as measured by the difference in the pretest and posttest mean scores of pupils in the experimental group 1.

Table 1. Mean and standard deviation and dependent samples t-test analysis showing the significant effect of play therapy (toy and object and role play techniques) on the learning outcome of attention deficit hyperactivity disorder pupils as measured by the difference in the pretest and posttest mean scores of pupils in the experimental group 1

Treatment Group	N	Pretest Mean	SD	Posttest Mean	SD	Mean Difference	df	T	Sig
Experimental Group 1	15	6.93	1.33	14.80	1.42	7.87	14	17.23	.000

Table 1 showing the effect of play therapy (toy and object and role play techniques) on the learning outcome of attention deficit hyperactivity disorder pupils as measured by the difference in the pretest and posttest mean scores of pupils in the experimental group 1, at pretest the pupils had a mean score of 6.93 (Sd = 1.33) and at posttest stage has a mean score of 14.80 (Sd = 1.42). this resulted in a mean difference of 7.87, which indicates that play therapy (toy and object and role play techniques) contributed in improving the learning outcome of ADHD pupils. When these values were subjected to an independent paired sample t-test analysis, a t-value of 17.23 was obtained, at degree of freedom (df) of 14 and a p-value of .000 which was statistically significant at 0.05 alpha level of significance. Based on the results of the t-test, the null hypothesis is rejected (Ho1) at the 0.05 significance level, that is t= 17.23, p=.000($p < .005$).

Therefore, there is a significant effect play therapy (toy and object and role play techniques) on the learning outcome of ADHD pupils, as indicated by the significant improvement in the pretest test and posttest scores in the experimental group 1. This implies that the difference that exists in the learning outcome as measured by the pretest score before the experimental group 1 received play therapy treatment and the learning outcome posttest score after the experimental group 1 received play therapy treatment is statistically significant and not due to chance or error.

Research Question 2: What is the effect of play therapy (toy and object and role play therapy) on learning outcome of attention deficit hyperactivity disorder pupils as measured by pretest-posttest mean scores of pupils in the groups (experimental 1 group and control group 1)?

Table 2. Mean and standard deviation analysis showing the effect of play therapy on learning outcome of attention deficit hyperactivity disorder pupils as measured by pretest-posttest mean scores of pupils in the groups (experimental group 1 and control group 1)

Treatment Group	N	Pretest Mean	SD	Posttest Mean	SD	Mean Difference
Experimental Grp 1	15	6.93	1,33	14.80	1.42	7.87
Control Group 1	15	7.07	1.49	8.00	1.30	0.93

Table 2 indicates the mean and standard deviation analysis for the effect of play therapy on the learning outcome of attention deficit hyperactivity disorder (ADHD) pupils. The

analysis compares the pretest and posttest mean scores, as well as the mean gain, for both the experimental group (which received play therapy) and the control group (which did not receive play therapy). The pretest mean scores for the experimental and control groups were relatively close, with the experimental group at 6.93 and the control group at 7.07. The study design appears to have controlled for initial differences between the groups, as evidenced by their comparable pretest mean scores.

After the intervention (play therapy for the experimental group), the posttest mean score for the experimental group increased significantly to 14.80, while the control group's posttest mean score increased to a lesser extent, reaching 8.00. The mean gain, representing the difference between the posttest and pretest mean scores, was 7.87 for the experimental group and 0.93 for the control group.

The findings suggest that play therapy had a substantial positive effect on the learning outcome of ADHD pupils in the experimental group. The considerable increase in the posttest means score and the large mean gain indicate that play therapy contributed to significant improvements in learning outcomes. In contrast, the control group, which did not receive play therapy, showed a smaller increase in the posttest mean score and a smaller mean gain. This supports the idea that the observed improvements in the experimental group can be attributed to the play therapy intervention.

Hypothesis 2: There is no significant effect of play therapy on learning outcome of attention deficit hyperactivity disorder pupils as measured pretest-posttest mean scores of pupils in the groups (experimental group 1 and control group 1).

Table 3. ANCOVA analysis showing significant difference in the effect of play therapy on learning outcome of attention deficit hyperactivity disorder pupils as measured by pretest-posttest mean scores of pupils in the groups (experimental group 1 and control group 1).

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	305.961[a]	2	152.980	101.471	.000	.883
Intercept	79.374	1	79.374	52.648	.000	.661
Pretest Learning Outcome	11.427	1	11.427	7.580	.010	.219
Groups	299.514	1	299.514	198.665	.000	.880
Error	40.706	27	1.508			
Total	4430.000	30				
Corrected Total	346.667	29				

Table, 3 shows the significant effect of play therapy (Toy and Object and Role Play Techniques) on learning outcome of attention deficit hyperactivity disorder pupils as measured by pretest-posttest mean scores of pupils in the groups (experimental group 1 and control group 1). The table shows that the computed F (2, 27) = 198.665 P <.05, i.e., p = .000 is statistically

significant at the chosen alpha level of 0.05. Therefore, there is a significant effect of play therapy (toy and Object and role play technique) on the learning outcome of ADHD pupils, as indicated by the significant improvement in scores in the experimental group 1 compared to the control group 1 as F (2, 27) = 198.665 P <.05, i.e., p = .000. The null hypothesis of no significant effect of play therapy (toy and object play and role play techniques) on learning outcome of attention deficit hyperactivity disorder pupils as measured by pretest-posttest mean scores of pupils in the groups (experimental group 1 and control group 1) is rejected and the alternate accepted, This implies that the difference that exists between experimental group (which received play therapy) and the control group (which did not receive play therapy) statistically is significant. Furthermore, the partial eta square which shows the effect size of the independent variable on the dependent variable shows a very large partial eta square of .880. This large partial eta squared value of .892 suggests a very strong effect of play therapy (toy and object and role play techniques) on the learning outcome of pupils with ADHD. Play therapy, which often involves hands-on and interactive activities of play therapy can make learning more engaging and enjoyable has a significant effect on learning outcome of ADHD pupils. Therefore, play therapy (toy and object and role play techniques) has statistically significant effect on learning outcome of attention deficit hyperactivity disorder pupils.

Research Question 3: What is the effect of play therapy (toy and object and role play techniques) on learning outcome of attention deficit hyperactivity disorder pupils on the basis of their groups (experimental group 1, control group 1, experimental group 2 and control group 2)?

Table 4. Mean and standard deviation analysis showing the effect of play therapy on learning outcome of attention deficit hyperactivity disorder pupils on the basis of their groups (experimental group 1, control group 1, experimental group 2 and control group 2).

Groups	N	Mean	Std. Deviation
Experimental Group1 (Pretest and Posttest)	15	14.80	1.42
Experimental Group 2 (Posttest Only)	15	14.20	1.37
Control Group 1 (Pretest and Posttest)	15	8.00	1.30
Control Group 2 (Posttest Only)	15	7.63	1.21

Table 4 presents the mean and standard deviation analysis for the effect of play therapy on the learning outcomes of attention deficit hyperactivity disorder (ADHD) pupils, categorized into different treatment. Experimental group 1 (pretest and posttest) had the highest mean score of 14.80 (Sd = 1.42), indicating significant improvement in learning outcomes due to the play therapy intervention while experimental group 2 (posttest only) had a mean score of 14.20 (Sd = 1.37), suggesting that play therapy effectively improves learning outcomes even without pretesting, though the improvement is slightly less than in experimental group 1. Control group 1 (pretest and posttest) had a mean score of 8.00 (Sd = 1.30), indicating minimal improvement in learning outcomes without the play therapy intervention. Control group 2 (posttest only) had

the lowest mean score of 7.63 (Sd = 1.21), showing the least improvement in learning outcomes, consistent with the lack of intervention.

The results suggest that play therapy had a substantial positive effect on the learning outcomes of ADHD pupils in both Experimental Group 1 and Experimental Group 2. Control Group 1, which did not receive play therapy, showed a smaller increase in learning outcomes compared to Experimental Group 1, supporting the idea that the observed improvements in the experimental groups can be attributed to play therapy. Similarly, Control Group 2, which did not receive play therapy, showed a smaller increase in learning outcomes compared to Experimental Group 2. The mean difference values support the conclusion that play therapy contributes to significant improvements in learning outcomes for ADHD pupils. From the foregoing, play therapy has a positive effect on the learning outcomes of ADHD pupils, as indicated by the significant improvement in scores in the experimental groups compared to the control groups.

Hypothesis 3: Play therapy (toy and object and role play techniques) has no significant effect on learning outcome of attention deficit hyperactivity disorder pupils on the basis of their groups (experimental group 1, control group 1, experimental group 2 and control group 2).

Table 5. One-Way ANOVA analysis showing significant effect on learning outcome of attention deficit hyperactivity disorder pupils on the basis of their groups (experimental group 1, control group 1, experimental group 2 and control group 2).

Sources	**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Between Groups	778.850	3	259.617	151.233	.000
Within Groups	96.133	56	1.717		
Total	874.983	59			

Table, 5 shows the significant effect of play therapy (toy and object and role play techniques) on learning outcome of attention deficit hyperactivity disorder pupils on the basis of their groups (experimental group 1, control group 1, experimental group 2 and control group 2). The table shows that the computed F (3, 56) = 151.233 P <.05, i.e., p = .000 is statistically significant at the chosen alpha level of 0.05. Therefore, there is a significant effect of play therapy on the working memory of ADHD pupils, as indicated by the significant improvement in the learning outcome mean scores in the experimental group 1 and 2 who receive play therapy (toy and object and role play) compared to the control group 1 and 2 that did not receive play therapy as F (3, 56) = 151.233 P <.05, i.e., p = .000. The null hypothesis of play therapy having no significant effect on learning outcome of attention deficit hyperactivity disorder pupils on the basis of their groups (experimental group 1, control group 1, experimental group 2 and control group 2) based on their pretest and posttest mean scores was rejected and the alternate accepted, This implies that the difference that exists between experimental group 1 and 2 (which received Toy and object play therapy treatment) and the control group I and 2 (which did not receive play therapy as treatment) statistically is significant. Play therapy, which

often involves creative and interactive activities that engage cognitive processes, creativity, and problem-solving has a significant effect on learning outcome of ADHD pupils. Therefore, play therapy (Toy and Object and Role Play Technique) has statistically significant effect on learning outcome of attention deficit hyperactivity disorder pupils.

However, since a significant difference was found to exist among the four groups, there is need, to determine the direction of the significant difference among the four groups. This was done by applying Post Hoc via Scheffe test for multiple comparisons as shown in table 7

Table 6: Scheffe Post Hoc Test of Group Difference in Learning Outcome

Groups	Mean Difference	Sig
Exp Grp 1 Vs Exp Grp 2	.60	.667
Exp Grp 1 vs Control Grp1	6.80*	.000
Exp Grp 1 vs Control Grp 2	7.17*	.000
Exp Grp 2 vs Control Grp1	6.20*	.000
Exp Grp 2 vs Control Grp 2	6.57*	.000
Control Grp 1 vs Control Grp 2	.37	.945

The result on table 6 revealed that a significant mean difference was obtained only when experimental group 1 was compared with control group 1 and control group 2 which yielded a mean difference of 6.80, $p = .000$, $p < 0.05$ and 7.17, $p = .000$, $p < 0.05$., and when experimental group 2 was compared with control group 1 and control group 2 were compared which yielded mean difference of 6.20, $p = .000$, $p < 0.05$ and 6.57, $p = .000$, $p < 0.05$. All other pairwise comparisons yielded no significant difference.

DISCUSSION

The result shows that toy and object play therapy had a significant effect on the learning outcome of pupils with ADHD as seen by $p<0.05$ for both the between the experimental and control group and also between both the two experimental and two control groups. The significant effect of toy and object play therapy on the learning outcome of ADHD pupils is evidenced by the notable improvement in scores in experimental group 1 compared to the control group and also between experimental group 1 and 2 and control group 1 and 2. This result is consistent with previous studies carried out on the effectiveness of play therapy on learning outcome and academic achievement (Bakhshayesh & Mirhosseini 2015; Bianco 2009; Bianco et al 2015; Bianco et al 2018; Bianco et al 2019; Massengale & Perryman 2021).
Result from this study clearly reveals that toy and object play therapy is effective on improving the learning outcome of pupils with ADHD. This is so as Toy and object Play therapy often incorporates multi-sensory experiences, involving touch, sight, sound, and sometimes smell or taste. Multi-sensory stimulation is beneficial for individuals with ADHD, as it enhances their

attention and cognitive processing. By engaging multiple senses, play therapy provides a rich sensory environment that supports learning and memory. Also, toy and object play therapy often involves interactive and engaging activities. The hands-on nature of play engages ADHD pupils in a stimulating and enjoyable manner, fostering motivation. Increased motivation can positively influence attention, participation, and the ability to focus on learning tasks, ultimately contributing to improved learning outcomes. Furthermore, play therapy emphasize experiential learning, allowing ADHD pupils to learn by doing. This hands-on approach provides concrete experiences, aiding in the understanding of abstract concepts. Experiential learning is particularly effective for individuals with ADHD, as it aligns with their often-kinesthetic learning preferences.

In addition, play therapy activities often require cognitive flexibility – the ability to switch between different tasks, ideas, or rules. This aspect is crucial for academic success, as it allows individuals to adapt to changing demands in the learning environment. By practicing cognitive flexibility in a playful context, ADHD pupils can transfer these skills to academic tasks. Furthermore, play therapy goes a long way in providing a relaxed and non-threatening environment. For individuals with ADHD, a low-pressure setting can be conducive to learning. Reduced stress levels can positively influence attention, concentration, and overall cognitive functioning. Similarly, play therapy sessions often incorporate positive reinforcement and rewards. Providing immediate feedback and rewards for successful completion of tasks can strengthen desired behaviors and motivate continued effort. This positive reinforcement may extend to academic tasks, encouraging persistence and resilience in the face of challenges. Also, engaging in play therapy activities may have neurobiological effects on brain function. Play and positive experiences can stimulate neurotransmitter release, which plays a crucial role in attention and learning. All these contributes to improved learning outcome.

What this result implies is that improved learning outcomes suggest that toy and object play therapy can contribute to academic advancement for ADHD pupils. Play therapy, with its focus on cognitive engagement, contributes to enhanced memory processes, leading to better retention of information. This can manifest as increased comprehension, better retention of information, and a more positive attitude toward learning encouraging active participation and engagement. This also implies that the interactive and stimulating nature of play therapy activities positively influence attentional mechanisms, contributing to sustained focus during academic tasks and resulting in more successful learning experiences.

CONCLUSION

The findings of this study revealed that play therapy (toy/object and role play technique), has a significant positive impact on the learning outcomes of pupils with ADHD. The results reveal substantial improvements in the pre-test and post-test mean scores of pupils in the experimental group, demonstrating that play therapy can effectively enhance academic performance and overall learning outcomes. Additionally, the comparative analysis between the experimental

and control groups further supports the conclusion that play therapy contributes significantly to the learning outcome of children with ADHD.

Recommendations

Schools should consider the integration of play therapy programs, especially the Toy and Object Play Technique, into their curriculum for pupils with ADHD. This approach can create a more engaging learning environment that addresses the unique needs of these students.

Teachers and educational staff should be trained on the principles and techniques of play therapy. This will enable them to effectively facilitate play therapy sessions and incorporate play-based learning strategies into their teaching practices.

Parental involvement should be encouraged in play therapy sessions, providing guidance on how parents can reinforce the strategies learned during therapy at home, which can enhance the effectiveness of the intervention.

Ministry of Education should implement mechanism for continuous monitoring and evaluation of the play therapy programs to assess their effectiveness and make necessary adjustments based on feedback from students, teachers, and parents.

Implications

The findings underscore the importance of incorporating therapeutic approaches, such as play therapy, into educational settings for children with ADHD. This approach not only enhances learning outcomes but also addresses the emotional and social needs of these students. The significant impact of play therapy on academic performance suggests that educators and mental health professionals should adopt more holistic methods to support children with ADHD, thereby improving their educational experiences and outcomes.

The study also highlights the necessity for schools to recognize ADHD as a multifaceted condition that requires diverse intervention strategies. By prioritizing play therapy, educators can foster a more inclusive environment that promotes engagement, motivation, and success for students with ADHD.

Further Research

Effects of play therapy on the academic and social outcomes of pupils with ADHD using a larger sample size and true experimental design.

REFERENCES

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). American Psychiatric Publishing.

American Psychiatric Association. (2022). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: APA.

Bakhshayesh, A. R., & Mirhosseini, S. M. (2015). The effects of play therapy on social skills and attention among children with attention deficit hyperactivity disorder. *Iranian Journal of Psychiatry and Behavioral Sciences, 9*(2), e421.

Barbaresi, W. J., Katusic, S. K., Colligan, R. C., Weaver, A. L., & Jacobsen, S. J. (2007). Long-term school outcomes for children with attention-deficit/hyperactivity disorder: A population-based perspective. *Journal of Developmental & Behavioral Pediatrics, 28*(4), 265–273.

Barkley, R. A. (2015). *Attention-deficit hyperactivity disorder: A handbook for diagnosis and treatment*. Guilford Publications.

Bianco, M. (2009). Strengthening mathematics skills through play therapy: An approach for elementary students. *Journal of Educational and Psychological Studies, 7*(3), 112–120.

Bianco, M., Harris, B., & Smith, A. (2018). Play-based mathematics interventions for children with learning difficulties. *Child and Adolescent Mental Health, 23*(2), 75–84.

Bianco, M., Harris, B., Thompson, J., & Weiss, C. (2015). Play therapy interventions to enhance academic and social outcomes for children with learning disabilities. *Learning Disabilities Quarterly, 38*(4), 200–209.

Bianco, M., Harris, B., Thompson, J., Weiss, C., & Miller, D. (2019). Integrating play therapy into mathematics education: A tool for students with emotional and behavioral challenges. *Educational Psychology Review, 31*(1), 87–102.

Biederman, J., Monuteaux, M. C., Mick, E., Spencer, T., Wilens, T. E., Silva, J. M., & Faraone, S. V. (2004). Young adult outcome of attention deficit hyperactivity disorder: A controlled 10-year follow-up study. *Psychological Medicine, 34*(11), 1989–2002.

Bratton, S. C., Ray, D., Rhine, T., & Jones, L. (2005). The efficacy of play therapy with children: A meta-analytic review of treatment outcomes. *Professional Psychology: Research and Practice, 36*(4), 376–390.

Bratton, S., Ray, D., Rhine, T., & Jones, L. (2021). The efficacy of play therapy with children: A meta-analytic review. *International Journal of Play Therapy, 30*(1), 3–17.

Connor, D. F. (2011). Stimulants. *Pediatrics, 127*(5), e1303–e1311.

DuPaul, G. J., & Stoner, G. (2014). *ADHD in the schools: Assessment and intervention strategies* (3rd ed.). Guilford Press.

DuPaul, G. J., Weyandt, L. L., & Janusis, G. M. (2011). ADHD in the classroom: Effective intervention strategies. *Theory Into Practice, 50*(1), 35–42.

Evans, S. W., Owens, J. S., & Bunford, N. (2020). Evidence-based psychosocial treatments for children and adolescents with attention-deficit/hyperactivity disorder. *Journal of Clinical Child & Adolescent Psychology, 49*(5), 563–589.

Fabiano, G. A., Pelham, W. E., Coles, E. K., Gnagy, E. M., Chronis-Tuscano, A., & O'Connor, B. C. (2009). A meta-analysis of behavioral treatments for attention-deficit/hyperactivity disorder. *Clinical Psychology Review, 29*(2), 129–140.

Faraone, S. V., Biederman, J., & Mick, E. (2015). The age-dependent decline of attention deficit hyperactivity disorder: A meta-analysis of follow-up studies. *Psychological Medicine, 36*(2), 159–165.

Frazier, T. W., Youngstrom, E. A., Glutting, J. J., & Watkins, M. W. (2007). ADHD and achievement: Meta-analysis of the child, adolescent, and adult literatures and a concomitant study with college students. *Journal of Learning Disabilities, 40*(1), 49–65.

Gagné, R. M. (1985). *The conditions of learning and theory of instruction* (4th ed.). New York.

Garrido, M., Flores, J., & Castaneda, A. (2023). Play therapy as an effective intervention for improving attention and behavioral outcomes in children with ADHD: A systematic review. *Journal of Child Psychology and Psychiatry, 64*(2), 243–259.

Homeyer, L. E., & Morrison, M. O. (2023). *Play therapy: The art of the relationship* (4th ed.). New York: Routledge.

Hoza, B. (2007). Peer functioning in children with ADHD: A meta-analytic review. *Psychological Bulletin, 133*(6), 1035–1060. https://doi.org/10.1037/0033-2909.133.6.1035

Johnson, D. W., & Johnson, R. T. (2009). An educational psychology success story: Social interdependence theory and cooperative learning. *Educational Psychologist, 44*(2), 107–119.

Kaduson, H. G., & Schaefer, C. E. (2001). Short-term play therapy for children with attention-deficit/hyperactivity disorder. *Journal of Clinical Child Psychology, 30*(1), 163–175.

Kaplan, B., Dewey, D. M., Crawford, S. G., & Wilson, B. N. (2001). The term comorbidity is a questionable value in reference to developmental disorders: Data and theory. *Journal of Learning Disabilities, 34*, 555–565.

Ladson-Billings, G. (1994). *The dream keepers: Successful teachers of African American children*. Jossey-Bass.

Landreth, G. L. (2012). *Play therapy: The art of the relationship* (3rd ed.). New York: Routledge.

Langberg, J. M., Epstein, J. N., Altaye, M., Molina, B. S., Arnold, L. E., & Vitiello, B. (2013). The transition to middle school is associated with changes in the developmental trajectory of ADHD symptomatology in young adolescents with ADHD. *Journal of Clinical Child & Adolescent Psychology, 42*(3), 431–442.

Lin, C. Y., Hsu, Y. T., & Wang, J. L. (2022). A meta-analysis of play therapy's impact on ADHD symptoms in children. *Journal of Attention Disorders, 26*(9), 1201–1217.

Massengale, K. E. C., & Perryman, K. L. (2021). The impact of play therapy on mathematics anxiety in elementary school students. *Journal of Child and Adolescent Counseling, 7*(3), 245–260.

Mayer, R. E. (2008). *Learning and instruction*. Upper Saddle River, NJ: Pearson Education.

Mehta, R., Patel, S., & Sharma, D. (2023). Enhancing executive functions in children with ADHD: The role of play-based interventions. *Child Neuropsychology, 29*(3), 366–379.

Nwankwo, O. C. (2013). *A practical guide to research writing for students of research enterprise*. Port Harcourt: University of Port Harcourt Press.

Nwankwo, O. C. (2015). *Psychology of learning*. Port Harcourt: University of Port Harcourt Press.

Onnachi, R. O. (2009). *Advanced psychology of learning and scientific inquiries*. Totan Publishers.

Polanczyk, G., Salum, G., Sugaya, L., Caye, A., & Rohde, L. A. (2018). Annual research review: A meta-analysis of the worldwide prevalence of mental disorders in children and adolescents. *Journal of Child Psychology and Psychiatry, 59*(4), 345–365.

Polanczyk, G., Willcutt, E. G., Salum, G. A., Kieling, C., & Rohde, L. A. (2015). ADHD prevalence estimates across three decades: An updated systematic review and meta-regression analysis. *International Journal of Epidemiology, 43*(2), 434–442.

Raggi, V. L., & Chronis, A. M. (2006). A review of the effectiveness of behavioral interventions for children with attention-deficit/hyperactivity disorder. *Psychology in the Schools, 43*(7), 821–834. https://doi.org/10.1002/pits.20188

Rajendran, K., Kruszka, P., & Baker, M. (2021). Cognitive and behavioral outcomes in children with ADHD: A longitudinal study. *Developmental Psychology, 57*(3), 429–441.

Rapport, M. D., Orban, S. A., Kofler, M. J., & Friedman, L. M. (2009). Do programs designed to train working memory, impulse control, and cognitive flexibility enhance the academic functioning of children with ADHD? *Clinical Psychology Review, 29*(5), 480–492.

Ray, D. C. (2011). Impact of play therapy on children with ADHD. *Journal of Counseling & Development, 89*(2), 203–212.

Schaefer, C. E., & Drewes, A. A. (2014). *The therapeutic powers of play: 20 core agents of change*. John Wiley & Sons.

Schunk, D. H. (2012). *Learning theories: An educational perspective* (6th ed.). Boston, MA: Pearson.

Suvin, M. C. (2019). What are learning outcomes? Retrieved from https://ijcrt.org/papers/IJCRT2005091.pdf

Thomas, R., Sanders, S., Doust, J., Beller, E., & Glasziou, P. (2022). Prevalence of attention-deficit/hyperactivity disorder: A systematic review and meta-analysis. *Pediatrics, 149*(6), e20210511.

Tomlinson, C. A. (2001). *How to differentiate instruction in mixed-ability classrooms*. ASCD.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.

Vygotsky, L. S. (1986). *Thought and language*. MIT Press.

Wood, D., Bruner, J. S., & Ross, G. (1976). The role of tutoring in problem solving. *Journal of Child Psychology and Psychiatry, 17*(2), 89–100.