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Effects of Teaching Art Activities by Using the Playing Method to Develop Skills in Preschool Children with Attention Deficit Hyperactivity Disorder

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Abstract

The purpose of this study was to explore the effects of teaching art activities on thinking and behavioural skills in preschool students with Attention Deficit Hyperactivity Disorder (ADHD). A program was designed and applied to teach certain art activities with the Playing method and to measure the thinking and behavioural skills before and after applying the program, by using observation. The sample consisted of 14 boys and girls identified with ADHD by the ADHD Rating Scale for children. They were divided into experimental and control groups matched for several demographic factors. After the experiment was completed, our comparisons demonstrated some beneficial and significant effects of the art program on the thinking and behavioural skills of the children who took part in the activities.

Art activities and the Playing method have an influential role in children's lives. Art, on the one hand, is the main factor of education that contributes to the process of shaping children's minds and fashioning their behaviour (Mohamed, 2003). In other words, if children engage in art activities, they will develop crucial, mental skills that will enable them to adapt their thinking and behaviour. The Playing method, on the other hand, helps to rectify their physical movements and augmenting of their mental processes (Al Raminy, 2006). In other words, this method assists children to correlate their physical actions and their thinking processes needed at a specific moment. *[Note: In North America, the term "learning through play" is used in education and psychology to describe how a child can learn to make sense of the world around them. "Play" refers to activities chosen by the child. The term "work" has a prearranged intent and outcome (Kahn & Wright, 1980).]*

The importance of arts activities and the Playing method in preschool and early childhood education has been established and there is evidence that such educational approaches will help to develop the main abilities and skills of children in preparation for the subsequent educational years (Abdul Hadi & Al Saheb, 2002; Ali, 2007; Ali & Abdul Khaliq, 2005). In contrast, there are some problems that a child might experience in this stage that might prevent him/her from acquiring such essential skills or might impact the degree of their development. Such problems include certain disorders that a child is born with or acquires early in life. Therefore, deficiency resulting from such problems may negatively impact

their ability to challenge everyday life situations and educational contexts that depend on these skills.

Many educational studies have focused on problems affecting early childhood development, including various syndromes and disorders. However, some behavioural disorders have not received enough educational or instructional concern as certain other types of developmental disorders. Due to the neglect of these behavioural disorder types, a child will continue to have the same negative symptoms or even more. For example, in Saudi Arabia, there is a focus on children with autism and institutes have been established for them. All of these institutes are oriented to, and include educational classes appropriate for, the child with autism, even though the prevalence of autism in Saudi Arabia has been reported to be only 2–5 children in every ten thousand. On the other hand, Attention Deficit Hyperactivity Disorder (ADHD) has tended to be largely ignored even though the prevalence rate in the primary schools in Dammam is at least 13% (Al Hamid, 2002).

ADHD is just one of the neurobehavioural disorders that might manifest in children at the early preschool stage (Al Sherbeeny, 2005). ADHD has been the subject of many medical and therapeutic studies, but not enough educational studies have been conducted on the topic, especially in the Arab world, taking into consideration that it shares similar negative impacts with other neurobehavioural disorders (Al Khashramy, 2004). ADHD is mostly characterized by persistent patterns of inattention and a component of hyperactivity and weak response inhibition (impulsiveness). It may affect children with intellectual disorders and/or autism. As mentioned above, the prevalence rate of ADHD is reported to be 13% among the Saudi population. An adverse consequence of ADHD is reflected by a high school drop out rate in those affected. Approximately 45% of those with ADHD are discharged from schools after various periods of time. Approximately 40–60 % need private tutors and/or peer tutoring at school, 35% fail to pass high school graduation tests, only 5% complete their university studies and 60–80% of affected children manifest difficulties in education (Al Hamid, 2000: Siasalem, 2001).

With respect to social and behavioural characteristics, 23% of those with ADHD experience personality disorders accompanied by a propensity for serious antisocial behaviours across the lifespan. These behaviours are sometimes associated with factors such as impaired social interaction and communication, malfunction and criminal behaviours. It has been reported that among those with ADHD, 30% participate in thefts when they reach adolescence or adulthood, 20% deliberately set fires with the intention of causing serious damage and 40% manifest alcohol and smoking abuse or dependence in their adolescence (Al Hamid, 2000; Siasalem, 2001).

Moreover, symptoms of ADHD are often present in individuals with pervasive developmental disorder (PDD). Some clinicians "label the symptoms of ADHD separately from PDD, whereas others include them as part of the PDD presentation" (Chiu & Pataki, 2013, p. 1). Suffering from ADHD is not limited to the child with ADHD; suffering also is related to those who interact or deal with the child; including family, tutors and classmates (Abdul Rahman & Hassan, 2003; Malchiodi, 2003).

Clearly, the educational and social disorders in children with ADHD can be ascribed to abnormalities in thinking and behavioural skills. Although medicines are used to inhibit some of the symptoms of ADHD on a short term basis, medicinal therapy will not aid with development or modification of thinking and behaviour. These skills should be dealt with pedagogically and educationally in the early stages of the lifespan to prevent exacerbation of the disorders in the succeeding lifespan levels (Al Khashramy, 2004; Al Khateeb, 2001).

We therefore proposed setting up an educational, entertaining and systematic technique to help children with ADHD to acquire such skills through art activities and the Playing method. Art activities in the preschool stage are advantageous in developing various skills – including thinking skills such as: attention, observation, concentration; ability to make comparisons including classification and assembly; and behavioural skills such as the practice of good hygiene conduct (Abdul Hadi & Al Saheb, 2002; Ali & Abdul Khaliq, 2005; Hafez, 2000). Furthermore, these art activities depend primarily on visual, dynamic and sensory stimulants, which help children to retain skills they

have learned for a longer period (Nasser, 2004) Thus, art activities are suitable for helping children with ADHD to normalize their behaviour (Al Khashramy, 2004).

The Playing method also assists in developing the aforementioned thinking skills.. Behavioural skills also should be developed by the Playing method. These basic skills include self control and the ability to anticipate and wait for their turn (Ali & Abdul Khaliq, 2005; Al Yateem, 2005; Issa, 2005). Thus, the Playing method is suitable for children who are experiencing ADHD making them promote more self-control (Issa, 2004).

Accordingly, it was proposed that if children with ADHD acquire the main thinking and behavioural skills they need, through an educational systematic technique such as teaching of art activities by means of the Playing method, they should acquire skills that are of benefit to themselves and their society.

The questions that we proposed to address were the following:

1. What are the effects of teaching art activities via the Playing method on the development of thinking skills in preschool students with ADHD?

2. What are the effects of teaching art activities via the Playing method on the development of behavioural skills in preschool students with ADHD?

The potential significance of this research can be explained from two perspectives – namely the theoretical and practical aspects.

The theoretical aspect: There are few studies that have dealt with the application of art activities, especially in the education of children with ADHD. To our knowledge, there has been no Arab study relating to developing measured art activities for children with ADHD at the preschool level. As well, there are few educational studies that have dealt with the Playing method, especially in the education of children with ADHD (Alessandri, 1992; Kaduson & Finnerty, 1995; Kearns, 2004).

The current study may be helpful for tutors as it deals with the subjects of poor thinking and behavioural skills, like inattention and inability to control mobility (Yahia, 2003). Children with ADHD suffer from these symptoms; thus the results of this study may enhance the development of thinking and behavioural skills in such children. According to the authors' knowledge, there have been few educational studies of any type with students who have ADHD or related disorders in Saudi Arabia.

The practical aspect: This study describes the use of art activities taught by using the Playing method to students with ADHD in the preschool level in order to develop the thinking and behavioural skills they need. If proven effective, the results may promote greater use of our methodology within educational institutes, and enhance the quality of life for people with ADHD. They also may enable fine art therapists to use a systematic educational approach in dealing with persons with ADHD educationally and behaviourally.

The study also may be helpful to persons in other disciplines such as family, tutors, arts therapists, special education teachers, and preschool specialists. Such individuals will be better prepared to use our approaches in the future and to deal with situations similar to those we describe.

Method

Approach

This study explored the effects of teaching certain art activities like drawing and using clay by using the Playing method to develop thinking and behavioural skills in preschool students with ADHD. The researchers matched children in the experimental group with those in the control group for factors which might affect the independent variables (see below). Results of the experimental group were compared before and after application of program. As well, results of the experimental group were compared with those of the control group before and after application of the program.

Participants

The sample was comprised of 14 boys and girls with ADHD between 4–6 years of age. It was a *purposive* sample because the ADHD population is unknown in Saudi Arabia, and the research-

ers identified participants by using an ADHD Rating Scale (American Psychiatric Association, 2000). Preschool teachers selected children they thought might have ADHD and the researchers then used the ADHD Rating Scale to determine if a child met or did not meet the ADHD criteria. Seven children were included in the experimental group and 7 in the control group. The two groups were matched according to the following variables: age, gender, members of the family and order of the child, social rank of the family, educational level of the parents and living standard of the family. The researchers focused on these variables because they are known to be significant factors in the life of child with ADHD (Floet, Scheiner, & Grossman, 2010; Garber, 2001; Jackson & Henderson, 2008).

Application of the Mann-Whitney "U" test (Table 1) showed that these participant characteristics were not different in the experimental and control groups ($P < 0.05$). Thus the experimental control groups were similar with respect to: age, gender, number of the family members and order of the child, social rank of the family, educational level of the parents and living standard of the family.

Tools

The researchers used the following tools in this study:

1. Rating scale of ADHD derived from the DSM-IV-TR (APA, 2000). This included 18 items to be addressed by the teacher and a parent of each participant. The teacher was provided with a teacher copy of the Rating Scale, and the parent with the parent copy of the Rating Scale. Each person was asked to assign a frequency adjective about specific behaviours of the child. The five available options were: always, often, sometimes, rarely and never. This Rating Scale was translated to Arabic and the validity and reliability of the Rating Scale were evaluated.

2. Observation cards prepared by the researchers for collecting data on children in the experimental and control groups before and after applying the program about their thinking and behavioural skills. Each card included five

Table 1. Demonstration that the Control and Experimental Groups are Matched with Respect to Seven Variables by Application of the Mann-Whitney "U" Test

Variable	*The Group*	*Number*	*Total Level*	*Average Grade*	*"U" Value*	*Significance Level*
Age	Control	7	32.00	5.33	11.00	0.108
	Experimental	7	73.00	9.13		
Gender	Control	7	8.10	81.00	14.00	0.545
	Experimental	7	24.00	6.00		
Number of the family members	Control	7	52.00	7.43	24.00	0.100
	Experimental	7	53.00	7.57		
Order of the child	Control	7	74.00	8.22	16.00	0.438
	Experimental	7	31.00	6.20		
Social rank of the family	Control	7	39.00	9.75	11.00	0.240
	Experimental	7	66.00	6.60		
Educational level of the parents	Control	7	54.00	6.75	18.00	0.491
	Experimental	7	15.00	8.50		
Living standard of the family	Control	7	31.00	6.20	16.00	0.438
	Experimental	7	74.00	8.22		

skills and for each skill there were two descriptors (i.e., "sentences"). The validity and reliability were determined for each card. Two types of validity were used. Expert's validity was based upon feedback from 13 experts from different five academic fields: art education, psychology, preschool education, special education needs, as well as curriculum and teaching instruction. In addition, Content validity was assessed by determining Pearson correlation coefficients. For reliability, the Cronbach's α coefficient has been used. Both Pearson correlation coefficients and Cronbach's α coefficient were determined by SPSS.

a) Observation card for measurement of thinking skills. The five thinking skills of Attention, Comparison, Classifying, Ordering and Observation were included**.** The Expert's validity ranged from 84.7%–100% and 70% or more of the terms expressing the skills were accepted. In assessment of Content validity, the majority of Pearson correlation coefficients were positive and statistically significant at a level less than 0.05. This indicated that the internal consistency and coherence between components of thinking skills on the thinking observation card were of high validity. In the reliability determination, the total alpha reliability coefficient reached a high value of 0.75 and a significance level of 0.01, indicating that the thinking skills observation card could be used with a high level of reliability.

b) Observation card for measurement of behavioural skills. The five behavioural skills of Activity Control and Quietness, Waiting Turn, Personal and Place Cleaning, Continuing Instructions and Directions, Ending Work and Activity were included. The Expert's validity of this card ranged from 92.4%–100%., and 70% or more of the terms were accepted. The majority of the Pearson correlation coefficients for the Content validity determination were positive and statistically significant at a level less than 0.05. This indicated that the internal consistency and coherence between components of behavioural skills on the observation card were of high validity. The Cronbach's α coefficient for reliability was determined to be 0.75 with a significance level of 0.01, indicating the behavioural skills observation card could be used with a high level of reliability.

Procedures

The Art Activities Program Prepared by the Researchers

The researchers proposed a program of art activities to acquire and develop thinking and behavioural skills for children with ADHD in the preschool stage. There were some steps for planning and designing the suggested program. The first stage of preparation included identification of activities to be used in the program. These included:

Art Activities

The program consisted of two main art activities: drawing activity and clay forming activity, which were divided into 12 specific activities. The time allocated to each of the 12 specific activities ranged between 20–30 minutes. One activity was conducted per day over a period of 14 days. The drawing and clay forming activities were selected because they are suitable for a child with ADHD with hyper-motor energy and are expected to enhance their mental and personal abilities (Al Adawy, 2003; Anani, 2002).

The Playing Method

During the planning phase for the art activities program, researchers decided to teach it by using the Playing method for two reasons. First, this method is appropriate for the nature of a child with ADHD. When the child plays, the possibility of becoming bored will decrease and the attention span will increase. Second, art activity in itself is a form of play (Al Khashrmi, 2004; Issa, 2004; Sisalem, 2001). In the program, the researchers focused on art playing and construction playing involving the hands. As well, motor-, dramatic-, and imaginative-play were used to relay information. In addition, the researchers used individual playing and group playing to enhance the effectiveness of the program.

Techniques of Reinforcement

The researchers used a number of strengthening techniques when teaching children with ADHD the art activities through the Playing method to encourage them to acquire and

develop thinking and behavioural skills that they lack (Al Shehry & Al Ghamdi, 2008). The main strengthening techniques of reinforcement used in this current study were symbolic reinforcement, oral reinforcement, non-oral reinforcement and negative reinforcement.

Program Arbitration (Experts' Validity)

After the designing of the program of teaching art activities through the Playing method, 12 experts evaluated the program in its original form for the suitability of the program content and its validity in achieving the goal of the program. The range of agreement amongst the experts ranged between 50% and 91.63% for the acceptance of the activities of the program. The researchers agreed that a proportion of 50% or more was sufficient for introducing a particular activity into the program because the specialization of the experts differed. Thus the program as a whole, including the 12 specific activities, was approved.

Steps for Implementing the Experimental Study

These were as follows:

1. At first, the researchers communicated with a number of preschool directors to find a suitable school with a sufficient number of children considered to be hyperactive and/or have attention deficit.

2. After an agreement was reached with the school administration to conduct the experimental study, the researchers selected the possible participants for the study and applied the ADHD Rating Scale to ensure that the participants indeed had ADHD. For pre-test measures, information about thinking and behavioural skills was collected from the experimental and control groups before conducting the experiment using the two observation cards that were developed for the study.

3. After preparing the class about where the experiment would be conducted on the experimental group and the program would be taught, and applying the program to the experimental group, the researchers collected post-test measures from the experimental group and the control group (which did not take part in the art program) using the same two observation cards of thinking and behavioural skills. This approach was used to illustrate the differences between the pre- and post-measurements for the experimental group, as well as the difference between the experimental and the control groups regarding their thinking and behavioural skills. This should give an indication if the program indeed positively affected the ADHD children's thinking and behavioural skills.

4. Finally, the researchers used appropriate statistical methods to test the effectiveness of teaching of art activities by using the Playing method on the development of thinking and behavioural skills for preschool children with ADHD. Means and standard deviations were calculated for thinking and behavioural skills (individually and overall). The two sample *t*-test was applied to detect statistically significant differences in the average scores of thinking skills and behavioural skills of children with ADHD in the various comparisons.

Results

On the basis of the observations, the following results were obtained:

Comparisons of Thinking and Behavioural Scores in Experimental Group Before and After Applying the Program

Thinking Skills

Application of the program of teaching art activities through the Playing method led to improvement in average thinking skills of the experimental group of children with ADHD. There was a statistically significant difference (i.e., P = 0.05) in average thinking skills of the experimental group before and after the application of the program (Table 2). As evident from Figure 1, there was apparent improvement in each of the specific thinking skills after application of the program. Improvement attained significance for Attention (P = 0.03) and Observation (P = .05).

There was a possible trend for improvement in Comparison (P = 0.20) though not for Classifying (P = 0.51) and Ordering (P = 0.43).

Behavioural Skills

There was no statistically significant difference in average behavioural skills of children in the experimental group before and after the application of the program (Table 3). However, as evident from Figure 2, there was apparent improvement in each of the specific behavioural skills after program implementation. There was a possible trend for improvement in Personal and Place Cleaning (P = 0.13), but improvement did not attain significance for: Activity Control and Quickness (P = 0.52); Waiting Turn (P = 0.74); Continuing Instruction and Directions (P = 0.40); or Ending Work and Activity (P = 0.74).

Comparisons of Thinking and Behavioural Scores in Experimental and Control Groups Before and After Applying the Program

Thinking Skills

There was no statistically significant difference in average thinking skills in a comparison between the control and experimental groups before application of the program. However, after implementation of the program, average thinking skills was significantly greater for the experimental than the control group (Table 4, Figure 3).

Table 2. Significant Difference in the Average Thinking Skill of the Experimental Group Before and After Applying the Program

Variable	*Experimental Group*	*Number*	*Mean*	*Standard Deviation*	*"T" Score*	*Significance Level*
Thinking Skills	Before	7	1.55	0.3690	1.87	0.05
	After	7	2.01	0.5273		

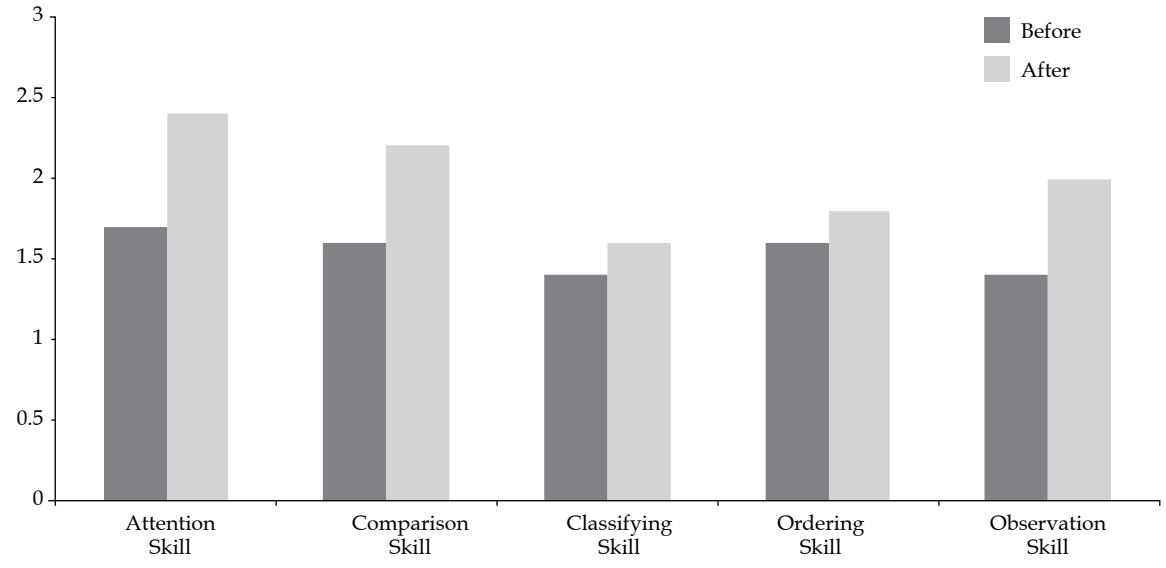

Figure 1. Scores in specific thinking skills of the experimental group before and after applying the program

Behavioural Skills

There was no significant difference in average behavioural skills of the experimental and control groups before application of the program. However, after implementation of the program, average behavioural skills was significantly greater for the experimental than the control group (Table 5, Figure 4).

Summary and Discussion

In summary, this study supported our hypothesis that application of the art activity program through the Playing method would result in improvements in thinking and behavioural skills for preschool children with ADHD. Our analyses demonstrated that:

1. Program application resulted in significant improvement in average thinking skills for the experimental group (P = 0.05), and apparent improvement in each of the five specific thinking skills (Table 2, Figure 1). Improvement in the specific thinking skills of Attention and Observation attained significance (P = 0.03 and 0.05, respectively)

2. There was no difference in average thinking skills between the experimental and matched control group before program application. After application of the program, the experimental group had significantly higher average thinking skills than the matched control group (P = 0.01) (Table 4, Figure 3).

3. Program application resulted in no significant improvement in average behavioural skills for the experimental group. However

Table 3. No Significant Difference in the Average of the Behavioural Skills of the Experimental Group Before and After Applying the Program

Variable	*Experimental Group*	*Number*	*Mean*	*Standard Deviation*	*"T" Score*	*Significance Level*
Behavioural Skills	Before	7	1.32	0.3094	1.48	0.403
	After	7	1.61	0.4059		

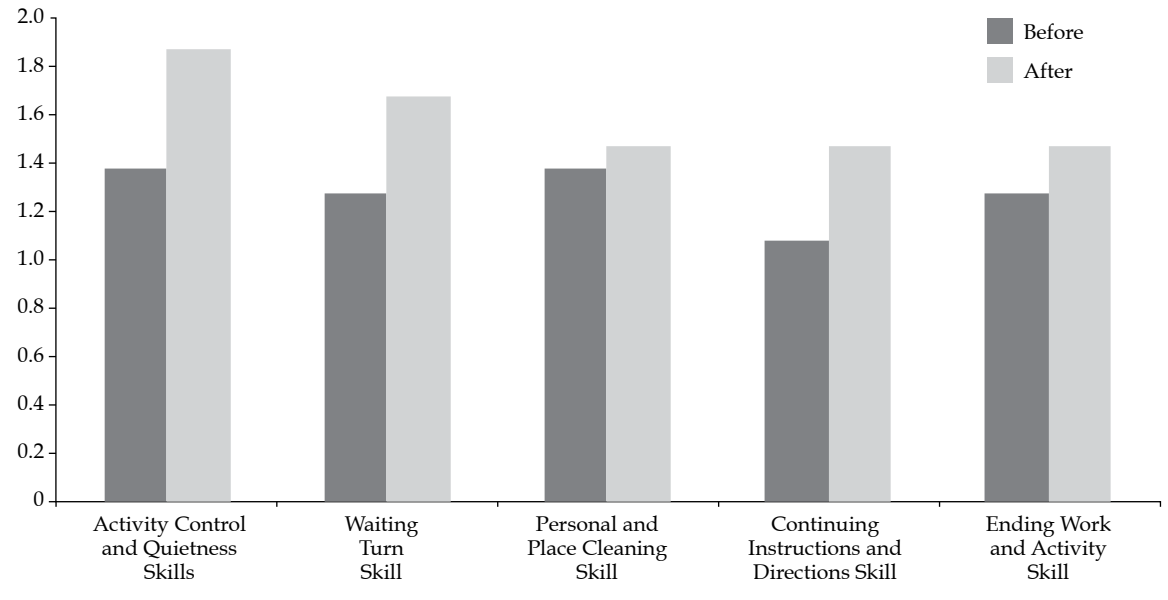

Figure 2. Differences in scores in specific behavioural skills of the experimental group before and after applying the program

Table 4. Differences in Average Thinking Skills as a Whole Before and After Applying the Program for the Control and Experimental Groups

Variable	*Group*	*Number*	*Mean*	*Standard Deviation*	T-*Test Score*	*Significance Level*
Thinking Skills (Before)	Control	7	1.41	0.1345	0.962	0.355
	Experimental	7	1.55	0.3690		
Thinking Skills (After)	Control	7	1.27	0.2400	3.360	0.010
	Experimental	7	2.01	0.5200		

some improvement was apparent in each of the five specific behavioural skills, though none of these improvements attained significance.(Table 3, Figure 2).

4. There was no difference in average behavioural skills between the experimental and control groups before program application. However, the experimental group taking part in the program had significantly higher average behavioural skills than the matched control group (P = 0.01) (Table 5, Figure 4).

According to the results that the researchers acquired from this study, what they observed when they dealt with children with ADHD, and what they also comprehended about the level of the thinking and behavioural skills in the experimental group before and after applying the program, the researchers recommend that curriculums and instruction programs for teaching art activities through the Playing method be introduced into preschools so that children with ADHD can improve individual components of thinking skills and behavioural skills. The use of activities that involve motion and that are entertaining might be particularly helpful.

This study was limited by several issues. The art program was restricted to a small number of activities and the program duration was short. The number of participants was small. Also the study was conducted in only one of the preschools in Riyadh, Saudi Arabia.

In the future, more experimental research should be carried out in the education and psychology fields about children with ADHD using a broader range of activities and longer programs to help them.

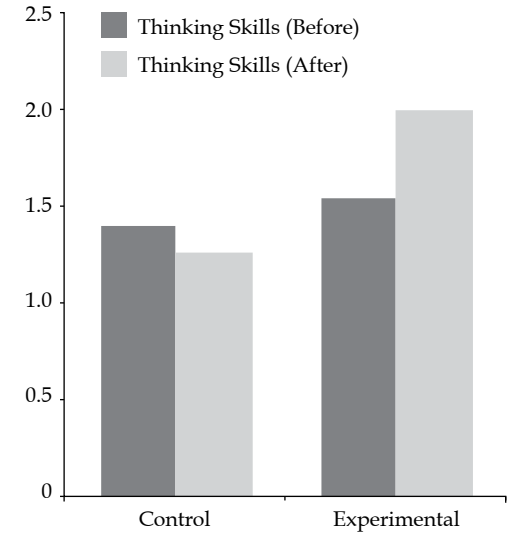

Figure 3. Difference in average thinking skills before and after applying the program for the control and experimental groups (See Table 4 for details)

Key Messages From This Article

Persons with ADHD: Young children with ADHD may have deficits in thinking and behavioural skills which are essential for basic life skills. Taking part in art activities through use of the Playing method is fun and may help develop these essential skills.

Professionals and policymakers: ADHD may affect approximately 13% of the Saudi population. Young children with ADHD should be included in educational programs to help them develop essential thinking and behavioural skills. One program of potential benefit that

Table 5. Difference in the Average of the Behavioural Skills as a Whole of the Experimental and Control Groups Before and After Applying the Program

Variable	*Group*	*Number*	*Mean*	*Standard Deviation*	T-*Test Score*	*Significance Level*
Thinking Skills (Before)	Control	7	1.25	0.7868	0.592	0.565
	Experimental	7	1.32	0.3094		
Thinking Skills (After)	Control	7	1.17	0.1496	2.700	0.010
	Experimental	7	1.61	0.4059		

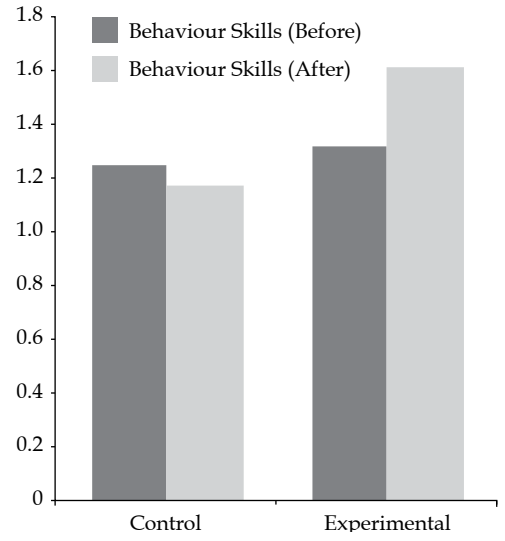

Figure 4. Average of behavioural skills as a whole before and after applying the program for the control and experimental groups (See Table 5 for details)

could be added to the preschool curriculum is art activities through use of the Playing method.

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