

Comparative Study of Painting and Storytelling Effects on attachment of Children with Autism

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ABSTRACT

Introduction: We can see Attachment manners in spectrum disorder of children with autism, when they feel stressed. Drawing and storytelling are low-cost, and simple ways for the least literacy families to improve clinical conditions in children with autism. So this study is comparing the painting and storytelling impacts on children with autism.

Materials and Methods: This study was a quasi-experimental interventional study conducted in 2020. The research samples included 35 children with autism who referred to the rehabilitation centers of Iran University Medical Sciences (12 in the storytelling group, 11 in the painting group and 12 in the control group). Data collection tools were included demographic characteristics questionnaire and CSHQ sleep habits questionnaire which were collected in two stages before and after the intervention. It was conducted at least 5 nights a week for a month. Data analysis of and the results was performed at a significant 0.05 level.

Results: Storytelling group average age was 7.58 \pm 1.78, for painting was 1.36 \pm 1.75 and control was 6.58 \pm 1.78. The results indicated that attachment mean in the two groups storytelling and painting was consist of a significant difference ($p < 0.05$). However, in the control group, for the two of pre-test and post-test periods, no significant difference of the average sleep was seen ($p > 0.05$). The attachment average differences for the storytelling group are significantly lower than the painting group, so the average differences are reported to be -3.3. ($-2.27 t =, p = 0.034$).

Discussion and Conclusion: Storytelling and painting were effective in attachment improvement of children with autism. And of course, as it was observed, painting was more effective than story. Based on results, for performing more interventions, especially in children with autism, painting is recommended, because it is inexpensive, effective and practical in sleep disorder management.

KEYWORDS

Autism, Attachment, Storytelling, Painting.

Introduction

Today, autism spectrum disorder is the worldwide most common developmental disability [1]. This condition includes a group of neurodevelopmental disorders that, are characterized by several disabilities in communication and social interactions as well as limited attachment in repetitive behaviors [2]. Autism is the most common and severe disease in Autism Spectrum Disorder (ASD) [3]. It is also the most severe behavioral disorder in childhood [4]. In the last twenty years, this disease prevalence has increased worldwide [5] autism spectrum disorder has been reported in 2 to 5 cases in each ten thousand live births [6]. By considering one percent prevalence rate of autism, it is expected that at least 230,000 of 23 million people below the age of 18, contain autism disorders. The annual economic care and treatment costs for these number of patients, will be about \$ 1.58 m [7]. Children with autism spectrum disorder have difficulty in bilateral communication, social skills, and even mating, and may misinterpret nonverbal cues for social interactions (such as gestures and facial expressions) [8]. They are also more and less sensitive to auditory, visual, and tactile stimuli [9] and they are also at risk of behavioral problems [10] so it may be difficult for families to communicate and interact with their children in the usual way. These problems makes parents spend more time, energy and resources on their children [11]. The child's desire to establish a close relationship with certain people and a sense of security in their presence is called attachment [12]. A study of 58 children with autism

showed 36 of them had attachment disorders [13]. Children with ASD have reported high levels of anxiety, stress, and insecure attachments. [14]. this theory arises from precise observations about children's relationships, especially with parents, and considering the interaction between genetic and environmental factors. Attachment style is formed from life experiences, especially childhood experiences in the family [15]. Attachment system is generally recognized as an internal monitoring system that has important consequences for personality and social behaviors, which is mainly formed through interaction with caregivers in early childhood ages [16]. Attachment behaviors are seen in children with autism spectrum disorder when they feel stressed or as they are looking for connection with their parents [17-20]. Autism and mental retardation seem to be in related to kind of insecure attachment [21]. A systematic review study states that, to determine what environmental and caring factors play a role in the development of attachment in children with ASD, more to be done [22]. Further studies in all fields and opportunities in the evidence-based scientific research enhancement work are needed for people with autism [23]. Sports interventions including jogging, horseback riding, martial arts, swimming, and yoga / dance can improve a variety of behavioral outcomes, including stereotyped behaviors, emotional- social functioning, cognition, and attention. Moreover, must be focused more on childhood (ages 0-5 years) and adolescence (ages 12-16), which leads to a better understanding of the benefits of exercise for this population [24]. Nonverbal communication with children is important. By understanding children's drawings, we are an step closer to understand their surroundings [25]. Painting is a fun, inexpensive, and easy way for school-age children to express their feelings and attitudes. Painting is a reliable source of information to explore their thoughts on anything that pertains to them [26]. The results showed that storytelling in form of playing the role is of one of the effective and cost-effective therapeutic interventions to improve the communication and social functioning of children with autism. Drawing and storytelling are inexpensive and simple methods for the family to be used with the least level of literacy [27]. Therefore, this study was conducted to check the painting and storytelling impacts on children attachment with autism.

Method

Study Design and Participants

This study is a quasi-experimental intervention in which the research samples included 35 children with autism who were referred to rehabilitation centers of Iran University Medical Sciences. The study population was the infected children who referred to this center. Sampling method was available in this study. Individuals who met the inclusion criteria were selected in the intervention and control groups until the quorum was reached. 12 people in the storytelling group, 11 in the painting group and 12 in the control group had cooperation. These people were the children aged 4 to 10 years with autism who referred to the center. Inclusion criteria was age between 4 and 10 years, not taking sedatives, definitive diagnosis of autism for the child, family willingness to cooperate and children with autism level one. Exclusion criteria included not performing the intervention at least 5 nights a week and receiving sedatives.

Data Collection Tools

The tools for collecting two questionnaires include attachment Intermediate Relationship Questionnaire (KCAQ) and Demographic Information Forms that were provided to parents.

Demographic information questionnaire: This questionnaire was used to assess the descriptive part of the study, which included information such as: kid age, gender, kid birth rank, residence place, mother age, father age, and parent's education.

Kinship Center Attachment Questionnaire: was designed by Halpern and Copenberg (2006). It is including 20 and its purpose is to measure the children attachment in middle school (before primary and primary school). Its scoring range is based on Likert, the scores for each option including for never 1, rarely 2, occasionally 3, often 4, always 5. Soleimani et al. (2014), investigated the validity and reliability of this questions. The analysis outcomes test showed that KMO test was equal to 0.73 and was at the desirable. The internal consistency coefficients of this questionnaire were obtained at a high level. Also, the reliability of the test-retest of this questionnaire was 0.79 [28].

Study Conducting Process

After receiving an introduction paper from Iran University of Medical Sciences, the researchers referred to rehabilitation centers under the university supervision and started sampling. At the beginning, the objectives were explained to the parents of the children who were participating in the study. In addition, written consent was obtained from all individuals to involve in the study. Then the pre-test of both groups was completed through the mentioned questionnaires. The intervention group was asked to start painting with the subject every night if the child and family wish to do so, after dinner and before performing sleep rituals such as brushing the child alone and under the supervision of the mother or father. Then paint and then remove the sheet from the office and stick it on his /her room wall next to the bed, so that the child can see them. This intervention was performed at least 5 nights a week for a month. Each week, the family takes a picture of the painting on the wall and sends it to the researcher, so that the researcher can be sure of the intervention process. In the storytelling group, every night, if the child and the family want to do this, before bedtime the story is read to the child. After one month, the questionnaire was completed by the parents.

Data Analysis

In the present study, for descriptive analysis, qualitative variables, number and percentage indices and for quantitative variables, mean and standard deviation have been reported. Also for inferential analysis of data from Kolmogorov-Smirnov statistical tests to check the normality of the data, paired t-test and Wilcoxon to compare pre-test and post-test, analysis of variance and Kruskal-Wallis test to compare the three groups (storytelling, drawing and control Independent t-test and, Mann-Whitney test were used to compare the mean differences of the pairs. In addition, SPSS software version 26 and Graphpad Prism version 8.2 are used to analyze the collected data. Finally, the significance level of $P < 0.05$ is considered to test the hypotheses.

Ethical Approval

This study was conducted after receiving the ethics code IR.IUMS.REC.1399.940 from the ethics committee of Iran University Medical Sciences.

Results

35 children with an average age of 6.86 participated in this study, of which 21 (60%) were boys and 14 (40%) were girls. The mean age in storytelling, painting and control groups was 7.58 1.78, 6.36 1.75 and 6.58 1.78, respectively. The average age of the mother in the storytelling, painting and control groups was 34.08.4, 4.54.35 and 30.33, respectively. The age of the father in the storytelling, painting and control groups was 36.92 4.83, 39.45 4.89 and 32.75 5.88, respectively. Descriptive information for the participants in the study has been reported in Tables (1).

Table 1. Frequency distribution of demographic variables in the three groups studied

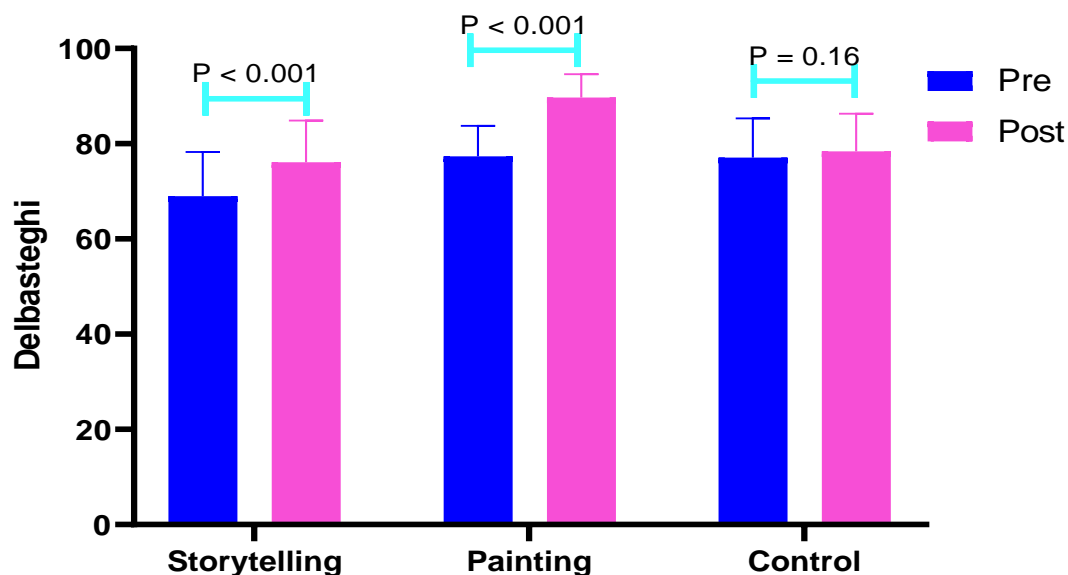
control number (%)	control number (%)	painting number (%)	storytelling number (%)	level	variable
21 (60)	6 (50)	8 (72.73)	7 (58.33)	boy	gender
14 (40)	6 (50)	3 (27.27)	5 (41.67)	girl	
14 (40)	8 (66.67)	4 (36.36)	2 (16.67)	1st	Which child in family
11 (31.43)	4 (33.33)	2 (18.18)	5 (41.67)	2nd	
9 (25.71)	0	4 (36.36)	5 (41.67)	3rd	
1 (2.86)	0	1 (9.09)	0	4th	
30 (85.71)	10 (83.33)	11 (100)	9 (75)	city	habitat
5 (14.29)	2 (16.67)	0	3 (25)	village	

The results of attachment averages in pre-test and post –test periods and also attachment comparison for storytelling,

painting and control group have been reported in table 2. It shows the attachment average in storytelling and painting has significant difference. While for control group this obvious difference has not been shown in pre-test and post – test.

Table 2. Attachment and sleep mean comparison in different groups

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Variable	Group	Before			After			T and P-Value		T and P-Value
		Mean	SD		Mean	SD				
Attachment	Storytelling	77.36	6.42		89.73	4.88		T = -5.92, P* \leq 0.001		T = -6.12 P* \leq 0.001
	Painting	69.00	9.27		76.08	8.80		T = -6.19, P* \leq 0.001		
	Control	77.08	8.218		78.42	7.914		T = -1.51, P = 0.16		
		F = 4.06 P* = 0.03			F = 10.86 P* \leq 0.001					
	F = ANOVA or Kruskal - Wallis			T = Paired T-Test or Wilcoxon			P = Pvalue			



The results of the two-by-two comparison of the mean differences (post-test minus pre-test) are reported in Table (3). According to the results, the average of attachment differences for the storytelling group is significantly higher than the control group, so that the average of the differences is 5.75. Also, the average difference of attachment differences for the painting group is significantly higher than the control group, so that the average difference of 11.03 has been reported. Further results indicate that the average of attachment differences for the storytelling group is significantly lower than the painting group, so that the average differences are reported as -3.3. In other words, the painting group had a greater increase in the average attachment than the storytelling group and showed a greater impact on average attachment improvement.

Table 3. Two by two mean differences comparison

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Variable	Group (I)		Group (J)		Difference (I-J)		T and P-Value	Effect size
	Mean	SD	Mean	SD	Mean	SD		
Attachment	Storytelling		Control		5.75	1.44	3.98	0.63
	7.08	3.9	1.3	3.1			0.001	
	Painting		Control		11.03	2.2	5.0	0.84
	12.4	6.9	1.3	3.1			<0.001	
	Storytelling		Painting		-5.3	2.3	-2.27	-0.43
	7.08	3.9	12.4	6.9			0.034	

Discussion

This study was conducted to determine the comparative study of painting and storytelling impacts on the autism children attachment. In general, there was no statistically significant difference between two intervention groups in demographic variables. Therefore, it concluded that the results comparison of attachment between intervention groups was probably due to intervention factors. According to results, the mean attachment score of children with autism in the painting group after the intervention compared to before the intervention and an improvement the attachment status in this group after the intervention was observed. The art benefits are vast and can improve people's lives by improving their mental, emotional and even physical condition. The Naseri et al. showed the painting impacts on self-esteem and self-efficacy for homeless children aged 5 to 12 in Karaj. The results showed that painting therapy as a psychological intervention, can be a good way to increase self-esteem and self-efficacy of homeless children to be used in supportive centers [29]. The goal of Gholamzade Khadar et al.'s study, is reducing the painting therapy effects in decreasing symptoms of separation anxiety disorders (SAD) in primary school boys, and it showed that the intervention group had a significant reduction in SAD symptoms while the control group showed no significant difference [30]. These studies were in line with our study. Another study was conducted on the painting effects based on painting therapy in reducing anxiety of children with stuttering of the semi-experimental type (pre-test-post-test with control group). The results showed that painting based on painting therapy is an effective method to reduce anxiety in children with stuttering [31] which is consistent with the present study. Therapists can use painting along with other therapies to improve children's sleep. Rezaei et al., investigated the effects of painting therapy on reducing anxiety and aggression in male primary school students with externalization disorders. Aggression scores of male students contain externalized disorders. Therefore, painting therapy can be considered as one of the therapeutic interventions in reducing children's behavioral problems. [31] Although the present study was not a painting therapy and children paint with their parents before going to bed as they wish and freely draw their own mental images, but it helped them to sleep better. The process of drawing, painting, or building is a complex process that in which children bring together various elements of their experience and create a new and meaningful whole. In the selecting process, interpreting and modifying these elements, children have presented more than just a picture or a sculpture. They have shown us a part of themselves, such as how they think, feel and see [30]. Greenberg argues that understanding one's emotions, by exploring and reflecting on them, is the healing key [32]. Xie Jing et al. research was inconsistent with the present study. In this study, painting impacts on quality of life was investigated and the results showed that painting did not have a significant effect [33]. One of the reasons for the difference between this study and the present study is the difference in sample size and target group in people with schizophrenia and in the present study were people with autism. The average attachment differences for the storytelling group are significantly lower than the painting group. In other words, the painting group had a greater increase in the average attachment than the storytelling group and it showed a greater impact on improving the average attachment, which maybe this difference is due to how parents tell stories to each other. Different senses are involved in painting and painting is more objective. Also in the painting group, the association of the child's mental images has improved their attachment. The effect of perceptual-motor training on attention in children with autism spectrum disorders. The results showed that motor-perceptual training for children with autism increases their attention, because they are effective in increasing neurological and cognitive function [34]. Also in the study of mental motor skills training has improved mental motor skills in children with autism [35]. However, the mean attachment score of children with autism in the storytelling group increased in the post-intervention stages compared

to the pre-intervention stage and showed an improvement in this group status after the intervention. Nasiri et al. In 2018, investigated the effects of storytelling on social interactions in boys with autism, the results showed that storytelling significantly increased the social interactions of children with autism [36]. Since children's attachment is deep emotional bond that they establish with their primary caregiver, it is possible that parents establish an effective relationship in storytelling. In a study conducted by Poslawsky et al. they investigated the effect of intervention program on improving the parent's roles in children aged 16 to 61 months with autism. This study, which was an attachment-based study, was performed on 78 caregivers and children, parents who underwent this video intervention, showed a greater increase in parenting. There were no changes in other aspects of parent-child communication or child play behaviors, and at 3-month follow-up, the intervention was seen only in the child's attention skills [37]. Parents had reported that children with autism had anxiety, stress, and insecure attachment [14]. In study of role-playing storytelling on communication and social skills effects on children with autism, it was shown that storytelling by role play is one of the effective and cost-effective therapeutic interventions to improve communication and social functioning of children with autism [38] Painting has that potential to improve some of the major symptoms of Autism Spectrum Disorder [39]. The present study has shown that painting and storytelling help to improve children's attachment. This study helps parents to communicate with their children through storytelling and painting. One of the obvious limitations of this study was inaccessibility to large number of samples and whether all parents implemented the implementation method correctly or not.

Conclusion

Storytelling and painting were effective factors in improving the children with autism attachment, and painting was more effective than storytelling. Base on the results, it is recommended to perform more interventions, especially using painting in children with autism, because it is inexpensive, effective and practical in attachment improving. It is also recommended to check the storytelling and painting impacts in a larger number of samples and in a long period of time.

The attachment contradiction - no attachment contradiction was expressed by authors.

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