The Effectiveness of Family-Based Sensory-Motor Games with Hand Dolls on the Verbal Skills and Social Skills of Children with Autism at the Nedaye Asr Center in Tehran

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Abstract

The present research was conducted with the aim of investigating the effectiveness of family-based sensory-motor games on children with autism. The research method was of quasi-experimental type with pre-test and post-test plan with control group. The statistical population of this research included male and female students aged 6 to 10 years old with autism disorder in the Nedaye Asr Center in Tehran and by sampling through simple random method 30 people (15 people experimental, 15 people control) were selected. The program of the effectiveness of family-centered sensory-motor games with the hand dolls was performed for 21 sessions of 45 to 60 minutes during two months for the experimental group. To collect data, Gilliam's Autism Diagnostic Test, social skills scale, and verbal skill scale have been used. For data analysis, the descriptive statistics of mean and standard deviation and the inferential statistics of Levene's test, Kolmogorov-Smirnov, analysis of covariance were used. The results of this research indicate that there is a statistically significant difference between the verbal skills and social skills of autistic children before and after the intervention. There is a significant difference in the subscales of the social skills of appropriate social behavior, non-social behavior, aggression and impulsive behavior, having high self-confidence, and communication with peers ($p < 0.001$). And there is a significant difference in the verbal skill subscales including listening, the ability to receive and send verbal and non-verbal message, communication along with decisiveness, insight towards the communication process and emotional control ($p < 0.001$), and it can be concluded that the family-based sensory-motor intervention program with hand dolls can be effective in increasing the verbal skills and social skills of children with autism and can be used as an effective treatment method.

Keywords: Family-Based Sensory-Motor Games, Verbal Skills, Social Skills, Children with Autism

INTRODUCTION

Autism is one of the prevalent neurodevelopmental disorders initially associated with major problems and abnormalities in the areas of social interactions, verbal and nonverbal communication, as well as the emergence of maladaptive and repetitive behaviors and limited interests [1, 2]. Problems of verbal and nonverbal social communication in these people cause severe decline in performance, weakness in advancing to establish social interactions and rejecting others' demand to establish social relation [1]; therefore, the problem in social interaction is the most obvious feature that distinguishes autism spectrum disorders from other growth disorders [3].

Although deficiency in social and communication performance domain is the best known feature of people with autism, there is many evidences today indicating that there are the abnormality of sensor processes and fundamental learning disorders in these children that can be as accompanying or probably as a factor that creates behavioral problems in autism spectrum disorders [4].

People with autism have abnormalities in the three areas of social, verbal interaction and activities and desires. There are abnormalities in the field of social interactions, such as eye contact, facial modes and body movements and status. The method of establishing relationship with peers often does not match a person's level of growth. These children have little desire to participate in enjoyable and interesting activities

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with others and have limited emotional-social relationships. In terms of communication defects, there is a delay or lack of verbal skills and defects in imitation and symbolic games. Autistic people have behaviors, desires and limited, repetitive and stereotype activities [5]. Attention, memory, and executive performances, cognitive recognition and motor skills are among cognitive impairments of children with autism disorder that can be enhanced by sensory-motor techniques. Among the processing features in autism is sensory-motor play therapy method as parallel and associated with it is defect in whole attitude processes. Such a way of processing and its associated disorders can be extended to selective processes domain, so that the child with autism is unable to integrate visual, verbal and interactive information and using it in a coherent and meaningful form [6]. Demographic researches have estimated the prevalence of autism as 0.6% [7]. Recent researches results show its increase for each 110 people in 10,000 people [8], and the probability of its occurrence among boys are three to five times more than that of girls [7]. Children with autism disorder have difficulty in communicating verbally and generally have low cognitive function, which is why play therapy is chosen for treatment in this group. Scranton, Biofington, Townsend and Poulton (2009) investigated the effectiveness of using simple, hand dolls in teaching empathy and emotional understanding skills in children with autism. The findings of these researchers showed the effectiveness of using simple and hand dolls in teaching empathy and social and emotional interactions. In line with these findings, Davis (2007), Lu, Peterson, LaCroix and Rosion, (2010) [9] have shown that family-based doll therapy, as a safe treatment and compatible with the growth characteristics and the conditions of children with autism disorder, has always allocated a share of the educational, psychological and rehabilitation interventions of these children to itself. Therefore, undertaking and developing in this field is a kind of scientific investment that will have several scientific outputs for children, families and professionals [10]. Doll play therapy is one of the proposed interventions for children with autism during which the therapist or adult tries to create motivation in the child and communicate with him/her and guide his/her behaviors by using hand dolls. In fact, for children with autism disorder, play therapy can provide a safe communication space and facilitate and accelerate the growth of social interactions and communication and verbal skills of these children [11].

Violation in social interactions as well as verbal skills can underlie behavioral and communication disorders in children. Doing this research can have a significant role in the strategy of reducing these deficiencies in children [12]. Also considering the role of family-based sensory-motor games with hand dolls in the development and evolution of the child and improving and strengthening abilities and removing the weaknesses of the child are considered as the importance of this research according to the researcher in preventing the emergence or even continuing these problems. On this basis, due to the increasing trend of diagnosing autism spectrum disorders in developing societies, Shah and Fries (2018) in

their research found out that cognitive rehabilitation program has been significantly effective in improving verbal skills in selecting children with autism. White et al. (2017) by conducting a research with play therapy method with hand dolls in a large group of children with autism and normal peers have shown that only eleven percent of children with autism under their study are more successful in understanding visual details than the normative group, and in other cases the performance of the two groups does not have significant difference. Lu, Peterson, LaCroix and Rosio (2010) in their research have shown that play therapy with hand dolls, as a safe treatment and compatible with growth features and the conditions of children with autism has always allocated a share of educational, psychological and rehabilitation interventions of these children to itself. Moore (2008) has shown in his research that children develop their sense of identity and social understanding of others through play. Children learn some social skills such as respect and empathy, humanity, and teamwork through play. In addition, Moore states that play enables children to communicate with others, to be able to express creativity, and to visualize and recreate everyday experiences and situations. Ghanbari Hashemabadi and Ebrahimi Nejad (2015) concluded that play therapy is an effective method to increase the social skills of children with autism spectrum. It has also been specified that it increases decision-making and the ability to communicate with others and drastically reduces the ratio of children's aggressive behaviors. Zarafshan and Behravani (2013) showed that teaching the communication system with hand dolls increased social communication skills such as paying attention, demanding, starting communication and the duration of cooperation. Kimyaie, Raftar and Soltanifar (2011) in their research concluded that teaching emotional and behavioral skills using painting therapy and doll games approaches increases children's ability to identify and manage emotion and communication skills. Karimzadeh, Akhavan Tafti, Kiamanesh and Akbarzadeh (2009) found out that teaching social-emotional interactions in addition to improving and developing the emotional social skills of children with the autism spectrum, improves their mental health too, and considering the characteristics of this disorder and its negative impact on personal, social life and executive functions of the affected person that was stated, few studies have been done in this regard, so on the one hand due to the existing research gaps, and on the other hand the high prevalence of autism disorder in children, the researcher is seeking to answer this basic question that whether family-based sensory-motor games with hand dolls affect the verbal skills and social skills of children with autism?

RESEARCH METHOD

This research was of quasi-experimental type conducted using pre-test and post-test plan with control group. The statistical population of this research includes male and female students aged 6 to 10 years old with autism disorder in Nedaye Asr Center in Tehran, that is under the supervision of the Exceptional Education and Training Organization in the academic year of 2019- 2020. Thirty male and female

students with autism disorder are selected using the available sampling method. In order to ensure that the desired sample is properly diagnosed with autism, the Gilliam's Autism Diagnostic Test will be performed that regarding the test result this assurance will be obtained that the sample members were selected as properly diagnosed with autism disorder and low verbal skills and social skills. Criteria for entering the research include being in the age range of 6 to 10 years old, having autism disorder (having speech to the extent of communicate, the absence of other disabilities, and family's consent to cooperate in the intervention program). Children who had the above conditions are entered to the research, and eventually children with comorbidities such as severe sensor-motor disorders and vision and hearing problems, severe behavioral problems that will lead to non-cooperation and severe intelligence and cognitive impairments are excluded from the research. Finally, the desired sample will be randomly divided into two experimental and control groups of 15 people. After receiving written consent from both groups, explanations were given to both groups regarding the manner of holding the sessions and their number, and a pre-test was conducted.

Sensory-Motor Play Therapy Intervention with Hand Dolls Program

The intervention program of the present research will includes a doll play therapy program for children with autism, which is modeled from the doll play therapy intervention program of Asghari Nekah et al. (2011). This program has been prepared based on cognitive-behavioral theories. Its validity has been confirmed by five experts in psychology and exceptional children education and its effectiveness on the communication skills of children with autism has also been shown [10]. This program will be performed for 21 sessions of 45 to 60 minutes during two months and as 3 sessions per week. Considering that the social skills include a collection of various interactive and communicative skills, and since children with autism disorder have deficiency in various areas of social skills, the play therapy intervention program with hand dolls in this research will also include a collection of social and interactive plays situations. The main objectives of this program include the growth and development of identification and emotional comprehension skills, the initiation of social interaction, social exchange and social responding, and the skills of maintaining and continuing social interaction in the form of doll play therapy.

Table of Sensory-Motor Play Therapy Intervention with Hand Dolls Program			
Sessions	**Subject**	**Session Content**	**Time**
First Session	Familiarity with program elements	Greetings, welcoming, attendance of experimental group members, familiarity with the elements of the program (instructor, participants and the framework of the program) performing a few games to strengthen communication	45 Minutes
Second Session	Identifying others' facial modes	Greetings, attendance, performing games with the aim of empowering children to identify others' facial modes (anger, happiness, fear, surprise, and sadness), repeating and practicing the skill taught and providing feedback about doing skill taught and providing homework	60 Minutes
Third Session	Using facial modes to express emotions	Greetings, attendance, summarizing the skill taught in the previous session, performing game with the aim of empowering children to use facial modes to express their feelings, repeating and practicing the skill taught and providing feedback about doing skill taught and providing homework	60 Minutes
Fourth Session	Using body gestures and facial modes to communicate	Greetings, attendance, summarizing the skill taught in the previous session, performing game with the aim of empowering children to use body gestures to communicate with others, for example, saying goodbye, shaking hands, repeating and practicing the skill taught and providing feedback about doing skill taught and providing homework	60 Minutes
Fifth Meeting	Reviewing previous sessions	Reviewing previous sessions for better repetition and learning	60 Minutes
Sixth Session	Attracting other people's attention before speaking	Greetings, attendance, summarizing the skill taught in the previous session, performing game with the aim of empowering children in attracting others' attention before speaking, repeating and practicing the skill taught and providing feedback about doing skill taught and providing homework	60 Minutes
Seventh Session	Starting a conversation with others	Greetings, attendance, summarizing the skill taught in the previous session, performing game with the aim of empowering children in starting a conversation with others, repeating and practicing the skill taught and providing feedback about doing skill taught and providing homework	60 Minutes
Eighth Session	Making eye contact	Greetings, attendance, performing game with the aim of empowering children in making eye contact when interacting with others, repeating and practicing the skill taught and providing feedback about doing skill taught and providing homework	60 Minutes
Ninth Session	Reviewing previous sessions	Reviewing previous sessions for better repetition and learning	60 Minutes
Tenth Session	Having the right tone of voice	Greetings, attendance, performing game with the aim of empowering children in having the right tone of voice when talking, repeating and practicing the skill taught and providing feedback about doing skill taught and providing homework	60 Minutes
Eleventh Session	Maintaining proper distance	Greetings, attendance, summarizing the contents taught in the previous session, performing game with the aim of empowering children in maintaining proper distance when talking, repeating and practicing the skill taught and providing feedback about doing skill taught and providing homework	60 Minutes

Twelfth Session	Observing the turn in the conversation	Greetings, attendance, summarizing the contents taught in the previous session, performing game with the aim of empowering children in observing others' turn, repeating and practicing the skill taught and providing feedback about doing skill taught and providing homework	60 Minutes
Thirteenth Session	Reviewing previous sessions	Reviewing previous sessions for better repetition and learning	60 Minutes
Fourteenth Session	Entering to the group of children who are playing	Greetings, attendance, performing game with the aim of empowering children to enter the group of children who were playing, repeating and practicing the skill taught and providing feedback about doing skill taught and providing homework	60 Minutes
Fifteen Session	Taking the initiative in friendship	Greetings, attendance, summarizing the contents taught in the previous session, performing game with the aim of empowering children in taking initiative in the game, repeating and practicing the skill taught and providing feedback about doing skill taught and providing homework	60 Minutes
Sixteenth Session	Asking others for help	Greetings, attendance, summarizing the contents taught in the previous session, performing game with the aim of empowering children in asking help from others when needed, repeating and practicing the skill taught and providing feedback about doing skill taught and providing homework	60 Minutes
Seventeenth Session	Reviewing previous sessions	Reviewing previous sessions for better repetition and learning	60 Minutes
Eighteenth Session	Listening skill	Greetings, attendance, performing game with the aim of empowering children in listening skill, repeating and practicing the skill taught and providing feedback about doing skill taught and providing homework	60 Minutes
Nineteenth Session	The right answer to start talking to others	Greetings, attendance, performing game with the aim of empowering children in giving right answer to start talking to others, repeating and practicing the skill taught and providing feedback about doing skill taught and providing homework	60 Minutes
Twentieth Session	Appropriate response to the request of others	Greetings, attendance, summarizing the contents taught in the previous session, performing game with the aim of empowering children in giving appropriate response to the request of others, repeating and practicing the skill taught and providing feedback about doing skill taught and providing homework	60 Minutes
Twenty-First Session	Reviewing previous sessions	Reviewing previous sessions and summarizing and preparing the group for ending the sessions	60 Minutes

Assessment Tools

Gilliam's Autism Diagnostic Test

This tool, also known as the GARS test, includes a checklist that helps detecting people with autism. The GARS test has been prepared by Gilliam as a valid tool in 1994 and includes 4 subtests of stereotyped behaviors, communication, social skill, and growth disorders, each of which has 14 items. This test was translated into Persian by Ahmadi, Safari, Hematian and Khalili in 2011 in Isfahan Autism Center and according to the norm of Iranian society its psychometric indicators have been calculated on 100 girls and boys with an average age of 8.28 years (standard deviation of 3.5). The reliability of the GARS test in the Persian version using the retesting method was calculated, that Cronbach's alpha coefficient for stereotyped behaviors, communication, social skills and growth problems have respectively been reported equal to 0.74, 0.92, 0.73, and 0.80. Cronbach's alpha coefficient for the whole GARS scale was obtained 0.89, which indicates the high reliability of this scale. The face and content validity of GARS test have also been confirmed by mentioned researchers.

After ending the intervention in the two groups, the questionnaire (Social Skills and Verbal Skills Assessment Scale) was completed once again. The control group did not receive any intervention and after the end of the training sessions and post-test implementation, in order to observe the ethical principles and according to the primary agreement, intensive training was held for the members of the control group, and the most important topics were presented briefly.

Social Skills Scale

This scale was prepared by Mackelson, Sugai, Wood and Kazdin (1983) with the aim of assessing the social skills of children and adolescents aged 4 to 18 years old and has three forms of parent, instructor and student [13]. Due to the age of subjects, only two parent and instructor forms have been used in this research. The parent form has 55 questions and the instructor form has 5 general questions from the 5 main factors of Mackelson's social skill that individuals should read each question and answer based on the Likert's index (1=never, 5=always) [14]. This scale has 5 subscales including (appropriate social behavior, non-social behavior, aggression and impulsive behavior, high self-confidence and communication with peers). Face and content validity of this scale were confirmed by Mackelson, Sugai, Wood and Kazdin (1983) and using Cronbach's alpha for grading parents and instructors its reliability has been respectively reported equal to 0.91 and 0.93 [13]. Yousefi and Khayer (2002) translated this form to Persian that was confirmed and its reliability using Cronbach's alpha for grading parents and instructors, has been respectively reported equal to 0.76. In the present research, the reliability of the questionnaire using Cronbach's alpha coefficient was obtained 0.81.

Verbal Skills Scale

This scale has been made by Queen Dom (2004) with the aim of assessing verbal skills, which has 34 item expressions that describe verbal skill [15]. Scoring this scale has been graded as Likert's four-degree spectrum from never (1) to always (5). This scale measures issues related to the social skills of children aged 6 to 12 years old with autism spectrum disorder, which has 34 items and 5 subscales, including listening, the ability to receive and send verbal and nonverbal message, communication along with decisiveness, insight towards the process of communication and emotional control. The whole face and content validity of this scale has been reported 0.94 by Queen Dom [16]. In the present research, the reliability of the questionnaire was obtained 0.87, using Cronbach's alpha coefficient.

After ending the training interventions and collecting statistical data, SPSS statistical software version 26 was used to analyze the data. Data were analyzed at two descriptive and inferential levels. The statistical tests of paired-T, Levene and Analysis of Covariance were used to analyze the data.

FINDINGS

Based on the results obtained from the investigation of descriptive indicators of the components of verbal skill in terms of groups studied in pre-test and post-test, the mean values (listening, the ability to receive and send verbal and non-verbal message, communication along with decisiveness, insight towards the process of communication and emotional control) in the experimental group in the post-test was higher than that of the pre-test (Table 1).

Table 1: Descriptive Indicators of Verbal Skill Components in the Two Control and Experimental Groups before and after the Intervention

Verbal Skill Components	Groups	Stages	Mean	Standard Deviation
Verbal Skill	Experiment	Pre-Test	70.33	11.76
		Post-Test	101.46	8.34
	Control	Pre-Test	75.06	9.42
		Post-Test	72.400	11.21
Listening	Experiment	Pre-Test	14.66	3.24
		Post-Test	21.53	2.61
	Control	Pre-Test	14.80	2.07
		Post-Test	16.61	3.97
The Ability to Receive and Send Verbal and Non-Verbal Message	Experiment	Pre-Test	14.20	2.14
		Post-Test	18.93	2.98
	Control	Pre-Test	16.80	3.23
		Post-Test	15.26	2.12
Communication along with Decisiveness	Experiment	Pre-Test	14.06	2.86
		Post-Test	21.33	2.16
	Control	Pre-Test	15.13	3.54
		Post-Test	13.46	4.13
Insight towards the Process of Communication	Experiment	Pre-Test	14.13	3.13
		Post-Test	23.06	2.05
	Control	Pre-Test	14.33	1.71
		Post-Test	3.35	3.35
Emotional Control	Experiment	Pre-Test	13.26	4.81
		Post-Test	16.600	2.61
	Control	Pre-Test	14.00	2.61
		Post-Test	13.73	2.68

Based on the results obtained from investigating the descriptive indicators of social skills components in terms of the groups studied in pre-test and post-test, the mean values (appropriate social behavior, non-social behavior, aggression and impulsive behavior, high self-confidence, communication with peers) in the post-test of experimental group was more than that of the pre-test (Table 2).

Table 2: Descriptive Indicators of Social Skills Components in the Two Control and Experimental Groups before and after the Intervention

Social Skill Components	Groups	Stages	Mean	Standard Deviation
Social Skills	Experiment	Pre-Test	78.20	11.68
		Post-Test	112.40	7.96
	Control	Pre-Test	81.73	11.70
		Post-Test	78.93	12.52

Appropriate Social Behavior	Experiment	Pre-Test	17.46	2.69
		Post-Test	23.53	1.92
	Control	Pre-Test	18.20	3.60
		Post-Test	17.20	2.85
Non-Social Behavior	Experiment	Pre-Test	14.06	3.05
		Post-Test	19.53	3.06
	Control	Pre-Test	16.06	2.84
		Post-Test	14.53	1.76
Aggression and Impulsive Behavior	Experiment	Pre-Test	14.13	2.92
		Post-Test	20.73	2.34
	Control	Pre-Test	15.60	3.94
		Post-Test	13.60	4.22
High Self-Confidence	Experiment	Pre-Test	15.80	2.75
		Post-Test	26.66	2.78
	Control	Pre-Test	15.60	3.36
		Post-Test	15.93	3.36
Communication with Peers	Experiment	Pre-Test	16.73	3.21
		Post-Test	22.33	3.30
	Control	Pre-Test	16.26	3.26
		Post-Test	17.66	3.22

Also, to investigate the distribution normality of the variables of verbal skill including (listening, the ability to receive and send verbal and nonverbal message, communication along with decisiveness, insight towards the process of communication and emotional control) and social skills including (appropriate social behavior, non-social behavior, aggression and impulsive behavior, high self-confidence, communication with peers) Kolmogrov-Smirnov test was used.

The results showed that the investigated variables have a normal and natural distribution (p>0.05). Levene's test results showed that the verbal skill variance is homogeneous between groups (F=2.001, df1=3, df2= 56, p= 0.124). And the Levene's test results showed that the social skills variance is homogeneous between groups (F=2.224, df1=3, df2= 56, p= 0.095). To investigate the intervention effect of family-based sensory-motor games, hand dolls have been used for children with autism in Tehran. According to the obtained results, there is a significant difference between verbal skill and social skills in the two groups. The value of Chi Eta obtained for verbal skill is (Eta =0.627) indicating 61%, and for social skills (Eta =0.610) indicating 63%, and from the changes in the subjects participating in the experimental group, the intervention of family-based sensory-motor games with hand dolls for children with autism in the Neda Asr Center in Tehran can be considered (Tables 3-4).

Table 3: Analysis of Covariance of Verbal Skill and Its Components in Experimental and Control Groups in Children with Autis

Variable	Source of Variance	Sum of Squares	df	Mean of Squares	F value	Significance Level P	Chi Eta
Verbal Skill	Group	9543,383	3	3181,128	30,094	0.000	0.617
	Error	5919,600	56	105,707			
	Total	397705,000	60				
Listening	Group	488,983	3	162,994	20,595	0.000	0.525
	Error	443,200	56	7,914			
	Total	17499,000	60				
The Ability to Receive and Send Verbal and Non-Verbal Message	Group	189,933	3	63,311	8,893	0.000	0.323
	Error	398,667	56	7,119			

	Total	16530,000	60				
Communication along with Decisiveness	Group	590,267	3	196,755	18,495	0.000	0.498
	Error	595,733	56	10,638			
	Total	16546,000	60				
Insight towards the Process of Communication	Group	863,267	3	287,755	40,720	0.000	0.686
	Error	395,733	56	7,0.67			
	Total	175594,000	60				
Emotional Control	Group	100,933	3	33,644	3,051	0.036	0.140
	Error	617,467	56	11,026			
	Total	13160,000	60				

There is a significant difference between the experimental and control groups in the components of verbal skill in the dimensions of listening (Eta =0.525. P=0.000, F= (20,595)), ability to receive and send verbal and nonverbal message (Eta =0.323. P=0.000, F= (8,893)), communication along with decisiveness (Eta =0.498. P=0.000, F= (18,495)), insight towards the communication process (Eta =0.686. P=0.000, F= (40,720)), and emotional control (Eta =0.140. P=0.000, F= (3,051)) (Table 4).

Table 4: Analysis of Covariance of Social Skills and Their Components in Experimental and Control Groups in Children with Autism

Variable	Source of Variance	Sum of Squares	df	Mean of Squares	F value	Significance Level P	Chi Eta
Social Skills	Group	12191,117	3	4063,706	32,915	0.000	0.638
	Error	6913,867	56	123,462			
	Total	481811,000	60				
Appropriate Social Behavior	Group	401,113	3	133,711	16,630	0.000	0.471
	Error	450,267	56	8,040			
	Total	22740,000	60				
Non-Social Behavior	Group	275,517	3	91,839	12,265	0.000	0.397
	Error	419,333	56	7,488			
	Total	16151,000	60				
Aggression and Impulsive Behavior	Group	477,117	3	159,039	13,416	0.000	0.418
	Error	663,867	56	11,855			
	Total	16533,000	60				
High Self Confident	Group	1238,533	3	412,844	56,407	0.000	0.751
	Error	409,867	56	7,319			
	Total	21962,000	60				
Communication with Peers	Group	348,717	3	116,239	10,986	0.000	0.370
	Error	592,533	56	10,581			
	Total	20925,000	60				

There is a significant difference between the experimental and control groups in the components of social skills in the dimensions of appropriate social behavior (Eta =0.471. P=0.000, F= (16,630)), non-social behavior (Eta =0.397. P=0.000, F= (12,265)), aggression and impulsive behavior (Eta =0.418. P=0.000, F= (13,416)), high self-confidence (Eta =0.751. P=0.000, F= (56,407)), and communication with peers (Eta =0.370. P=0.000, F= (10,986)), (Table 4).

DISCUSSION AND CONCLUSION

The present research was conducted with the aim of investigating the effectiveness of family-based sensory-motor games with hand dolls on verbal skills and social skills of children with autism in Tehran. The results of the research showed that the intervention of family-based sensory-motor games with hand dolls on verbal skills and social skills of children with autism are consistent with the results of the researches of Shah and Fries (2018), White et al. (2017), Lu,

Peterson, LaCroix, and Rosio (2010), Moore (2008), Zarafshan and Behravani (2013), Kimyaie, Raftar, and Soltanifar (2011) and confirm their findings. To explain the obtained results, it should be said that people with autism have abnormal disorders in respect of social skills and verbal and nonverbal communication, that verbal communication problems in these people cause their poor performance and poor social skills, and leads to rejecting the establishment of interaction with others. Interactive behaviors of people with autism such as eye contact, facial modes, and body movement status have an important role that can be enhanced through sensory-motor techniques. Sensory-motor play therapy method can integrate the behavioral disorders of autistic children and reduce the ratio of their behavioral disorders through sensory-motor games, and increase their social skills and verbal skills improvement.

The effectiveness of applying hand dolls makes autistic children exhibit emotional behaviors in empathy training and social skills of themselves, and affects the creation of motivation and communication with others and control their way and type of behavior, that a kind of healthy communication space facilitates their verbal skills and social skills.

Sensory and motor games lead to improve strengthening the abilities to remove behavioral weaknesses and instabilities in children with autism. And it has a significant effect on preventing their erroneous behaviors, that by teaching family-based sensory-motor games with hand dolls by parents and instructors it creates motivation in the child to exhibit positive active behaviors of him/herself and to guide their behaviors through interaction and communication.

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