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The Effectiveness of Floor time Play Therapy on Improving Executive Functions and Cognitive Emotion Regulation in Children with Attention Deficit / Hyperactivity Disorder (ADHD)

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This study aimed to determine the effectiveness of Floortime play therapy on improving executive actions and cognitive emotion regulation in children with attention deficit/hyperactivity disorder (ADHD). The research design was quasi-experimental with a pretest-posttest design and control group. The statistical population included all the 9-11 years-old boys with attention deficit/hyperactivity disorder (ADHD) who were referred to Counseling Centers and Psychological Services for Children in Tehran in the first half of 2018. According to the purpose of this study, thirty subjects were selected using the multi-stage cluster sampling method and were randomly divided into experimental group and control group that each of which included fifteen subjects. Data collection tools were Conners Parent Rating of Childhood Behavior Problems (CPRCBP) scale, Structured Clinical Interview, Barkley Deficits in Executive Functioning Scale-Children and Adolescents (BDEFS-CA), and Cognitive Emotion Regulation Questionnaire-Kids-Persian (CERQ-K-P). After performing the pre-test, the control group waited and the Floortime play therapy for the experimental group was performed in 10 sessions of 45 minutes in a group manner and then, at the end of the treatment interventions, the subjects of the experimental group and control group were evaluated again by the Executive Activity Failure Scale and the Cognitive Emotion Regulation Questionnaire. Research data were analyzed using Descriptive Statistics and Multivariate Analysis of Covariance (MANCOVA) and one-way analysis of covariance in the Manco context. The results showed that after the intervention, there was a significant difference between the experimental group and control group in the rate of increase in adaptive cognitive emotion regulation strategies of positive refocus and refocus on planning, and the rate of decrease in maladaptive cognitive emotion regulation strategies and insufficiency of executive actions ($p<0.05$), but there was no significant difference between the experimental group and control group in terms of adaptive strategies for cognitive regulation of emotional acceptance, positive re-evaluation and viewpoint acceptance ($p> 0.05$).

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1. Introduction

Attention deficit/hyperactivity disorder (ADHD) is one of the most common neurodevelopmental disorders in childhood that results from the weakness of behavioral inhibition and is recognized by three characteristics of attention deficit, hyperactivity and impulsivity (Cheng, Hong, Huang, Hatfield, & Hong, 2014; Ambuabunos, Ofovwe & Ibadin, 2011). Attention deficit is the biggest problem of these children (Asherson, 2017). Inattention appears in educational and social situations, and these people have difficulty doing their homework due to the lack of attention to detail (American Psychiatric Association, 2013). Hyperactivity may occur in the form of instability, squirm, lack of tranquility, and talkativeness. Impulsivity is a thoughtless behavior that appears in the form of impatience, impaired delayed responding, blurting out answers before questions have been completed, trouble waiting for the turn, and disturbing others (Chorniy & Kitashima, 2016). Children with attention deficit/hyperactivity disorder (ADHD) are usually disobedient and socially irrational and aggressive (American Psychiatric Association, 2013), and often get up and show more aggression towards their peers during large-scale or organized games that require sitting and considering rules, or in teacher-led activities (Ríos-Hernández-Alda, Farran-Codina, Ferreira-García & Izquierdo-Pulido, 2017). Most of the children with attention deficit/hyperactivity disorder (ADHD) are blamed for their irresponsibility and have difficulty making decisions, as well as being rejected from the peer group because of their characteristics, and have difficulty learning skills that can keep others around them. These children do not accept the mistakes and responsibilities of their actions in their interpersonal relationships, and that is why they are blamed (Matza, Mary, Deal, Kimberly & Erder, 2017). The Fifth Edition of the Diagnostic and Statistical Manual of Mental Disorders estimates the prevalence of this disorder at 5% in childhood and 2.5% in adulthood (American Psychiatric Association, 2013). To diagnose this disorder, symptoms should be observed for at least six months and also at least in two different areas such as home and school before the age of seven and lead to serious damage in important areas of the child's life such as social interactions and academic performance (Sidlauskaite, Sonuga-Barke, Roeyers & Wiersema, 2016).

Despite many studies in the past few decades in the field of etiology and explanation of the rise of attention deficit/hyperactivity disorder (ADHD), no strong and comprehensive model has been found yet that can explain the various problems of children with this disorder, but in recent years attention has been drawn to the insufficient pattern in executive functions such as weakness in inhibition, constant attention, working memory, abstract thinking, and planning (Barkley, 1997; Vance, Winther and Rennie, 2011; Karamshaei, Abedi and Yarmohammadian, 2014). Executive actions are skills that help a person to achieve a goal in the form of decision-making, constant attention, organization, planning, self-initiation, self-reflection, and flexibility activities (Safaeian, Alizadeh, and Farrokhi, 2017). Some of these components are defined by Graham (2017) as follows: 1.Planning: the ability to develop a roadmap to achieve a goal or complete a task, 2.Organization: the ability to arrange or place objects based on the system, 3.Time management: the ability for estimating the required time, allocating time, and observing time constraints, 4.Working memory: the ability to keep information in mind while performing complex tasks, and 5.Metacognition: the ability to monitor the behavior and its evaluation (i.e., by asking yourself). Neuropsychological studies indicate the place of these actions in the frontal lobe and especially in the forehead area (Nigg, 2009). The main cognitive pattern that correlates insufficiency of executive actions to behavioral symptoms of attention deficit/hyperactivity disorder (ADHD) has three main symptoms of attention deficit/hyperactivity disorder (ADHD) (attention deficit/hyperactivity disorder and impulsivity), all of which are subsets of insufficient inhibition (that is one of the types of executive actions) (Barkley, 1997). Numerous studies have shown that the performance of children with attention deficit/hyperactivity disorder (ADHD) is weaker than normal children in many components of this important developmental structure including inhibition, constant attention, working memory, abstract thinking, and planning (Nourani Jorjadeh, Mashhadi, Tabibi, and Kheyrkhah, 2016). The reason for the occurrence of different symptoms is also the difference in the degree of insufficiency in their executive actions (Milton, 2010). In addition, various studies have reported the degrees of disorder in the frontal lobe in children with attention deficit/hyperactivity disorder (ADHD), which has caused them to fail in most of the abilities related to executive functions, and show significant differences with normal children in most of its components (Nigg, 2009; Biederman, Petty, Doyle, Spencer, Henderson & Marion et al., 2008; Barkley, 1997; 2006).

In addition, various studies have shown that children and adolescents with extrinsic disorders and destructive behaviors such as aggression and hyperactivity use more

uncompromising emotion regulation strategies and have problems in organizing emotional experiences, evaluating their own and others' emotions, and expressing emotions appropriately in different situations and use the positive skills of emotional regulation strategies such as planning, re-evaluation, and acceptance less (Spencer et al., 2011; Ghasempour and Ramezani, 2015) and they are not able to apply adaptive emotion regulation strategies (Barkley & Fischer, 2010; Ghasempour and Ramezani, 2015). Cognitive emotion regulation is defined as cognitive strategies for responding to stressful events and managing stimulating information emotionally and consider as a part of cognitive coping (Rahmati and Saber, 2017). People use a variety of emotional regulation strategies in the face of stressful situations. Among these strategies, we can mention negative strategies including rumination, self-blame, blaming others, catastrophizing, and positive strategies including positive refocus, positive re-evaluation, acceptance, refocus on planning, and perspective development (Kamali Eigoli and Abolmaali Al-Hosseini, 2016). Research has shown that maladaptive strategies of cognitive emotion regulation such as self-blame, catastrophizing, blaming others, and thought suppression have a detrimental effect on the mental health and quality of adolescents' and young adults' life. Several studies have shown that there is a strong relationship between the use of special cognitive strategies and psychopathology (Izadpanah, Schumacher, Arens, Stopsack, Ulrich, Hansenne et al., 2016; Potthoff, Garnefski, Miklósi, Ubbiali, Domínguez-Sánchez & Martins et al., 2016). New evidence from attention deficit/hyperactivity disorder (ADHD) suggests that problems in cognitive-emotional regulation could be an important factor in the development and persistence of the disorder (Biederman, Spencer, Lomedico, Day, Petty & Faraone, 2012). The results of various studies indicate that children with attention deficit/hyperactivity disorder (ADHD) used more maladaptive emotion regulation strategies than their normal peers and have fundamental problems in regulating emotions and processing emotions (Ghasempour and Ramezani, 2015; Mohammadi and Mousavi, 2015; Forslund, Brocki, Bohlin, Granqvist & Eninger, 2016; Biederman et al., 2012; Musser, Backs, Schmitt, Ablow & Measelle, 2012; Brotman, Rich, Guyer, Lunsford, Horsey & Reising et al., 2011; Spencer, Faraone, Surman, Petty, Clarke & Batchelder et al., 2011).

It can be concluded from the various research findings that insufficiency in executive actions and the use of cognitive emotion regulation strategies of maladaptive emotion are important theories in the phenomenology of attention deficit/hyperactivity disorder (ADHD), which is characterized by marked deficits in adaptive behavior. Therefore, special attention has been paid to executive actions and cognitive regulation of emotion in order to reduce the behavioral symptoms of these children. In this regard, research findings show that the quality of parent-child relationship and acceptance and rejection by parents affects the executive actions of children with attention deficit/hyperactivity disorder (ADHD) (Qaranjik, 2011) and also can be influenced by parent-child relationships (Alink, Cicchetti, Kim & Rogosch, 2009), so that emotion regulation problems are common in people with a history of personal injury (Samuelson, Krueger & Wilson, 2012). However, the mother-child relationship in the family in which there is a child with attention deficit/hyperactivity disorder (ADHD) is in a negative cycle along with stress and inefficient interaction (Anastopoulos, Sommer & Schatz; Huber, 2010; Gau & Chang, 2013) which indicates the inability of parents to manage child behavior and consequently, led to the negative parent-child interaction; Therefore, an important step to improve executive actions and cognitive emotion regulation and thus reduce the behavioral symptoms of these children is to involve the family in the treatment plan and also planning and providing intervention to improve the quality of parent-child communication, for which play therapy can be a good method. When verbal language is not enough to express children's thoughts and feelings, therapists use play therapy to help children express what has upset them (Gil, 1991). For this purpose, the use of the Floortime method which pays attention to the development of the child's sentimental and emotional abilities has considered the individual characteristics of children with special needs in terms of sensory processing disorders in treatment and considers the parent-child or caregiver-child relationship (Greenspan, DeGangi & Wieder, 2001) .This method is especially popular among occupational therapists around the world because it focuses on play and daily life activities, and the occupational therapist can increase the child's participation in these two areas by working on this approach in the treatment (Dionne & Martini, 2011). The goal of Floortime is to promote the development of a child with special needs through the use of specific strategies in two-way interactions with the child, which is performed by the therapist and the parents (or primary caregiver) as a continuous intervention. The ultimate goal of Floortime is to increase communication, emotional, visualization, and play skills (Greenspan, DeGangi & Wieder, 2001). In fact, unlike many studies,

this approach targets the real context of the child's life instead of individual therapy, and unlike many studies, in addition to parent-child communication issues, it also considers biological differences and developmental stages. As a result, it has been titled the Integral Human Development Approach. This approach has been used more in the past in the correlation with autism (Dionne & Martini, 2011; Greenspan and Wieder, 1997; Alizadeh Zarei and Karamali Esmaeili, 2015; Aali, Amin Izadi, Abdekhodaei, Chamanabad, and Moharreri, 2014). Since Floortime play therapy has focused more on children with autism in previous research, it has been important to show its effectiveness in improving executive actions and cognitive-emotional theory in children with attention deficit/ hyperactivity disorder (ADHD).

In our country, drug treatments are often used for children with attention deficit/hyperactivity disorder (ADHD). However, the increasing number of mental disorders among these children who are sometimes treated with negligence also requires the study and effectiveness of psychological interventions (Meftagh, Mohammadi, Ghanizadeh, Rahimi, and Najimi, 2011). The limitations of research in this area are still significant. According to the expressed theoretical and research foundations, play therapy can be useful for these children and the present study examines the effectiveness of this treatment with a new approach; Therefore, this study aimed to evaluate the effectiveness of Floortime play therapy on improving executive actions and cognitive emotion regulation in children with attention deficit/hyperactivity disorder (ADHD) to determine what potential effect it will have on these children.

2. Methodology

The method of the present research is quasi-experimental research with a pretest-posttest design with a control group. The statistical population included all the 9-11 years-old boys with attention deficit/hyperactivity disorder (ADHD) who were referred to Counseling Centers and Psychological Services for Children in Tehran in the first half of 2018. From the above statistical population, 30 people (15 in the experimental group and 15 in the control group) were selected based on the cluster sampling method by observing the criteria for entering the study and by random replacement in the experimental group and control group. Thus, among the 22 districts of Tehran, 2 districts were randomly selected, and from each district, 1 center for Counseling Centers and Psychological Services for children was chosen, and among the boys referred to those centers, 30 children with attention deficit/hyperactivity disorder (ADHD) who were eligible to enter the study were randomly selected and accidentally assigned to experimental group and control group. Inclusion criteria include: 1.9-11 years old boy, 2.Diagnosis of attention deficit/hyperactivity disorder (ADHD) using the Conners Children's Behavioral Problems Scale-Parent Form and interview based on Diagnostic and Statistical Manual of Mental Disorders (DSM) 3.IQ over 90 in the Raven test for children, 4.At least one of the parents is literate to read and write, and 4.Ritalin tablets were used as a medical treatment for at least 2 months. Exclusion criteria also include: having concurrent disorders such as to conduct disorder and mood dysregulation disorder. Research data were analyzed using descriptive statistics and Multivariate Analysis of Covariance (MANCOVA) and one-way analysis of covariance in the Manco context. The following tools were used to collect data:

Conners Parent Rating of Childhood Behavior Problems (CPRCBP): The Conners Rating Scale is one of the most well-known scales for children's behavioral problems and has been used in numerous studies in research and clinical settings for more than 30 years due to its many positive characteristics. Scoring is done by different evaluators and also the consideration of the views of parents and teachers along with various short and long forms that are used according to the condition, and the confirmation of its validity and reliability in different cultures are among the factors that have led to the widespread acceptance of the Connors Behavioral Problems Rating Scale at the international level. The Conners Children's Behavioral Problems Scale-Parent Form was developed by Goyt, Connors, and Aldrich (1973) and revised and reprinted by Rittman et al. (1998). Items on this scale are scored on a 4-point Likert scale from zero (never) to 3 (very high). Out of 48 items, 26 items are related to attention deficit/hyperactivity disorder (ADHD), which includes two subscales of attention deficit/hyperactivity disorder (ADHD) (16 items) and attention deficit disorder (10 items). The 26-item score for attention deficit/hyperactivity disorder (ADHD) ranges from 0 to 78 and due to its many positive characteristics, it has been used in numerous studies, research, and clinical contexts for more than 30 years. Scoring is done by different evaluators and also the consideration of the views of parents and teachers along with various short and long forms that are used according to the condition, and also the confirmation of its validity and reliability in different cultures are among the factors that have led to the widespread acceptance of the

Connors Behavioral Problems Rating Scale at the international level. In his research, Riley (2011) reported that the reliability coefficient of this scale using Cronbach's alpha method is 0.89. In the study of Weisani, Shehniyailagh, Aalipour, and Mehrabizadeh Honarmand (2015), a sample of 360 boys in the first, second, third, and fourth grades of primary school in Sanandaj was used to determine the reliability coefficient of the Conners Children's Behavioral Problems Scale-Parent Form. Using Cronbach's alpha method, Spearman-Brown and Guttman halving of the total scale reliability coefficients were 0.91, 0.90, and 0.90, respectively, the reliability coefficients of the attention deficit subscale were 0.79, 0.76, and 0.75, respectively and the reliability coefficient of hyperactivity subscale was 0.87, 0.84, and 0.83, respectively. Besides, in the study of Weisani et al. (2015), a confirmatory factor analysis method was used to confirm the validity of the Conners Children's Behavioral Problems Scale-Parent Form. The results showed that the chi-square value on the degree of freedom ($\chi 2/df$) was 1.88 and according to the desired criterion, this value indicates the optimal fit of the tool. The Root Mean Square Error of Approximation (RMSEA) is 0.05, the Comparative Fit Index (CFI) is 0.90, the Goodness of Fit Index (GFI) is 0.90, the Adjusted Goodness of Fit Index (AGFI) is 0.88 and the Parsimony Goodness of Fit Index (PGFI) was 0.76, which according to the set criteria are considered desirable and indicates the appropriate fit and acceptable validity of the instrument. In addition, the results of confirmatory factor analysis showed that in the scale of inattention, items 3, 5, and 10 with a standard coefficient (β) of 0.57 and the amount of explained variance of 0.32 are more relative than other items. Additionally, in the hyperactivity subscale of item 11 with a standard coefficient (β) of 0.65 and explained variance of 0.42 was more important than other items. It should be noted that all items had a β above 0.30 and none were removed in the final analysis.

Structured clinical interview: Structured clinical interview is a type of diagnostic interview in which the interviewer designs questions to bring the person closer to the therapeutic goal. Unlike an unstructured interview, the topics discussed are presented according to a predetermined schedule and the interviewer gives direction to the discussion in this type of interview (Hossein Khanzadeh, 2017). In this study, based on the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders, a structured diagnostic interview is performed by a psychiatrist or child and adolescent psychologist from one of the child's parents in order to diagnose the symptoms of Oppositional Defiant Disorder (ODD).

Barkley Deficits in Executive Functioning Scale-Children and Adolescents (BDEFS-CA): This scale is a tool containing clinical information to assess the insufficiency of executive actions in the daily living activities of people aged 6 to 18 years old that reported by their parents. The tool has a long version of 70 questions and a short version of 20 questions, both of which are used to assess insufficiency of executive actions in the daily activities of children and adolescents in five interrelated dimensions of insufficiency of executive actions made by Barclay in 2010. The five subscales of the test are: time management (questions 1 to 13), self-organization/problem solving (questions 14 to 27), self-control (questions 28 to 40), self-motivation (questions 41 to 54), and emotional self-regulation (questions 55). Questions 5-20-21-23-27-25-47-52-59-68 out of 70 long-scale questions have assessed the possibility of attention deficit/hyperactivity disorder (ADHD). Each question is given a score of one to four (never = one, sometimes = two, often = three, always = four). The score of each subscale is obtained from the sum of the scores of the questions related to the same subscale. In addition to the subscales scores, three summary scores of executive actions (sum of subscales), attention deficit/hyperactivity disorder (ADHD), and the number of signs of insufficiency of executive actions (questions that longs three or four lines) are obtained (Nourani Jorjadeh et al. 2016). The total validity of the scale is reported as 0.99 with Cronbach's alpha and 0.74 to 0.88 for the sub-types. The revised version was published by Barclay in 2011 with a test-retest validity of 0.84 (Knouse, Barkley & Murphy, 2013). Research and clinical experience confirm the validity and usefulness of this tool in assessing insufficiency in these dimensions. There is a lot of evidence to support the validity of the instrument as well as the validity of the optimal retest on this scale (Barclay, 2012). Nourani Jorjadeh et al. (2016) used the internal consistency method (Cronbach's alpha coefficient) to evaluate the validity of the questionnaire. After reviewing the data obtained from a sample of children with attention deficit hyperactivity disorder (ADHD), Cronbach's alpha coefficient of this questionnaire was reported as 0.90. The internal consistency of the subscales was also calculated in the range of 0.86 to 0.96. To evaluate the content validity, the questionnaire was reviewed by several psychology professors and the result was considered acceptable. In the present study, a short 20-item version of the Barkley Deficits in Executive Functioning Scale-Children and Adolescents (BDEFS-CA) was used.

Cognitive Emotion Regulation Questionnaire-Kids-Persian (CERQ-K-P): This version was developed by Garnefski et al. (2007) based on the original version of the Cognitive Emotion Regulation Questionnaire for use in children's society. This version of the questionnaire is similar to the original version in terms of grading method, number of questions, and subscales, but the content of the questions are designed to be understandable for children (Garnefski, Kraaij, and Spinhoven, 2001; 2002). Children's Version the Cognitive Emotion Regulation Questionnaire is a multidimensional questionnaire used to identify children's cognitive coping strategies after experiencing negative events or accidents. Unlike other coping questionnaires that do not explicitly distinguish between an individual's thoughts and actual actions, this questionnaire assesses an individual's thoughts after encountering a negative experience or traumatic event; it is a self-report tool and contains 36 items. CERQ-K has a strong empirical and theoretical foundation and consists of 9 subscales. These subscales evaluate the 9 cognitive strategies including self-blame, acceptance, rumination, positive refocus, refocus on planning, positive re-evaluation, viewpoint acceptance, catastrophizing, and blaming others. Scale scores range from 1 (rarely) to 5 (mostly). Each subscale contains 4 items. The total score of each subscale is obtained by summing the scores of the items; therefore, the range of scores for each subscale will be between 4 to 20. High scores in each subscale indicate the further use of this strategy in dealing with stressful and negative events (Garnefski et al., 2007). This questionnaire is a scale that assesses a person's thoughts after a negative experience or traumatic event. This questionnaire evaluates 9 different cognitive regulation strategies including self-blame, acceptance, rumination, positive refocus, refocus on planning, positive re-evaluation, viewpoint acceptance, catastrophizing, and blaming others (Garnefski, Kraaij, and Spinhoven, 2001; 2002). This tool is one of the most authoritative tools for studying cognitive emotion regulation processes in the field of abnormal psychology and has been translated into various languages including French, Chinese, Turkish, Spanish, and Persian; and its factor structure and validity have been confirmed (Mashhadi, Hasani and Mirdorghi, 2012). Garnefski et al. (2007) created and developed a special edition for children based on the main Cognitive Emotion Regulation Questionnaire. Like the adult version, the results of factor analysis indicated that the children's version of this questionnaire evaluates the same 9 strategies of emotional cognitive regulation and its validity coefficient was reported to be more than 0.70 in all 9 strategies. Mashhadi et al. (2012) reported that Cronbach's alpha coefficients for all subscales and the whole scale in both sexes and all participants were favorable in terms of psychometrics, and the range of most correlations of the item set was more than 4. The study of the factor structure of this questionnaire using the exploratory factor analysis method supported the 9 main factor model of CERQ-K, which explained 68% of the variance. The results of confirmatory factor analysis also indicated favorable and acceptable items' fit. In addition, the pattern of correlation coefficients between the subscales and the concurrent validity of the questionnaire, with the children's multidimensional anxiety scale and the children's depression scale, indicated good validity of this scale.

After referring to Counseling Centers and Psychological Services for selected children using multi-stage cluster sampling method and making the necessary coordination with the center officials and obtaining permission to conduct research with the cooperation of the center's director, the list of referred children to those centers with attention deficit/hyperactivity disorder (ADHD) was prepared. Then, using a simple random sampling method, a sample of 30 people were selected based on the prepared list; First, the list of all the children's name with attention deficit/hyperactivity disorder (ADHD) who were referred to the centers was taken, then from this list, the sample was randomly selected, their parents were contacted and after explaining the goals of research and getting their satisfaction, children who met the inclusion criteria were selected and invited to participate in the research. In the next step, children with attention deficit/hyperactivity disorder (ADHD) were randomly selected in the experimental group and control group. Then, the questionnaires were given to them and the children in the experimental group received 10 sessions of 45 minutes of Floortime play therapy intervention. At the end of the treatment sessions, questionnaires of executive actions and cognitive-emotion regulation were asked from them again to evaluate the post-test and the results were evaluated.

The following is the summary of the structure and description of the Floortime play therapy sessions adapted from the research of Greenspan and Wieder (2007), which was conducted in 10 sessions of 45 minutes:

Table 1: Structure and Description of Floortime Play Therapy Sessions

Session	Description
1	Introducing the therapist and parents, describing the treatment process for parents, answering parents' ambiguities and questions, conducting a pre-test. Observing the type of mother-child and father-child interaction, identifying the strengths and weaknesses of each. Gaining a realistic view of the level of parent-child interaction and the intimacy of their relationship.
2	Placing the therapist in the role of parent and performing appropriate interactive actions to the child's developmental levels and according to the child's sensory-emotional regulation. Performing Floortime during the treatment session by the parents and correcting possible mistakes and giving the task of performing Floortime at home to parents.
3	Creating a playful and free space for the child and experiencing intimacy, interaction, and body structure with the child and recording sensory-emotional reactions of low or high response type in the proportionate to the sensory-emotional-emotive rhythm of the child and the type of behavior and request that the child has. Taking into account the sensory-emotional conditions of the child, accompanying him in every movement he performs, from strong to delicate movements in such a way that the experience of common sense is taken into consideration, whatever he is doing should be given maximum attention and response.
4	Paying attention to the permanence and expansion of the communications that are created, attempting to achieve a higher emotional experience in communications as simple as possible. In other words, constant attention to the number of two-way communications and the depth of emotional experience.
5	Give the child the opportunity to show his or her desire to be as free as possible in the treatment session; Such as choosing a place to sit, the distance he chooses, physical posture such as sleeping and rolling, and accompanying him in these movements. Allowing the child to search and pry even about the face and its parts and also the body of the therapist, and to be very careful in making eye contact and transferring emotions and eye communications by moving back and forth your face or the face of the child.
6	Creating a happy atmosphere, playing with cheeks, using rhythmic speech, caressing the cheeks, playing with the child's fingers, hugging, and holding the child to the extent of his or her satisfaction. Kissing and caressing the fingers towards the head and neck and paying attention to non-verbal and verbal transfers and communications according to what has happened and the child's sensory-emotional states.
7	Exaggeration and magnification in the symbolic movements of eating, calling, bathing, wearing, and falling to attract the attention of communion; and speaking in proportionate to these symbolic movements with maximum emotion and excitement. Repeating different movements as exactly as his or her performance. Accompanying running, falling, and using appropriate verbal and non-verbal communications, creating homogeneity, attracting attention, and eye contact, and also laughing and more intimacy. Creating simple obstacles and practice problem-solving to the extent of the child's patience and endurance.
8	Playing games that aimed to auditory stimulation and making auditory pleasure along with the symbolic activity. Using happy and playful melodic speech and effort to audio-verbal communications and strengthening verbal communication responses. Designing multi-stage dynamic games tailored to the child's desire and attract maximum participation in combining, building, and using separate components and separate tools to achieve the goal and desire that the child is seeking.
9	Using symbolic games with the help of maquettes of animals and dolls to convey the feeling of hunger, pain, and the need for help and attention and also aid from the child and planning a few movements before the action and repeating it verbally and starting to help the child. Try to attract the maximum participation of the child. Practicing bridging between two or more ideas in a verbal and non-verbal expression with appropriate emotion and their practical implementation through the language of dolls, expressing causes and accuracy in two-way communications, eye-emotional communication, and constant communication intimately.
10	Observing eye contact and verbal-sensory emotional communication symbolically, attracting attention and asking for help from the child, asking for a massage, asking for food symbolically, questioning and answering, and creating appropriate speech contexts and high emotional feedback accompanied by pleasure. Playing the role of mother, father, doctor, and driver by the child and appropriate demands from him or her. Examining the child's development with the parents; summarizing the contents of the previous sessions; concluding, and performing the post-test.

3. Findings

Table 2 shows the demographic characteristics of the sample by experimental and control groups.

Table 2. Demographic Characteristics by Experimental and Control Groups

Feature		Study Group			
		Experimental Group		Control group	
		Frequency	Percentage	Frequency	Percentage
Age	9 Years	1	6.7	1	6.7
	10 Years	12	80	9	60
	11 Years	2	13.3	5	33.3
Number of Children in the Family	1 Child	5	33.33	4	26.67
	2 Children	7	46.67	6	40
	3 Children and More	3	20	5	33.33
Birth Order	First Child	12	80	11	73.33
	Second Child	3	20	3	20
	Third Child and More	0	0	1	6.67
Mother's Education	High School Diploma or Less	4	26.67	3	20
	Diploma	7	46.67	5	33.33
	Associate	3	20	3	20
	Bachelor	1	6.67	4	26.67
Maternal Employment Status	Employed	5	33.33	6	40
	Housekeeper	10	66.67	9	60
Father's Education	High School Diploma or Less	4	26.67	3	20
	Diploma	4	26.67	3	20
	Associate	3	20	5	33.33
	Bachelor	3	20	2	13.33
	Master of Arts	1	6.67	2	13.33
Paternal Employment Status	Employed	12	80	11	73.33
	Unemployed	3	20	4	26.67
Economic Status	Good	4	26.67	4	26.67
	Moderate	8	53.33	8	53.33
	Poor	3	20	3	20

As shown in Table 2, in both the experimental group and control group, a higher percentage of children with attention deficit/hyperactivity disorder (ADHD) had a 10-year sample. Besides, the majority of children in the experimental group and control group live in families with two children, which means that most of them also have the first child in the family. The mother's education of the majority of the children in the sample group, in both the experimental group and control group, was a diploma, and the mothers of the majority of the children in the sample group, in both the experimental group and control group, were housewives. In addition, the father's education of the majority of children in the sample group was high school diploma or less and diploma, while the fathers of the majority of students in the control group were associate and in both the experimental group and control group, the father of the majority of children with attention deficit/hyperactivity disorder (ADHD) were employed. Finally, the economic status of the majority of children's families in both the experimental group and control group was moderate.

Tables 3 show the descriptive indicators of the scores of executive actions and cognitive emotion regulation strategies of the children in the sample group for the experimental group and control group separately in the pre-test and post-test stages.

Table 3: Descriptive Statistics of Executive Actions and Cognitive Emotion Regulation of Experimental and Control Groups in the Measurement Stages

Variables		Group	State Measurement			
			Pre-Test		Post-Test	
			Mean	DS	Mean	DS
Insufficiency of Executive Actions		Experimental	198.13	50.90	132.33	34.25
		Control	204.21	35.98	201.89	33.51
Insufficient Component of Executive Action	Time Management	Experimental	36.13	9.90	28.80	5.07
		Control	37	5.98	38.33	4.52
		Experimental	33.60	11.22	23.40	7.89

	Self-Organization / Problem Solving	Control	33.21	12.41	34.98	11.28
	Self-Control	Experimental	39.27	6.77	25.33	7.64
		Control	37.27	6.32	38.27	6.96
	Self-Motivation	Experimental	41.07	13.60	27	9.32
		Control	39.93	7.13	39.07	6.28
	Emotional Self-Regulation	Experimental	47.20	14.21	31.27	7.32
		Control	53.27	9.77	52.33	9.64
Cognitive Emotion Regulation Strategies	Self-Blame	Experimental	16.60	1.45	8.27	1.41
		Control	15.80	2.86	14.07	2.42
	Acceptance	Experimental	11.40	3.26	12.80	3.65
		Control	12.20	2.83	12.47	4.63
	Rumination	Experimental	14	1.94	9.33	1.35
		Control	14.20	1.41	13.13	3.54
	Positive Refocus	Experimental	11.27	3.40	15.33	3.64
		Control	12.80	3.16	12.53	2.52
	Refocus on Planning	Experimental	11.87	3.63	17.60	2.45
		Control	12.33	2.10	12.80	4.86
	Positive Re-Evaluation	Experimental	11.20	4.88	13.13	2.52
		Control	13.47	2.99	13.87	2.92
	Viewpoint Acceptance	Experimental	11.07	3.16	11.27	3.77
		Control	12.67	4.44	12.27	3.32
	Catastrophizing	Experimental	16.33	2.64	8.07	2.60
		Control	15.27	4.96	14.93	3.13
	Blaming Others	Experimental	13.20	3.88	9.13	2.52
		Control	12.47	3.99	12.87	3.92

As can be seen in Table 3, the mean and standard deviation of the total score of insufficiency of executive actions in the experimental group were 198.13±50.90 and in the control group were 204.21±35.98 in the pre-test stage, but the mean and the standard deviation of the total score of executive actions in the experimental group were 132.33±34.25 and in the control group were 201.89±33.51 in the post-test stage. This reduction of the mean from pre-test to post-test in the experimental group also applies to the components of insufficiency of executive actions, namely time management, self-organization/problem solving, self-control, self-motivation, and emotional self-regulation. However, these changes are not seen in the control group. In the field of maladaptive cognitive regulation strategies, the mean and standard deviation of self-blame in the pre-test stage were 16.60±1.45 in the experimental group and were 15.80±2.86 in the control group, but in the post-test stage, the mean and standard deviation of self-blame were 8.27±1.41 and in the control group were 14.07±2.42. This reduction in mean from pre-test to post-test in the experimental group also applies to other maladaptive cognitive emotion regulation strategies, namely ruminating, catastrophizing, and blaming others. However, these changes are not seen in the control group. Besides, the mean and standard deviation of acceptance from adaptive cognitive emotion regulation strategies in the pre-test stage were 11.40±3.26 in the experimental group and 12.20±2.83 in the control group, but in the post-test stage the mean and standard deviation of acceptance in the experimental group were 12.80±3.65 and in the control group were 12.47±4.63. This increase in mean from pre-test to post-test in the experimental group also applies to other adaptive cognitive emotion regulation strategies, namely positive refocus, refocus on planning, positive re-evaluation, and viewpoint acceptance. However, these changes are not seen in the control group.

Before performing the Multivariate Analysis of Covariance (MANCOVA), the Kolmogorov-Smirnov Test was applied to examine the normality of the distribution of scores between the two groups among the research variables, the Levin test was applied to examine the homogeneity of variances of research variables in the community, and the Box's M Test was used to evaluate the homogeneity of variance-covariance matrices. The results of these tests were not significant ($p>0.05$), and the homogeneity of the regression line slope also supported the non-significance of the interaction of conditions and pre-test ($p>0.05$). In addition, the Bartlett Sphericity Test was used to examine the assumption of normal correlation of scattering variables or pre-tests with each other and with the significance of Kaiser-Meyer-Olkin (KMO) index and the amount of

chi-square test calculated for Bartlett sphericity test ($p < 0.05$), it can be stated that there is no multiple linearities between the scattering variables and the correlation of the scattering with each other is normal. Therefore, the data did not question the assumptions of using analysis of covariance. Consequently, according to the assumptions, the analysis of covariance can be used. Table 4 shows the results of multivariate tests for general comparison between research variables in two groups (components of insufficiency of executive action and cognitive emotion regulation strategies).

Table 4: Multivariate Tests on the Mean of Post-Test Variables of Experimental and Control Groups with Pre-Test Control

Name of the Test	Value	DF Hypothesis	DF Error	F	P	Effect Size (Eta)	Statistical Power
Pilay Effect Test	0.98	9	11	61/27	0.001	0.98	1
Wilks Lambda Test	0.02	9	11	61.27	0.001	0.98	1
Hotelling Effect Test	50.13	9	11	61.27	0.001	0.98	1
Roy's Largest Root Test	50.13	9	11	61.27	0.001	0.98	1

As shown in Table 4, it is indicated that there is a significant difference between the experimental group and control group, at least in terms of one of the dependent variables (components of insufficiency of executive action and cognitive emotion regulation strategies) by controlling the pre-test levels of significance of all tests ($F=61.27$ and $p<0.001$). In order to find out which variable or variables differ between both groups, analysis of Covariance in the Manco context for the insufficiency of executive actions and its components and cognitive emotion regulation strategies was performed separately and the results are presented in the following table. Table 5 shows the results of the analysis of Covariance in the Manco context to compare the post-test of insufficiency of executive actions and its components and cognitive emotion regulation strategies in the experimental group and the control group with the pre-test control group.

Table 5: Analysis of Covariance on the Post-Test Executive Actions and Emotion Regulation Strategies with the Pre-Test Control Group

Variable		Sum of Squares	DF	Mean Square	F	P	Effect Size	Statistical Power
Insufficiency of Executive Actions		9120.48	1	9120.48	16.23	0.001	0.70	1
Insufficient Component of Executive Action	Time Management	513.67	1	513.67	17.02	0.001	0.65	1
	Self-Organization / Problem Solving	408.19	1	408.19	9.65	0.034	0.50	1
	Self-Control	595.72	1	595.72	38.98	0.001	0.81	1
	Self-Motivation	647.27	1	647.27	17.17	0.001	0.65	1
	Emotional Self-Regulation	1314.08	1	1314.08	29.93	0.001	0.76	1
Cognitive Emotion Regulation Strategies	Self-Blame	182.59	1	182.59	56.27	0.001	0.77	1
	Acceptance	4.50	1	4.50	0.30	0.581	0.02	0.12
	Rumination	60.60	1	60.60	14.35	0.001	0.47	0.98
	Positive Refocus	25.69	1	25.69	6.52	0.041	0.30	0.88
	Refocus on Planning	118.58	1	118.58	12.11	0.003	0.44	0.96
	Positive Re-Evaluation	10.39	1	10.39	3.27	0.091	0.17	0.72
	Viewpoint Acceptance	0.01	1	0.01	0.002	0.965	0.001	0.05
	Catastrophizing	260.59	1	260.59	33.60	0.001	0.67	1
	Blaming Others	87.68	1	87.68	16.76	0.001	0.51	1

As shown in Table 5, there is a significant difference between the experimental group and control group in terms of the insufficiency of executive actions and their components and cognitive emotion regulation strategies (excluding acceptance, positive re-evaluation, and viewpoint acceptance strategies) ($0.05>p$). In other words, due to the mean of insufficiency of executive actions and its components and maladaptive strategies of cognitive emotion regulation in the experimental group compared to the average of the control group, Floortime play therapy reduces the insufficiency of executive actions and its components and maladaptive strategies (self-discipline, rumination, catastrophizing and blaming others) in the experimental group. However, this play therapy due to the mean of adaptive cognitive emotion regulation strategies of positive refocusing and

refocusing on the experimental group planning compared to the control group mean has increased these adaptive cognitive emotion regulation strategies in the experimental group. Nevertheless, with the pre-test control, there is no significant difference between the experimental group and control group in terms of adaptive cognitive regulation strategies of acceptance emotion, positive re-evaluation, and viewpoint acceptance ($p<0.05$).

5. Discussion

The purpose of this study was to determine the effectiveness of Floortime play therapy on improving executive actions and cognitive emotion regulation in children with attention deficit/hyperactivity disorder (ADHD). The results obtained from the first part of the research findings showed that Floortime play therapy has reduced the insufficiency of executive functions in children with attention deficit/hyperactivity disorder (ADHD). No study has been conducted to evaluate the effectiveness of Floortime play therapy on improving executive functions in children with attention deficit/hyperactivity disorder (ADHD) so far, but in general, the results of the present study are comparable to the findings of research conducted concerning children with autism. Accordingly, these findings are generally in line with the results of the study of Weisani et al. (2015) which showed that teaching child-parent communication methods has significantly reduced attention deficit/hyperactivity disorder (ADHD) and its subscales. Besides, these findings are generally parallel with the results of Asghari Nikah and Abedi (2014) who showed that play therapy based on executive functions is effective in improving response inhibition, planning, and working memory of children with attention deficit/hyperactivity disorder (ADHD). In addition, these findings are in conformity with the results of the research by Hannesdottir, Ingvarsdottir & Bjornsson (2017) that showed the OutSMARTers program is a program focused on teaching children social-emotional skills using cognitive-behavioral techniques; and teaching executive actions improves symptoms of attention deficit/hyperactivity disorder (ADHD), emotion regulation, and socio-emotional skills of children with attention deficit/hyperactivity disorder (ADHD). The characteristics of this intervention method can be implied in the explanation of the effectiveness of Floortime play therapy on improving executive functions and its components in children with attention deficit/hyperactivity disorder (ADHD). The content of these sessions is such that it increases the acceptance and communion of parents with the child. In this method, parents are taught to strengthen their relationship with the child during playing. In this communication, children use their toys to discover new experiences and to express what they think and feel; therefore, the empathetic and emotional response of the parents to the feelings and emotions of the child strengthens his or her self-respect to himself or herself and helps the child to take responsibility for his or her actions by reinforcing self-control. On the other hand, the child is in the center of parents' attention during play, and the parents provide the desired communication and services for the child so that he or she can express his or her anger, loneliness, failures, fears, and desires through play along with a sense of calm. When a child plays, parents usually follow the child's instructions and there is no reprimand, punishment, humiliation, evaluation, and judgment. Given the many problems that most parents have in their interactions, playing is a good tool for rebuilding the positive relationship of parents with their children with attention deficit/hyperactivity disorder, which helps to meet their needs and conflicts. In addition, the formation of a positive relationship between the child and the parent will reduce negative feelings and concerns related to parenting, which ultimately increases the awareness and knowledge of the parents about how to interact with their child. Another important feature of Floortime game therapy is its emphasis on playing games to stay focused and maintain attention. Games that are dealt with this method are including the game of spot the differences, glasses and coins, cutting pictures from magazines, see and say, and reverse execution of instructions; and all of which aim to strengthen constant attention, working memory, visual sequence, visual memory, self-monitoring, self-control, and selective attention. Therefore, teaching these games to parents and their constant and regular performance by the child at home can affect the lack of attention and focus and selective attention to the content of the child. According to Sanders et al. (2014), one of the main characteristics of children with attention deficit/hyperactivity disorder (ADHD) is the lack of skills necessary for selective attention. Due to the short range of constant attention, these children's attention changes from one center to another very quickly and therefore; cannot use self-regulatory strategies of attention and constant attention in a given focus. Hence; the rate of rapid changes of attention from one focus to another will cause an interruption in receiving a message, a topic, and a subject, and in this case, their academic performance will be severely affected by their lack of attention. For this reason, some parts of the treatment of children with attention deficit/hyperactivity disorder (ADHD) should

be based on games that can strengthen selective attention, constant attention to a focus, and their working memory, which are included in Floortime play therapy.

The results of the second part of the research findings showed that Floortime play therapy has reduced the use of maladaptive cognitive regulation strategies in children with attention deficit/hyperactivity disorder (ADHD) and increased their use of adaptive cognitive emotion regulation strategies. As mentioned in the first hypothesis, no study has been conducted to evaluate the effectiveness of Floortime play therapy on improving the symptoms of children with attention deficit/hyperactivity disorder (ADHD) including cognitive-emotional regulation, but in general, the results of the present study can consider as a comparison with the results of research conducted concerning children with autism. Accordingly, these findings are generally in line with the results of Alizadeh Zarei and Karamali-Ismaili (2015) that showed the Floortime method was effective in improving emotional functions such as communication and emotional skills and also playing in children with autism spectrum disorders. Besides, these findings are generally parallel with the results of the study of Weisani et al. (2015) that showed teaching the child-parent communication method significantly reduced attention deficit/hyperactivity disorder (ADHD) and its subscales. In addition, these findings are generally in conformity with the results of Asghari-Nikah and Abedi's (2014) research that showed play therapy based on executive functions is effective in improving response inhibition, planning, and working memory of children with attention deficit/hyperactivity disorder (ADHD). Finally, these findings comply with the results of the research by Hannesdottir et al. (2017) that showed the OutSMARTers program as a program focused on teaching children social-emotional skills using cognitive-behavioral techniques and executive action training improves symptoms of attention deficit/hyperactivity disorder (ADHD), emotion regulation, and socio-emotional skills of children with attention deficit/hyperactivity disorder (ADHD). We can use the theory of ecological systems theory by Bronfenbrenner (1979; quoted by Mohseni, 2011) for the explanation of the findings of the present study. According to this theory, the natural environment of life is the most powerful source of influence and it has an impact on human behavior, and any disorder in the optimal execution of roles in the natural environment and its inefficiency can have profound effects on the lives of human beings. Based on this theory, educating parents, especially mothers as the first and most influential source of influence on the child's developmental process, can prevent the formation of many behavioral and emotional problems in children or reduce its severity. Therefore, the mother's relationship with the child is reformed and improved in the Floortime method through playing as the most effective technique of interaction with the child that can reduce many of the children's behavioral problems. Hence, repairing children's problems by individuals who are themselves in the cycle of anxiety can somehow cause this deficient cycle to fluctuate and damage. Since the treatment used in this method emphasized playing, which is the innate and natural language of the children's relationship with the world around them, it can solve many social and emotional problems of the children, including distrust, low self-esteem, aggression, impulsive behavior, isolation and lack of attention (Kidron & Landreth, 2010). Additionally, in the Floortime method, the reflective response in which the child's emotions and feelings are returned to the child using the mother's words, increases self-awareness, recognizing one's emotions, and practicing how to deal with these emotions. Self-awareness and acceptance of their emotions, in addition to control destructive behaviors such as aggression and impulsive behaviors, can develop feelings of communion and evaluate their behavior from different aspects. As regards one of the problems of aggressive, impulsive, and hyperactive children is the lack of communion and evaluation of their behavior from the perspective of others, for this reason, children learn to behave through the reflection of emotions during the child-parent relationship to evaluate their behavior by reflecting the emotions presented by the mother to the child and to examine the positive and negative aspects of their behaviors and correct them, all of which indicate the effect that this method can have on the cognitive regulation of emotion in children with attention deficit/hyperactivity disorder (ADHD).

One of the limitations of the present study was that the findings could only be generalized to children who met the inclusion criteria for this study and also to individuals who differed from the subjects of the present study in terms of demographic characteristics and inclusion criteria; therefore, it is recommended to test Floortime play therapy in different populations with higher sample sizes and over a longer period to increase the generalizability of the results for future research. Besides, due to time constraints, the opportunity to hold a follow-up test and measure the stability of the intervention at long intervals was not provided;

Therefore, it is suggested that to follow the stability of the effects of training sessions, follow-up courses and at different intervals, to re-evaluate the effectiveness of narrative therapy based on daily executive actions in future research. Finally, disregarding the effects of cultural and ethnic factors; in other words, the quality and impact of cultural and ethnic factors, which are certainly at least involved in the occurrence of problems and insufficiencies, they have not been taken into account, while paying attention to this issue may have changed the direction of the research.

Due to the effectiveness of Floortime play therapy in improving executive functions and cognitive regulation of emotion in children with attention deficit/hyperactivity disorder (ADHD), counselors and teachers of exceptional children, psychologists, and psychiatrists of psychotherapy centers and clinics are recommended to use this treatment program in the intervention programs for children with attention deficit/hyperactivity disorder (ADHD) and use these methods in specialized counseling centers and clinics for children and adolescents, especially for children with attention deficit/hyperactivity disorder (ADHD).

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