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Research Paper

Comparison of the Effectiveness of Child-Parent Relationship Trianing and Barkley's Parent Training in Behavioral-Emotional Problems of Children with Attention Deficit-Hyperactivity Disorder

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ABSTRACT

Objective: One of the most common childhood disorders is attention deficit-hyperactivity disorder (ADHD). The objective of the present study was to compare the effectiveness of child-parent relationship trianing and Barkley's parent training in behavioral-emotional problems of children with ADHD.

Methods: The research method was quasi-experimental with pretest-posttest and follow-up. The statistical population of the study included all mothers with a son with ADHD. These mothers' children were studying in one of the primary schools in Ahvaz in the academic year 2021-2022. They were selected through random clusters sampling method and randomly were assigned to child- parent relationship therapy (n = 15), Barkley's parent training (n = 15) and control (n = 15) groups. Moreover, Clinical interview, Children's Behavior Checklist and SNAP-IV training Scale were instruments of collecting data. Achenbach Behavior Scale was used to collect data. The child-parent relationship group participated in ten 60-minute sessions; the Barkley's parent training group participated in fifteen 60-minute sessions. However, the control group did not receive any intervention. Data were analyzed using mixed analysis of variance using SPSS software (version 25).

Results: The results of intragroup effects showed that child-parent relationship therapy and Barkley's parent training were effective in the behavioral-emotional problems in the posttest phase ($P < 0.05$); they reduced children's emotional-behavioral problems. However, the effects were not sustained ($P < 0.05$). In addition, there was no significant difference between the effectiveness of child-parent relationship therapy and Barkley's parent training in children's emotional-behavioral problems ($P < 0.05$).

Conclusion: According to the results of the study, child-parent relationship therapy and Barkley's parent training were effective in emotional-behavioral problems of children with ADHD. Therefore, clinical psychologists and counselors are recommended to use these methods to reduce emotional-behavioral problems of children with ADHD.

1. Introduction

Mental health disorders (MHD) are very common in childhood. They include affective disorder, compulsive-obsessive disorder, anxiety, depression, oppositional defiant behavior, developmental disorders, and attention deficit-hyperactivity disorder (ADHD).

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Attention deficit-hyperactivity disorder is one of the most common neurodevelopmental disorders, the prevalence of it is estimated between 5 and 7% worldwide (Lavi et al., 2022). This disorder is characterized by significant attention deficit, hyperactivity, and impulsivity (American Psychiatric Association & Association, 2013). Attention deficit-hyperactivity disorder is an early and persistent disorder which is associated with significant functional impairments in many aspects of life. Affected individuals are at increased risk of lower academic achievement, social problems, impaired peer relationships, disruptive behavior, emotional dysfunction as well as higher rates of mood disorders and anxiety (Pang et al., 2021; Sánchez et al., 2019). These children may strongly dislike tasks which require mental effort and concentration, and are easily distracted by environmental events. If this disorder is not treated in childhood, it may be associated with other disorders such as disobedience, stubbornness, conduct disorder as well as anxiety and depression (Beaton et al., 2022; Magnin & Maurs, 2017; Tandon & Pergjika, 2017). Emotional and behavioral problems are one of the traumatic consequences of attention deficit-hyperactivity disorder which can affect children's performance. Children's maladaptive behaviors such as impulsivity, disobedience of parents' orders, destructive behaviors, stubbornness, and irritability lead to the parents' bad feelings such as anger, helplessness, fatigue, and reduced tolerance. As a result, the way parents react and behave with these children is affected; they may show behaviors such as punishment, rejection, blame, and exclusion. These parents' reactions provoke the children's negative emotions (e.g., failure, anger, and disappointment) and lead to their maladaptive behaviors and form a vicious cycle. Hence, in many cases, the parents' incorrect reaction is decisive in increasing the children's behavioral problems (Gillberg, 2014; Wender & Tomb, 2017).

Behavioral disorders in children with attention deficit-hyperactivity disorder are shown as externalizing disorder including stubbornness, problem-making, and disobedience, or internalizing disorder including withdrawal, depression, and anxiety (Willner et al., 2016). Due to the occurrence of these disorders, especially at school age, parents' sensitivity is stimulated and their negative reactions would be intensified. Thus, the child-parent interaction is greatly disturbed, and creates stress for parents or caregivers (Arslan et al., 2021).

So far, various treatment methods have been used to reduce the psychological, behavioral, emotional, communication, social and academic problems of children with attention deficit-hyperactivity disorder. These treatments are in two categories including drug treatment and psycho-social therapy. In psycho-social therapy, parent training is considered an essential part of therapeutic interventions. One of these non-drug interventional methods is parent-child relationship therapy. This method is based on the assumption that improving the parent-child relationship can improve the child's emotional and behavioral problems and can guarantee the child's mental health (Peyman Nia, 2012) . In this method, the parent-child relationship is used as a source of changing the child's understanding and ultimately his behavior (Mäntymaa et al., 2012); improving the parent-child relationship weakens the ineffective parent-child interactions, and increases the parents' ability to understand the child (Bratton & Landreth, 2006). In the parent-child relationship training method, parents are used as agents of change; the sessions are held individually or in structured meetings under the supervision of professionals. Another main feature of this method is that it focuses on the future, while most parent training models focus on past relationships and events and emphasize on correcting the child's past relationships (Bratton & Landreth, 1995). The parent-child relationship training are improving the quality of parent-child relationship, parents' cooperation with each other, parents' acquisition of play therapy skills, reducing children's behavioral problems and emotional distress, and increasing parents' acceptance by children (Amanelahi et al., 2019). The results of Fazli and Sajjadian's (2016) study showed that parent training along with drug treatments could reduce the behavioral problems of children with attention deficit-hyperactivity disorder. In addition, Visani et al. (2014) examined the students with attention deficit-hyperactivity disorder and found that parent-child relationship training reduced symptoms of attention deficit-hyperactivity disorder and relevant problems.

Another method used to reduce the emotional-behavioral problems of children with attention deficit-hyperactivity disorder is parent training, which was first proposed by Barkley (1987) to families with disobedient and stubborn children (Barkley, 1997). In this method, the children's behavior modification program is implemented in the natural environment (i.e., home) by the parents who have the most interaction with them. By using the dimensions of effective relationship, reward system, reinforcement and negotiation, this program reconstructs the ineffective interaction of parents with children and improves behavioral problems, attachment

relationships, social skills and classroom behaviors of the children (Barkley, 2013). The research results of Danforth et al. (2006) and (Reyno & McGrath(2006) showed that the Barkley's method significantly reduced externalizing problems and aggressive behaviors of hyperactive children. Moreover, training parents had positive results in reducing the behavioral problems of children with ADHD in the studies of Kheir (2012) and Balali & Aghayousofi (2011). Abedi et al.(2016) also confirmed the effect of Barkley's parent training on the symptoms of attention deficit-hyperactivity disorder and anxiety.

Some parents report that their children experience problems in their emotions, behavior and communication with their peers (Malonda et al., 2019). Thus, more research is required to find effective methods to reduce emotional and behavioral consequences of ADHD. So far, various effective interventions have been identified for the treatment of ADHD and its consequences. However, achieving a maximally effective treatment requires more research studies (Hinshaw & Arnold, 2015). Although parent-child relationship therapy and Barkley's parent training provided substantial research evidence, the comparison of the effectiveness of them has not been made. Therefore, the objective of the present research study was to investigate the effectiveness of Barkley's parent training, active memory training and the combination of these two interventions for children with ADHD. It sought to answer whether there was a difference between the effectiveness of parent-child relationship therapy and Barkley's parent training in terms of emotional and behavioral problems of children with attention deficit-hyperactivity disorder

2. Materials and Methods

The present study was a quasi-experimental study with a pretest-posttest design with a control group and one-month follow-up. The statistical population included all mothers with a son with ADHD who were studying in one of the primary schools in Ahvaz in the academic year of 2021-2022. The sample size of the present study was determined by referring to (Cohen, 2013) table. Accordingly, the sample size in the experimental studies at the confidence level of 95%, the effect size of 0.50 and the test power of 0.80 for each group is 15 individuals. First, four elementary schools in Ahvaz were chosen randomly. Then, the teachers of those schools were asked to introduce the students with the symptoms of attention deficit-hyperactivity disorder. In the third step, using SNAP rating scale (SNAP-IV) and clinical interview based on mental disorders diagnosis for ADHD (the fifth edition), the mothers of the students with ADHD were invited to participate in the study. They were randomly assigned into two experimental and one control groups. The inclusion criteria included having informed consent to participate in the study, living with the son with ADHD at the time of the study, age range of 7-12 years for children, not receiving any type of psychological training or treatment during the study, having reading and writing literacy and having a child diagnosed with ADHD based on the SNAP-IV rating scale and clinical interviews. The exclusion criteria were failure to fill out the questionnaires, unwillingness to participate in the treatment sessions and absence of more than two sessions of the treatment sessions.

Data analysis was conducted using SPSS software (version 25). Descriptive data was reported through mean and standard deviation. Despite the follow-up phase, mixed analysis of variance with repeated measurements and Bonferroni post hoc test were used to examine the differences between the experimental and the control groups in terms of emotional and behavioral problems. Inferential analyses were performed at the significance level of .05. In addition, in this study, ethical considerations including scientific honesty and trustworthiness, informed consent to participate in the study, observing the participans' right to remain anonymous and keeping their information confidential were taken into consideration.

Instruments:

1. Children's Behavior Checklist (CBCL): In this study, the measurement system based on Achenbach's experience of the parenting form was used to measure the children's emotional and behavioral problems. The assessment system based on Achenbach's experience includes a set of checklists to evaluate competencies, adaptive functioning and emotional and behavioral problems, including child behavior checklist, self-assessment questionnaire, and teacher report. Each of these checklists can be filled out in 20 to 25 minutes. Child Behavior Checklist (CBCL) consists of 113 items which examine the emotional and behavioral states of children in eight areas, in two age groups of 4-11 years old and teenagers (12-18 years old), in the last six months. Parents rate their child's different behaviors on a three-point Likert scale. The test scores can be presented through three indicators of internalized problems (e.g., isolation, anxiety, and depression), externalized problems (e.g., aggression and delinquent behaviors) and general problems (e.g., indicators of internalizing and externalizing problems, and the problems regarding concentration, thinking, and social aspects). The reliability coefficient of this test is reported as 0.75, and it is used as one of the

important screening instruments for psychiatric disorders in the age group of 4-18 years old (Achenbach, 1991). The standardization of this measurement system was done in Tehran, after the necessary adaptations in terms of language, culture and society, on the Iranian sample. The results showed that the alpha coefficients of the scale, based on DSM-IV, were at a satisfactory level. Its range was from 0.64 to 0.8. Moreover, the results obtained regarding the construct validity, the content validity and the factor validity of this scale showed acceptable validity and internal correlation coefficient ($P < 0.01$) (Minaee, 2006). In the present study, the reliability coefficient of this scale was .82 using Cronbach's alpha.

2. SNAP-IV Rating Scale: The new edition of this scale is used to evaluate and diagnose attention deficit-hyperactivity disorder and oppositional defiant disorder. This scale was first developed by Swanson et al. (1980) based on DSM. It was known as SNAP with the initials of the developers of the scale. Simultaneously with the revision of DSM criteria and the compilation of DSM-IV, the SNAP was also rewritten and published in 2001 (Swanson et al., 2001). This scale includes 30 questions (i.e., 10 questions on attention deficit, 10 questions on hyperactivity/impulsivity, and 10 questions on oppositional defiant disorder). Many studies confirmed the validity and the reliability of this scale (Dineen & Fitzgerald, 2010; Kidron & Landreth, 2010; Kiive et al., 2010; Swanson et al., 2012). In the present study, the reliability coefficient of this scale was estimated to be .79 using Cronbach's alpha.

Data collection procedure:

Following the ethical considerations, after obtaining the consent of the participants and explaining the research objectives, the participants were randomly assigned into three groups based on the inclusion criteria, and an informed consent was obtained from them. In other words, 15 individuals were in the experimental group of parent-child relationship therapy, 15 individuals were in the experimental group of Barkley's parent training method, and 15 individuals were in the control group. Then, how to participate in the sessions and the number of sessions were explained. The parent-child relationship therapy was prepared based on Bratton & Landreth (2006) model. This program was implemented for ten 60-minute sessions (one session per week). The educational structure was prepared and implemented based on theoretical and philosophical concepts and parent-child relationship techniques. The treatment sessions were conducted by the online researcher from the first of November to the second week of January of 2021-2022 (see Table 1). In addition, the treatment protocol of the parent training therapy was developed and implemented by the online researcher from the first of November to the second week of December of 2021-2022 during ten 60-minute sessions (one session per week). The educational structure was based on the theoretical and the philosophical concepts and therapeutic techniques of Barkley (2013) parent training therapy (see Table 2).

Table 1. Summary of parent-child relationship treatment sessions

Session	Content
First	Introducing the members and the therapist, explaining the working process and the rules governing the group, giving a brief explanation about the parent-child therapeutic relationship, stating the goals and the essential concepts, and teaching the skill of reflective response
Second	Creating a supportive atmosphere and facilitating the relationship of the parents, preparing parents to implement play sessions at home through reviewing reflective responses, familiarizing parents with the basic principles of play sessions and the importance of creating a structure for play sessions, choosing toys and the right time and place for play sessions, role playing and demonstrating basic play skills
Third	Explaining play sessions' do and don'ts, role playing of the play sessions' dos and don'ts, and giving parents a play session process checklist with additional guidelines
Fourth	Examining the parents' report of play sessions with children, criticizing the video of play sessions prepared by parents, teaching the skill of setting restrictions using the three-step A-C-T method, explaining the reason and the importance of setting rules and restrictions, playing the role of setting limits
Fifth	Examining the parents' reports of play sessions and criticizing the video recorded by them, reviewing the skill of setting limits through role playing
Sixth	Examining the parents' reports of play sessions and criticizing the video recorded by them, preparing a poster of the dos and the don'ts of the play sessions, teaching the skill of giving the child the right to choose
Seventh	Examining the parents' reports of play sessions and criticizing the video recorded by them, supporting and encouraging parents in applying the skills, teaching self-esteem constructive responses and reflective responses
Eighth	Examining the parents' reports of play sessions and criticizing the video recorded by them, teaching the skill of encouragement against praise and playing the relevant role
Ninth	Examining the parents' reports of play sessions and criticizing the video recorded by them, supporting and encouraging the parents in applying the acquired skills, teaching advanced limit setting and playing the relevant roles
Tenth	Examining the parents' reports of play sessions and reviewing the video recorded by them, reviewing the basic principles of the parent-child therapeutic relationship and the acquired skills, teaching how to generalize the skills to context other than the play sessions

Table 2. Summary of Barkley's parent training sessions

Session	Content
First	Introducing the members and the therapist and explaining the work process and the rules governing the group, giving a brief explanation about parent-child therapeutic relationship, stating the goals and essential concepts, examining misconceptions about attention deficit-hyperactivity disorder, teaching the child to obey and follow orders and using request commands
Second	Suggesting the parents to give clear instructions to the child and break them into small chunks with multiple pauses, making thinking and problem solving methods objective and tangible, organizing work or homework in a way which is more attractive and motivating for the child, asking the parents to prepare the environment and the surrounding conditions in such a way that the distraction factors would be minimized, helping the child to focus his attention on what is important
Third	Giving immediate feedback and rewards to the child after completing the task or following the rules, using the token system, focusing on one or two social behaviors which parents would like to observe more in the child's daily interaction with his peers, reminding the child of the time due to paying more attention to the surroundings and making the child sensitive to the passage of time, reminding the child of important points in the child's performance, directing the child's behavior from immediate pleasure and gratification to future goals and developing foresight in them, teaching the child to be patient
Fourth	Encouraging the child to invite his classmates home after school or on weekends, asking the parents to focus on children who have common interests with their child, monitoring the child's behavior while playing with peers, encouraging the child's new skills and behaviors, and giving him a token during the break or at the end of the paly
Fifth	Controlling one's negative emotions at home and preventing any aggressive and undesirable behavior on the part of family members, monitoring television programs and eliminating watching violent television programs, pointing out the violent and inappropriate behaviors immediately after accidentally watching violent programs
Sixth	Reviewing previous sessions and answering the parents' questions, emphasizing consistency and coordination in parents' performance, managing the child behavior through asking the parents to teach their children how to deal with peer bullying and teasing
Seventh	Reviewing new social skills in the week and explaining the new skills to the child, reconstructing the situation of interacting with peers for the child and asking the child to practice the skills, encouraging the child to perform appropriate behaviors
Eighth	Taking videos of the child's interactions with his peers or siblings without attracting his attention, reviewing them with the child in another context and time, informing the child of how he behaves in different situations and pointing out the positive aspects of his behaviors
Ninth	Limiting the child's contact with aggressive peers or socially rejected children, encouraging the child to have a relationship with his peers and to invite them home, preparing a non-competitive context for the child to interact with his peers so that the child's emotional arousal and frustration would be prevented
Tenth	Examining the parents' reports of play sessions and criticizing the video recorded by them, asking the parents to emphasize cooperative learning assignments in which each of the children in a small group were asked to do a task to achieve a common goal, summarizing all the contents

3. Results

According to the results of Table 3, there was a difference between the means of family performance, parenting stress, and emotional and behavioral problems in the three phases of the test; this difference occurred between the posttest and follow-up phases and the pretest phase.

Table 3. Mean and standard deviation of emotional and behavioral problems

Group	pretest		Posttest		Follow-up	
	Mean	SD.	Mean	SD.	Mean	SD.
Parent-child experimental group	125.64	8.63	87.46	7.32	89.06	7.98
Barkley's experimental group	124.80	9.12	87.33	8.17	88.20	8.23
Control group	129.04	7.24	128.17	6.15	127.12	7.82

The results of Levine's test indicated the homogeneity of the error variances in the three groups, and the results of Mauchly's test showed that the condition of equality of the variance/covariance matrices and the assumption of sphericity were not met. Therefore, Greenhouse-Geisser correction was used. The results of M-box statistic were significant for the research variables ($P < 0.05$). Since the M-box test was significant ($P < 0.05$, $F = 3.29$), to evaluate multivariate effects, Pillai's trace effect was taken into account. The results of the multivariate test of Pillai's trace effect showed that the score of the dependent variable (i.e., emotional and behavioral problems) was different in terms of both time ($P < 0.05$, $F = 189.87$) and the interaction between time and group ($P < 0.05$, $F = 14.11$).

The results of Table 4 showed that the effect size of time was significant ($P < 0.05$, $F = 352.94$). Therefore, it is concluded that the score of emotional and behavioral problems was different in the three phases of pretest, posttest and follow-up. As the eta value showed, 0.59% of the changes in the score of emotional and behavioral problems were explained by within-group factor. Moreover, the within-group interaction effect of time and the two experimental and the control groups ($P < 0.05$, $F = 67.04$) was significant. The eta value showed that 0.49% of the changes could be explained by the interaction of time and group.

Table 4. The results of within-group effects for emotional and behavioral problems

Source	Sum of the squares	df	Mean of the squares	F	Sig.	Effect size
Time	19917.73	1.94	16680.35	352.94	.005	.59
Time * Group	7567.42	2.38	3168.71	67.04	.005	.49
Error	2370.17	50.152	47.260			

The results of Bonferroni post hoc test in table 5 showed that parent-child relationship therapy and Barkley's parent training were effective in emotional and behavioral problems in the posttest phase (P < 0.05). However, the effect did not sustain (P < 0.05). The scores in the control group showed that there were no significant differences among the pretest, the posttest and the follow-up scores in terms of emotional and behavioral problems (P < 0.05).

Table 5. Within-group variables' means of emotional and behavioral problems

Group	Time (I-J)	Mean difference (I-J)	Sig.
Parent-child relationship	Pretest-posttest	-41.23	<.001
	Pretest-follow-up	-41.19	<.001
	Posttest-follow-up	.49	1
Barkley's parent training	Pretest-posttest	-40.18	<.001
	Pretest-follow-up	-32.28	<.001
	Posttest-follow-up	.84	1
Control group	Pretest-posttest	-1.18	.62
	Pretest-follow-up	-1.90	1
	Posttest-follow-up	-.732	1

Furthermore, table 6 showed that between-group effect was significant (P < 0.05, F = 2519.92). Thus, it can be concluded that there was a difference between the groups. Considering the significance of the difference between the groups, Bonferroni's post hoc test was used to compare between-group effects.

Table 6. The results of between-group effects for emotional and behavioral problems

Source	Mean of the squares	df	Mean of the squares	F	Sig	Effect size
Intercept	1670001.64	1	1670001.64	2519.92	<.001	.98
Group	17500.31	2	16008.88	24.15	<.001	.41
Error	27834.22	42	662.72			

In addition, as it is evident in table 7, there was no significant difference between the parent-child relationship group and Barkley's parent training group in terms of emotional and behavioral problems in the posttest and follow-up phases (p < 0.05). However, there was a significant difference between the parent-child relationship group and Barkley's parent training group with the control group in the posttest and follow-up phases (p < 0.05). In other words, both intervention methods were effective in emotional and behavioral problems of the studied sample, and they did not differ in terms of effectiveness. Furthermore, the intervention methods sustained their positive effect after the passage of time.

Table 7. The means of within-group variables for emotional and behavioral problems

Emotional and behavioral problems	Time (I-J)	Mean difference (I-J)	Std. error	Sig.
Pretest	Parent-child relationship and Barkley's parent training	-3.11	5.42	1
	Parent-child relationship and control group	-2.01	5.42	1
	Barkley's parent training and control group	1.67	5.09	1
Posttest	Parent-child relationship and Barkley's parent training	3.74	4.95	1
	Parent-child relationship and control group	-36.19	4.95	<.0001
	Barkley's parent training and control group	-34.19	4.95	<.0001
Follow-up	Parent-child relationship and Barkley's parent training	-4.11	4.80	1
	Parent-child relationship and control group	-37.25	4.80	<.0001
	Barkley's parent training and control group	-33.65	4.80	<.0001

4. Discussion and Conclusion

The objective of the present study was to compare the effectiveness of parent-child relationship therapy and Barkley's parent training in the emotional and behavioral problems of children with attention deficit-hyperactivity disorder. The results of within-group effects showed that parent-child relationship therapy and Barkley's parent training affected the emotional and behavioral problems in the posttest phased, and reduced the emotional and behavioral problems of children; however, they did not sustain. There was no significant difference between the impact of parent-child relationship therapy and Barkley's parent training on children's emotional and behavioral problems. The results of this research study are in line with the findings of (Fazli & Sajjadian, 2016) and (Visani et al., 2014) studies which emphasized the effect of parent-child relationship therapy on symptoms of attention deficit-hyperactivity disorder and the relevant problems. In addition, the findings of the present study are consistent with those of (Danforth et al., 2006), (Reyno & McGrath, 2006), (Kheir, 2012), (Balali & Aghayousofi, 2011), (Abedi et al., 2016) who confirmed the effectiveness of Barkley's method in emotional and behavioral problems of children.

The effectiveness of child-parent relationship therapy in reducing emotional and behavioral problems and symptoms of attention deficit-hyperactivity disorder can be explained through referring to the characteristics of this method. The content of this method's sessions increases the acceptance and the empathy of the parents and the children. In this method, parents are taught to strengthen their relationship with their children while playing with them. During this relationship, children use toys to discover new experiences and to express what they think and feel about them. Therefore, the empathetic and emotional response of the parents to the children's feelings and emotions strengthens the children's self-esteem and helps them accept responsibility for their actions through strengthening self-control. On the other hand, the children are the center of attention of the parents during the play, and the parents make a favorable relationship with the children so that they can express their anger, loneliness, failures, fears and wishes calmly through the play. When the children are playing, the parents usually follow the children's instructions, and there are no reprimand, punishment, humiliation, evaluation and judgment. Considering the many parents' interactional problems with their children with attention deficit-hyperactivity disorder, play is a suitable instrument to rebuild the relationship between parents and children; it helps resolve their needs and conflicts. Furthermore, the formation of a positive relationship of the children and the parent will reduce the negative feelings and parenting worries, which will ultimately increase the awareness and the knowledge of parents about how to interact with their children (Bratton & Landreth, 2006).

According to the child-parent relationship therapy, training parents, especially the mother as the first and the most influential source in child's development, can prevent many behavioral and emotional problems of children or reduce the problems' severity. Therefore, in child-parent relationship therapy, the modification and the improvement of the mother-child relationship is achieved through play which is the most effective technique of interaction with the children and reduces many children's behavioral problems. Thus, solving children's problems by someone who is worried can somehow damage this defective cycle. Since child-parent relationship therapy emphasizes play, which is the innate and natural language of the children's relationship with the surrounding world, it can solve many emotional and behavioral problems of children, including mistrust, low self-esteem, aggression, impulsive behavior, isolation and lack of attention (Kidron & Landreth, 2010).

Another important feature of child-parent relationship therapy is its emphasis on playing with the aim of maintaining focus and attention. From among the games played in this method are the secret of differences, the cup and the coin, cutting pictures in magazines, seeing and telling, and executing commands in reverse. The purpose of all these games is to strengthen continuous attention, active memory, visual sequence, visual memory, self-monitoring, self-control and selective attention. Therefore, teaching these games to parents and their continuous and regular performance by the child at home can affect the lack of attention, the lack of concentration and the lack of selective attention of the children. According to Sanders et al. (2014), one of the main characteristics of children with attention deficit-hyperactivity disorder is the lack of skills for selective attention. Due to the short span of continuous attention, these children change their attention very quickly from one focal point to another. Therefore, they cannot use self-regulation strategies of attention and continuous attention. Therefore, the rate of rapid change of attention from one focal point to another will cause discontinuity in receiving a message and an issue. In this case, their academic performance is strongly affected by their lack of attention. Hence, part of the treatment of children with attention deficit-

hyperactivity disorder should be based on games which strengthen their selective attention, continuous attention and active memory.

These games are included in parent-child relationship therapy. In addition, in child-parent relationship therapy, reflective response in which the children's emotions and feelings are returned to themselves through their mothers' words increases self-awareness, the recognition of emotions, and the way to deal with them. In addition to controlling destructive behaviors such as aggression and impulsive behaviors, self-awareness and acceptance of one's feelings can develop a sense of empathy and an evaluation of one's behavior from different aspects. Considering the fact that one of the problems of aggressive, impulsive and hyperactive children is the lack of empathy and the evaluation of their own behavior from the perspectives of others, in child-parent relationship therapy, the children learn to control their behaviors through the reflection of emotions which is presented to the children by the mothers, to evaluate and to examine the positive and the negative points of these behaviors, and to take action to modify them.

The effect of Barkley's method on reducing the internalization problems of children in the present study can be explained by referring to the fact that Barkley's parent training method improves the social skills of children with attention deficit-hyperactivity disorder through changing and modifying the parenting and the interactive pattern of parents (Yaghmaei et al., 2019). One of the goals of Barkley's parent training program is to design the best match between the parents and the children. In this regard, parents learn to change the children's abnormal behaviors as much as possible through applying restrictions. Otherwise, they accept the unchangeable factors and try to control them as much as possible. It seems that restrictions increase the children's self-control, responsibility for their behaviors, and the level of acceptance of the children by the parents. As a result, parent-child relationship improves (Hosainzadeh Maleki et al., 2014; Newby et al., 1991). Due to the inappropriate behavior of children with attention deficit-hyperactivity disorder, parents use many restriction methods and incorrect punishments. Another concept which mothers learn in this program is the correct use of deprivation as a punishment for bad behavior, which significantly helps improve the parent-child relationship.

Barkley's parent training method can improve child-parent interactions, can change parents' attitudes towards children's behaviors and their problems, can facilitate correct management of parents regarding controlling children's hyperactivity, can teach children to control impulsive behaviors, and can teach patents to provide timely and appropriate reminders and rewards. Furthermore, increasing the awareness of parents regarding this disorder and the appropriate way to deal with these children changes the parents' understanding of the children's behaviors and reduces the conflict between the parents and the children, and improves the symptoms of the disorder. In addition, active participation of parents in the training sessions and their motivation in treatment results can be seen as another reason for the reduction of the symptoms.

This research study had some limitations which should be taken into account in the interpretation of the findings. For instance, the participants included the mothers with a son with attention deficit-hyperactivity disorder in elementary schools in Ahvaz; it made it difficult to generalize the results to other age groups, gender and geographical areas. Therefore, it is suggested that future studies examine mothers with both sons and daughters with attention deficit-hyperactivity disorder in a wide range of geographical areas. Moreover, accessibility of the sample and the feasibility of face-to-face training due to the spread of Covid-19 were other limitations of the present study. According to the results of the study, it is suggested that psychologists use these methods (i.e., parent-child relationship therapy and Barkley's parent training) to reduce the emotional and behavioral problems of children with attention deficit-hyperactivity disorder.

5. Ethical Considerations

Compliance with ethical guidelines

Compliance with ethical guidelines in designing and compiling this research, ethical principles have been considered. The purpose of the research was explained to the participants and the information was received confidentially and used only for research purposes.

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Authors' contributions

All authors of this article participated in all stages of writing and conducting research.

Conflicts of interest

The authors of the article had no conflict of interest.

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