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The Effectiveness of Cognitive-Behavioral Play Therapy on Impulsivity of Hyperactive 5-7-Year-Old Children

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Quantitative Study

Abstract

Background: The aim of the current research was to investigate the effectiveness of cognitive-behavioral play therapy on improving impulsivity of hyperactive children aged 5 to 7 years.

Methods: This study employed a quasi-experimental design with both pre- and post-tests, along with a control group, and a follow-up period of one month. The statistical population included all children with hyperactivity disorder, 5 to 7 years old, in Izeh City, Iran, in 2020. Purposeful sampling was employed to select 30 participants based on the inclusion and exclusion criteria. They were then randomly assigned to two experimental and control groups (n = 15 per group). The intervention group received twelve 60-minute sessions of cognitive-behavioral play therapy, while the control group was on the waiting list. The Barratt Impulsiveness Scale-Version 11 (BIS-11) was applied as a research tool. Repeated measures analysis of variance (ANOVA) was used by SPSS software.

Results: The univariate analysis of covariance (ANCOVA) showed that cognitive-behavioral play therapy effectively reduced impulsivity (F = 24.514, P = 0.001) and this difference continued during the follow-up period.

Conclusion: The effect of cognitive-behavioral play therapy training on the improvement of impulsivity in the experimental group in comparison with the control group has continued in the follow-up phase of 1.5 months.

Keywords: Cognitive-behavioral therapy; Play therapy; Impulsivity; Hyperactivity

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Introduction

Attention deficit/hyperactivity disorder (ADHD) is a neurobehavioral developmental disorder that is often diagnosed in childhood (Muskens, Velders, & Staal, 2017). In hyperactive children, impulsivity is one of the important variables that researchers pay attention to. Impulsive children often do not have proper control over their behavior and the reactions they show to the events around them are too natural (Valori, Della Longa, Angeli, Marfia, & Farroni, 2022). Impulsivity is defined as immediate action, lack of focus on the activity at hand, and lack of planning and thinking, and is part of a behavioral pattern and not a single action (Bakhshani, 2014). Impulsivity is a kind of psychological mechanism through which a person unconsciously shows the pressures caused by his deprivations in the form of risky reactions and when he is impulsive, he does not care about the rights and demands of others. Impulsivity helps a person in the immediate satisfaction of needs and desires and temporary solutions, but in the long term, aggression alienates people from others and makes them suspicious, fearful, hostile, and withdrawn (Herman, Critchley, & Duka, 2018).

Cognitive-behavioral play therapy is often used to treat maladjusted children and those who have difficulty solving adjustment issues (Ashori & Dallalzadeh Bidgoli, 2018). Play therapy is a method by which the child's natural means of expression, i.e., play, are used as a therapeutic method to help the child control his emotional pressures (Shrinivasa, Bukhari, Ragesh, & Hamza, 2018). Moreover, this method is used for three- to eight-year-old children who have family problems (such as parental divorce), nail biting, nocturnal enuresis, behavioral disorders, and hyperactivity, and are unsuccessful in group relationships or have become victims of child abuse (Birdal & Doğangün, 2016). Therapists who use play therapy believe that this method allows the child to build the world on a smaller scale with his hands and bring it under his influence; a task that is not possible in the environment around children every day (Elbeltagi, Al-Beltagi, Saeed, & Alhawamdeh, 2023). In cases where a child commits a destructive act in the playroom, the teacher's behavior is very important. Children in such conditions look at the teacher or therapist to find out his reaction (Rogers, 2015). Freud believed that if the child is playing in a safe environment, then the game gives the child an opportunity to express anxiety without being punished. In the meantime, like Freud, Erikson concludes that play can reduce anxiety (Capps, 2018). In addition, he believed that the game was used to form self-esteem by helping to develop social and physical skills (self-improvement function) (Alieksieieva, Bihun, Chukhrii, Honcharovska, Kalishchuk, & Otych, 2022).

Many studies have proven the effectiveness of this approach. For example, Karimi Lichahi, Azarian, and Akbari (2021) found that according to the results of the covariance analysis, play therapy had a significant positive impact on enhancing reading performance and adaptive skills, while also decreasing behavioral issues in the experimental group. It helps with dyslexia, which improves executive functions such as decision-making, organization, planning, self-management, and self-control. Hosseinzadeh (2021) showed that cognitive game therapy reduced the symptoms of attention deficit/hyperactivity and impulsivity, and this approach is suggested to therapists and psychological specialists. The findings of Zarandi, Ghodrati, & Vatankhah (2018) showed that there was a significant difference between the mean behavior problems, learning problems, psycho-physical problems, impulsivity, and passive anxiety of the experimental and control groups in the post-test stage. El-Nagger, Abo-Elmagd, & Ahmed (2018) found that cognitive behavioral play

therapy was influential on reducing the symptoms of attention deficit/hyperactivity and impulsivity in hyperactive children. Hirschfeld and Wittenborn (2016) confirmed that this approach was effective on impulsivity for young children whose parents were divorced. They found that cognitive behavioral play therapy had been effective in improving children's impulsivity. Stulmaker and Ray (2015) demonstrated that play therapy improved impulsivity in young, anxious children. In order to address impulsivity in hyperactive children, it is critical to undertake studies that aim to alleviate the challenges faced by these children. The chief inquiry of this research is whether the efficacy of cognitive-behavioral play therapy can be ascertained in ameliorating the impulsiveness of hyperactive children ranging from 5 to 7 years old.

Methods

This study employed a quasi-experimental design with both pre- and post-tests, along with a control group, and a follow-up period of one month. The statistical population included all children with hyperactivity disorder, 5 to 7 years old, in Izeh City, Iran, in 2020. Purposeful sampling was employed to select 30 participants based on the inclusion and exclusion criteria. They were then randomly assigned to two experimental and control groups (n = 15 per group). The adequacy of sample size was confirmed through G*Power software (α = 0.05 and power test = 0.90). The inclusion criteria were as follows: age between 5 to 7 years old, living with their parents, and having ADHD criteria based on Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-V), and exclusion criteria were their parents' or their reluctance to take part in the study, failure to maintain proper participation (over two absences in the therapeutic sessions), and unwillingness to continue participation.

After receiving the necessary permissions for conducting the research, the sample of research was selected. To select the sample, 30 children with hyperactivity disorder aged 5 to 7 years from Niayesh Primary School in Izeh City, who were selected purposefully, were randomly divided into two experimental and control groups. Mothers of children with hyperactivity disorder were invited before the implementation of the intervention, and the necessary explanations about the play therapy intervention and how to correctly fill out the questionnaire were presented to them by the therapist. The Barratt Impulsiveness Scale-Version 11 (BIS-11) for children with hyperactivity disorder was administered to both groups (intervention and control) before conducting the training sessions. The intervention group received twelve 60-minute sessions of cognitive-behavioral play therapy (Knell, 1993), while the control group was on the waiting list. The intervention program was implemented by the first author who had passed specialized workshops and courses in the school counseling office. The follow-up period was conducted using the research instruments on the intervention and control groups one month after the post-test. Table 1 shows a summary of the cognitive-behavioral play therapy. During the experiment, the therapist played the desired game with each child individually for 7 minutes while the other children were playing, and at the end of each session, all the children played the game together in turns. After the implementation of the intervention to conduct the post-test, the questionnaires were completed again by mothers of children with hyperactivity disorder. The follow-up test was held for both the test and control groups one month after the completion of the sessions and taking the post-test.

BIS-11: This scale has been designed by Barratt (Patton, Stanford, & Barratt, 1995).

The BIS-11 is a 30-item self-report measure that assesses impulsivity using a 4-point Likert scale (1 = rarely/never and 4 = almost always/always). Higher scores indicate higher levels of impulsivity. The lowest and highest scores are 30 and 120, respectively**.** Reliability coefficients were calculated using Cronbach's alpha and retest methods, which were 0.81 and 0.77, respectively. The results provide evidence that the structure of the BIS-11 scale applies to the Iranian sample (Javid, Mohammadi, & Rahimi, 2012). In the present study, the reliability of this questionnaire was obtained using Cronbach's alpha method (0.82).

Repeated measures analysis of variance (ANOVA) was used to examine the effectiveness of cognitive-behavioral play therapy in improving impulsivity in hyperactive children. Before analysis, the data were examined to ensure meeting the basic assumptions of repeated measures ANOVA. In this regard, the normal distribution of scores and homogeneity of variance and covariance matrices (homoscedasticity) were examined, confirming the assumption of normal distribution of hyperactive children with impulsivity scores in both study groups. Mauchly's sphericity test was also used to check if the assumption of homoscedasticity was met. Levene's and Box's M tests were used to validate the assumption of equivalence of covariance and hyperactive children with impulsivity variances. The results confirmed the homogeneity of variances. Mauchly's test also verified the assumption of sphericity. Ultimately, the Box's M test indicated the equivalence of covariance in the intervention and control groups. Therefore, the assumptions for conducting repeated measures ANOVA were met. Data analysis of this research was done on two descriptive and inferential levels with SPSS software (version 26, IBM Corporation, Armonk, NY, USA).

Table 1. A summary of the cognitive-behavioral play therapy sessions

Sessions	Contents
1	Introduction of the consultant: getting to know the students and explaining the general structure of the sessions
2	Objectives: 1) reviewing the homework and receiving the homework from the subjects, 2) introducing the game and how to do it and the purpose of doing it
3	Objectives: 1) reviewing the assignments of the previous session, 2) introducing the game to the subjects and the purpose of playing the game
4	Objectives: 1) reviewing the assignments of the previous session, 2) introducing the game to the subjects and the purpose of playing the game
5	Objectives: 1) reviewing the assignment of the previous session, 2) introducing the play dough to the subjects and the purpose of playing the game; after the greeting, the subjects were asked to review the assignment related to the previous session and then the new training game was given.
6	Objectives: 1) reviewing the assignment of the previous session, 2) introducing the fight game but with your paper to the subjects and the purpose of playing the game
7	Objectives: 1) reviewing the assignment of the previous session, 2) introducing the reminiscence game to the subjects and the purpose of playing the game
8	Objectives: 1) subjects' assignment, 2) introducing the games and the purpose of playing them; after the greeting, the subjects were asked to review the assignment related to the previous session.
9	Objectives: 1) reviewing the homework of the subjects, 2) introducing the games and the purpose of playing them
10	From the tenth session to the twelfth session, no new game was taught, only the games of the previous sessions were reviewed, and with the help of the subjects, and at the end of the twelfth session, while thanking the subject for his cooperation as well as the control group, the post-test was conducted separately.

Results

In this study, in the experimental group, 53.33% of female children and 46.66% of male children, and in the control group, 73.33% of female children and 26.66% of male children made up the sample. Besides, 60% were related to parents of two children in the experimental group and 53.33% were related to parents of two children in the control group; 13.33% related to parents of one child in the experimental group and 20% related to parents of three children in the control group had the lowest frequency. In the experimental group, the highest value was 60% related to the father's bachelor's education, and in the control group, 73.33% were related to the father's bachelor's education. In the experimental group, the father's diploma education had the highest value at 66.6%, while in the control group, the lowest value was related to the father's master's education at the same percentage. In addition, in the experimental group, the highest value was 46.66% related to the mother's bachelor's education, and in the control group, 53.33% related to the mother's bachelor's education. The smallest percentage observed in the experimental group was 33.13% for mothers with associate degrees, while in the control group, the lowest percentage was also 33.13% for mothers with diplomas.

According to table 2, the estimated mean scores of the impulsivity from the pretest, posttest, and follow-up stages were significantly different.

The univariate analysis of covariance (ANCOVA) showed that cognitive-behavioral play therapy effectively reduced impulsivity ($F = 24.514$, $P = 0.001$) (Table 3).

Table 4 shows that the ANOVA was significant for the within-group and between-group variables ($P < 0.001$). This revealed that the effect of time alone was significant considering the group effect. Moreover, the interaction effects of group and time were significant ($P < 0.001$). The results of repeated measures ANOVA indicated the effectiveness of cognitive-behavioral play therapy in improved impulsivity of the hyperactive children. Considering the significant factors at the within-group level, the significant difference in three measurement stages (pretest, posttest, follow-up) was confirmed for student impulsivity. Furthermore, the significant group source illustrated a significant difference in hyperactive children impulsivity between the cognitive-behavioral play therapy and control groups.

Discussion

The present study aimed to assess the effectiveness of cognitive-behavioral play therapy on improving the impulsivity of hyperactive children aged 5 to 7 years from Niayesh Pre-school in Izeh City. The results showed that cognitive-behavioral play therapy training reduced impulsivity in hyperactive children. These results have continued into the 1.5-month follow-up phase.

Table 2. Mean and standard deviation (SD) of the impulsivity in intervention and control groups

Variable	Phase	Intervention group (mean ± SD)	Control group (mean ± SD)	K-S	P-value
Impulsivity	Pretest	87.40 ± 6.74	86.40 ± 7.83	0.070	0.041
	Posttest	87.00 ± 6.55	78.67 ± 8.27	0.050	0.001
	Follow-up	87.53 ± 7.47	78.93 ± 8.35	0.165	0.021

SD: Standard deviation; K-S: Kolmogorov-Smirnov

Table 3. The results of univariate covariance on impulsivity

	SS	MS	F	P-value	η^2
Fixed effect	1032.820	1471.890	24.514	0.001	0.302
Pre-test	1147.210	1153.280	19.414	0.001	0.318
Groups	31652.142	21573.114	543.532	0.001	0.531
Error	1172.330	34.760			
Total	31612.946				

SS: Sum of squares; MS: Mean square

Based on the confirmation of the effectiveness of cognitive-behavioral play therapy training in reducing impulsivity in hyperactive children, it can be said that it has reduced impulsivity in the experimental group compared to the control group.

This finding is consistent with the research results of previous studies (Karimi & Ganji, 2021; Hosseinzadeh, 2021; Watankhah et al., 2018; Al-Nijer et al., 2018; Hirschfeld & Wittenborn, 2016; Feizollahi, Sadeghi, & Rezaei, 2020).

Javanbakhsh and Shahidi (2021) showed that play therapy based on cognitive-behavioral therapy had an effect on the rate of hyperactivity as well as children's behavior in the classroom, group participation and cooperation, and attitudes toward power authorities in primary school and it improved children's performance (Javanbakhsh & Shahidi, 2021). Moreover, Ghodousi et al. (2017) revealed that an effective way to lessen externalizing behavior problems such as aggression and law-breaking behavior among street and working children was cognitive-behavioral play therapy (Ghodousi, Sajedi, Mirzaie, & Rezasoltani, 2017). In the other study, findings showed that play therapy based on the cognitive-behavioral model could reduce behavioral problems and improve the social skills of children with ADHD (Ashori & Dallalzadeh Bidgoli, 2018).

Nayebi et al. (2020) showed that both individual and group play therapy were effective in increasing the component of problem coping and decreasing the component of solution aversion and destructive coping in primary students with ADHD (Nayebi, Pasha, Bakhtiyarpour, & Eftekhar Saadi, 2020). Additionally, based on the findings of follow-up test, group play therapy was more effective than individual play therapy in terms of increasing the component of problem coping and decreasing the components of solution aversion and destructive coping in primary school students with ADHD.

The theories that explain children's play are very different in terms of the type of explanation, for example, they consider play as a component of cognitive and rational development, and a means for new skills. However, none of these theories have a contradiction in using games as a therapeutic method. Play is one of the essential components of children's lives, because they are usually in the most natural and comfortable state while playing, and as easily as adults express their feelings through speech, they do the same through play (Karimi & Ganji, 2021; Hosseinzadeh, 2021; Feizollahi et al., 2020). This therapeutic method is short-term, directive, and problem-focused. In cognitive-behavioral play therapy, the therapeutic relationship established between the counselor and the client is an informative and cooperative relationship for understanding.

Table 4. Repeated measurement results for the effects of time and interaction of time and group

Variables	Source	SS	MS	F	P-value	η^2
Impulsivity	Time	84.92	42.63	27.37	0.001	0.65
	Group	286.89	143.44	46.68	0.001	0.73
	Time × group	7.20	7.20	5.22	0.030	0.25

SS: Sum of squares; MS: Mean square

Game techniques as well as verbal and non-verbal communication are used to help children change their behavior and participate in treatment; thus, it can be said that the game is an extremely efficient and effective tool that can be used to enter the inner world of children. Therefore, the results obtained, which indicate a significant relationship between cognitive-behavioral play therapy training and the reduction of impulsivity in hyperactive children, are completely understandable (Ashori & Dallalzadeh Bidgoli, 2018; Nayebi et al., 2020).

The current research was not free of problems and obstacles in its implementation; among these limitations we can mention that the results are exclusive to children with hyperactivity disorder, 5 to 7 years old at Niayesh Primary School in Izeh City. Caution is needed in generalizing the study findings to other groups of samples. Because of self-report tool, the information obtained from this tool may not be a completely accurate description of the reality. It is possible that the conditions of the test affected the test subjects because of answering many questions of the questionnaire (pretest-posttest), and as a result, their accuracy in answering may have decreased.

Conclusion

According to the confirmation of the effectiveness of cognitive-behavioral play therapy training in reducing impulsivity in hyperactive children, it can be said that it has reduced impulsivity in the experimental group compared to the control group. Play therapy is a helpful interaction between a child and a trained adult, which seeks ways to establish communication and reduce the child's emotional disturbances through symbolic communication in the game so that during interpersonal interactions with the therapist, the child experiences acceptance, emotional discharge, reduction of painful effects, reorientation of impulses, and corrected emotional experience.

Conflict of Interests

Authors have no conflict of interests.

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