



**Comparison of the effectiveness of group training to modify the parent-child interaction pattern and the stress reduction program based on mindfulness on the symptoms of attention deficit/hyperactivity disorder and defiant disorder in children with attention deficit hyperactivity disorder and oppositional defiant disorder**

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**ABSTRACT**

**Background and Aim:** The present study was conducted with the aim of comparing the effectiveness of group training to modify the parent-child interaction pattern and the stress reduction program based on mindfulness of hyperactivity and defiant disorder symptoms in children with attention deficit hyperactivity disorder and oppositional defiant disorder. **Method:** The present study is a semi-experimental type in which a pre-test-post-test design was carried out with a control group with measurement at the baseline after the intervention and a 3-month follow-up with the control group. A number of 36 elementary school boys were studying in 10 boys' public elementary schools in the 3rd district of Tehran province in the school year of 2011-2014 and were randomly selected to the experimental group (mindfulness-based stress reduction program) n=12. Modification of parent-child interaction model) (n=12) and control (n=12) were assigned. Due to the spread of Corona, all the participants completed the demographic questionnaire (created by the researcher), the questionnaire of symptoms of disobedience disorder, the behavioral list (Achenbach and Rescular 2017) and the hyperactivity questionnaire (Swanson, Nolan and Pelham. 1981) by sending a link in three stages. The intervention sessions were conducted face-to-face in compliance with health protocols. Hypotheses related to the effectiveness of the research intervention were analyzed using multivariate covariance analysis (MANCOVA) as well as LSD follow-up tests. **Results:** The results of the present study showed that there is no significant difference between the variable mean of disobedience disorder symptoms and hyperactivity symptoms in the pre-test stage between the three groups, which indicates the homogeneity of the three research groups in the pre-test stage, the comparison of the two test groups also showed that There is a significant difference between the two test groups in the components, and the comparison of the averages indicated that the test group of the mindfulness-based stress reduction program was more effective. **Conclusion:** The results of this research showed that the two mentioned treatments can be used as psychological interventions in reducing the symptoms of disobedience disorder and hyperactivity symptoms in children aged 9-13 years, considering the greater effectiveness of the stress reduction program based on mindfulness, this treatment should be prioritized. Treatment should be given.



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## Introduction

The main characteristic of attention deficit disorder is impulsivity, which interferes with a person's performance or growth. Behavioral inattention manifests as a distraction from the task, lack of persistence, difficulty staying focused, and disorganization, and is not a sign of stubbornness or lack of understanding (Regan, Williams, & Vorhees, 2022). Aggressive behaviors can appear in the form of social interference (excessive interruption of others' words) or important decisions without thinking about their long-term consequences (such as accepting a job without getting enough information about it) (Bartoli, Callovi, Cavaleri, Cioni, Bachi, Calabrese, et al., 2022). Individuals with attention deficit/hyperactivity disorder often experience forgetfulness, restlessness, mood instability, and difficulty perceiving time (Hoogman, Van Rooij, Klein, Boedhoe, Ilioska, et al., 2022). Of course, in most people with this disorder, the symptoms of motor impulsivity decrease in adolescence and adulthood, but the symptoms of restlessness, inattention, poor planning, and hyperactivity continue. A significant percentage of children with ADHD also struggle in adulthood (Pan, Wang, Qin, Li, Chen, Zhang, et al., 2022). The oppositional defiant disorder is most prevalent in families where parents or caregivers are unresponsive or neglectful in caring for the child (Burke, Johnston, & Butler, 2021). If this disorder coexists with attention deficit hyperactivity disorder, it is more likely to continue until adulthood and become an antisocial personality disorder. Experts believe that identifying potential factors in the development and emergence of behavioral disorders, especially oppositional defiant disorder, has an undeniable role in devising and using effective interventions to improve this disorder (Beltran, Sit, and Ginsburg, 2021).

Various interventions for oppositional defiant disorder and treatment approaches have been presented. Among them, parent training is preferable and superior to other intervention methods due to its focus on the most central factor in the emergence of behavioral disorders, i.e., parents. (Lowet, Kulan, Vaida, Hesselink, Levine, Ewing-Cobbs, et al., 2022). Constant punishment and unstable regulations in the family are probably related to oppositional defiant disorder, which leads to the continuation

of the vicious cycle of parent-child interaction. In fact, children show high rates of disobedience and aggression in response to punishment. Parents also use ineffective regulatory strategies to avoid this behavior of children, which perpetuates the parent-child vicious cycle (Harpold, Biederman, Gignac, Hammerness, Surman, et al., 2007). Among parent-based interventions, interventions that emphasize the behavioral principles of parent-child interaction education are considered one of the most popular and successful intervention approaches concerning children's harmful and disruptive behaviors (Curtin, Dirks, Cruice, Herman, Newman et al., 2021). In this regard, the evidence shows that behavioral training programs for parents are introduced as the first preventive strategy for treating children with behavioral problems, and this strategy is increasing. In this type of intervention, the child's behavior modification program is implemented in the home's natural environment and by the parents who interact most with him (Valero Aguayo, Rodriguer-Boganera, Ferro Garcia, and Ascanio Velasco, 2021). Parent-child interaction is a complex and multi-dimensional phenomenon and as a result of the interaction of several key factors such as the attitude and degree of parental acceptance, the way of managing and controlling behavior, the sense of social competence and self-control, the level of parenting knowledge and skills, self-confidence and good thinking. Parenting is formed by raising a child and creating an environment with minimal conflict, general problems of parent-child relationships, and the mother's emotional care of the child (O'Toole, Lyons, and Houghton, 2021). In the approach of modifying the pattern of parent-child interaction, special procedures are used to treat behavioral disorders of children with confrontational disobedience; Procedures such as improving parents' selective attention skills, modifying parental commands, modifying children's play behavior, parents' use of deprivation, parental planning, and activity planning in order to prevent problems, especially before entering public places (Roby, Miller, Shaw, Morris, Gill, Bogen, et al., 2021).

In the method of modifying the pattern of parent-child interaction, the methods of communication and management of parents' behavior are modified. Also, procedures for improving

parents' selective attention skills, modifying parental commands, and modifying children's play behavior, will be evaluated and reconstructed (Allen, Harrington, Quetsch, et al., 2022). The treatment based on mindfulness is a psychological intervention that can help students with hyperactivity and oppositional disorders. Bishop (2018) believes mindfulness in contemporary psychology is an approach to increase awareness in responding to mental processes, including emotional disorders. Moreover, it is effective in reducing the symptoms of anxiety and other mood disorders, and it is suggested that mindfulness interventions may cause processes that underlie psychological well-being (Don et al., 2022). Mindfulness-based therapies have been reported to be highly effective in treating some clinical disorders and physical diseases because they address physical and mental dimensions (Don et al., 2022). According to the mentioned materials, the main question of the current research is that Is there a difference between the effect of group training to modify the parent-child interaction pattern and the mindfulness-based stress reduction program on symptoms of hyperactivity and defiant disorder in children with attention deficit hyperactivity disorder (combined with oppositional defiant disorder)?

### Method

This research was quasi-experimental with a pre-test-post-test design with a control group. The statistical population of this research was made up of all primary school students studying in the 3rd district of Tehran in the academic year 2021-2022. In the screening questionnaire of the research, they scored higher than the cut-off point in the questionnaires measuring hyperactivity and disobedience disorder. The aforementioned interventions were performed based on the mindfulness training protocol of Kabat-Zinn (2013) for the first experimental group during eight 2-hour sessions. For the second experimental group, eight intervention sessions were performed based on the protocol of parent-child interaction patterns of Eyberg (2018) in a 90-minute session. The participants completed the questionnaire three times, before the intervention (pre-test), after the intervention (post-test), and three months after the intervention (follow-up phase).

### Tools

**1. Achenbach Child Behavior Checklist (CBCL) - Parent Version:** Achenbach's Child Behavior Checklist assesses the emotional-

behavioral problems as well as the academic and social capabilities and competencies of children aged 6-18 from the parent's point of view and is usually completed in 20-25 minutes (Reilly et al., 2016). Minaei's research (2015) reported the range of internal consistency coefficients of scales using Cronbach's alpha formula from 0.63 to 0.95. The time stability of the scales was checked using the test-retest method with a time interval of 5-8 weeks, and the range of time stability coefficients was obtained from 0.32 to 0.67. Also, the agreement between the respondents has been examined, and the range of these coefficients fluctuated from 0.09 to 0.67.

**2. Attention Deficit Hyperactivity Disorder Standard Questionnaire:** It was designed and compiled by Swanson, Nolan, and Pelham (1981) to measure attention deficit hyperactivity disorder in children and adolescents. This questionnaire has 18 questions and 2 components and is based on a three-choice Likert scale with questions such as (I often do not pay attention to details or I am careless in homework, daily tasks, and other tasks). The content and criteria validity, and the reliability of this questionnaire have been assessed as appropriate (Zargari et al., 2022).

### Results

According to the demographic information, the mean and standard deviation of the age of the participants in the first experiment group (mindfulness-based stress reduction program) is  $11.90 \pm 5.09$ , the mean and standard deviation of the age of the participants in the second experiment group (parent-child interaction pattern) is  $11.50 \pm 5.46$ . The mean and standard deviation of the age of participants in the control group is  $11.01 \pm 4.77$ .

As the results have shown, the mean and standard deviation of hyperactivity variable with components of inattention and impulsivity of the participants, respectively, in the first test group (mindfulness-based stress reduction program) in the pre-test stage was  $34.85 \pm 3.73$ , In the post-test phase,  $23.65 \pm 4.39$  and the follow-up phase, it remained relatively constant,  $24.20 \pm 4.50$ . However, in the second test group (parent-child interaction pattern), in the pre-test stage, it was  $33.5 \pm 4.97$ ; in the post-test stage, it was  $22.15 \pm 4.76$ ; and in the follow-up stage, it was  $70.4 \pm 71.22$  has also decreased. In the control group, in the pre-test stage,  $34.05 \pm 5.01$ ; in the post-test stage,  $33.25 \pm 5.06$ ; and in the follow-up stage, it remained relatively stable at  $33.70 \pm 5.25$ .

The results showed that the mean and standard deviation of the variable of internalized behavioral problems of the participants in the first experiment group (mindfulness-based stress reduction program) in the pre-test stage was  $12.50 \pm 2.70$ , in the post-test stage  $4.15 \pm 1.14$  and the follow-up phase,  $4.25 \pm 1.16$  remained relatively constant. However, in the second experiment group (parent-child interaction pattern), in the pre-test stage, it was  $13.15 \pm 2.73$ ; in the post-test stage, it was  $6.70 \pm 2.27$ , and in the follow-up stage, it was  $7.20 \pm 2.14$  has also decreased. In the control group, in the pre-test stage,  $12.60 \pm 2.70$ ; in the post-test stage,  $13.01 \pm 2.61$ ; and in the follow-up stage, it remained relatively constant at  $12.75 \pm 2.48$ . In the same way, the mean and standard deviation for the variables of externalized behavioral problems and general problems are observed separately for different groups and stages. Training to modify the parent-child interaction pattern and stress reduction program based on mindfulness of the symptoms of the defiant disorder in children with attention deficit hyperactivity disorder and oppositional defiant disorder is effective; there is a difference between their effectiveness. Considering that the significance level for comparing the two groups of mindfulness-based stress reduction programs and modification of the parent-child interaction pattern is  $P < 0.05$ , it can be said that between the two mindfulness-based stress reduction programs and modification of the parent-child interaction pattern, there is a significant difference in the mean change of internalized behavioral problems. Referring to the significant reduction in the averages of internalized behavioral problems in both groups of the mindfulness-based stress reduction program and modification of the parent-child interaction pattern, it can be stated that these two treatments play a role in reducing internalized behavioral problems. However, considering the greater reduction of the averages of internalized behavioral problems in the mindfulness-based stress reduction program group compared to the parent-child interaction pattern modification group and the control group, it can be said that this mindfulness-based stress reduction program reduces internalized behavioral problems had a more significant effect. As the results show, considering that the significance level for comparing two groups of stress reduction program based on mindfulness and modification of the parent-child interaction pattern is  $P < 0.05$ ,

it can be said that between the two stress reduction programs based on There is a significant difference in changing the mean of externalized behavioral problems based on mindfulness and modification of the parent-child interaction pattern. Referring to the significant reduction in the averages of externalized behavioral problems in both groups of the mindfulness-based stress reduction program and modification of the parent-child interaction pattern, it can be stated that these two treatments play a role in reducing externalized behavioral problems. However, due to the greater decrease in the average of externalized behavioral problems in the mindfulness-based stress reduction program group compared to the parent-child interaction pattern modification group and the control group, it can be said that this mindfulness-based stress reduction program reduces behavioral problems. As the results show, considering that the significance level for comparing the two groups of stress reduction program based on mindfulness and modifying the parent-child interaction pattern is  $P > 0.05$ , it can be said that between the two stress reduction programs based, there is no significant difference in changing the average of overall problems on mindfulness and modification of parent-child interaction pattern. In fact, citing that the averages of general problems in both groups of the mindfulness-based stress reduction program and modification of the parent-child interaction pattern are not significantly different, it can be said that these two treatments are not significantly different in reducing general problems. Nevertheless, due to the greater reduction of the average overall problems in the mindfulness-based stress reduction program group and the parent-child interaction pattern modification group compared to the control group, it can be said that mindfulness-based stress reduction program and the parent-child interaction pattern modification group had a significant impact in reducing general problems. By modifying the parent-child interaction pattern, the mindfulness-based stress reduction program effectively improves oppositional disobedience (internalized behavioral problems, externalized behavioral problems, general behavioral problems) in children with attention deficit hyperactivity disorder and oppositional defiant disorder; and there is a difference between their effectiveness in the follow-up phase.



Also, the results showed that the F ratio obtained in the group factor is significant in the dimensions of emotional ataxia ( $p < 0.01$ ) and self-differentiation ( $p < 0.01$ ). This finding indicates that mindfulness training based on eating improved dyslexia in overweight women. In this regard, an analysis of variance with repeated measurements was done for the experimental group in three phases of therapeutic intervention, where the observed F ratio was in the improvement of emotional dyslexia ( $p < 0.01$ ) and self-differentiation ( $p < 0.01$ ). Considering that the significance level for comparing the two groups of mindfulness-based stress reduction program and modification of parent-child interaction pattern is  $P > 0.05$ , it can be said that between the two mindfulness-based stress reduction programs and modification of parent-child interaction pattern, there is no significant difference in the average change of hyperactivity and impulsivity symptoms. However, due to the existence of a significant difference between each of the test groups, i.e., the mindfulness-based stress reduction program group and the parent-child interaction model modification group, compared to the control group, it can be stated that these implemented treatments, i.e. the stress reduction program based on mindfulness and modifying the parent-child interaction pattern, both have had a significant effect in reducing the symptoms of hyperactivity and impulsivity. Nevertheless, due to the greater decrease in the average of impulsivity dimension in the parent-child interaction pattern modification group compared to the mindfulness-based stress reduction program group and the control group, it can be stated that this modification of the parent-child interaction pattern had a more significant effect in improving the impulsivity dimension.

### Conclusion

This study was designed and implemented to compare the effectiveness of group training to modify the parent-child interaction pattern and the stress reduction program based on mindfulness of hyperactivity and defiant disorder symptoms in children with attention deficit hyperactivity disorder and oppositional defiant disorder .

In explaining the findings of this research, it can be pointed out that mindfulness-based stress reduction treatment significantly affects the quality of life and psychological well-being of children with attention deficit hyperactivity disorder and oppositional defiant disorder.

Mindfulness affects the emotional and sensory components of the body through self-regulation of attention through meditation activities. Based on these findings, it can be said that reducing activities, especially those that are socially reinforced and for a child who is rejected by society because of the constant mischief seen by the child in public, has value and importance. This can cause more social withdrawal, decrease self-efficacy, increase anxiety and depression, and feelings of helplessness, and decrease the quality of life in these children. Quality of life is significantly correlated with stress and depression. As a result, it is expected that positive changes in some psychological functions, such as reducing stress, increasing well-being and mental health, will be made by performing regular mindfulness exercises. As a result, these changes can affect the quality of life of children with attention deficit hyperactivity disorder (Thomas et al., 2017). The results of the studies show that the quality of life of children with attention deficit hyperactivity disorder and oppositional defiant disorder is lower in the psychological dimension compared to other dimensions (Eyeberg et al., 2001). Different terms, such as the balance between positive and negative emotions and a life with good quality define improvement of mental health. Therefore, what is clear from the many definitions is that mental health is related to various factors such as quality of life, coping strategies in dealing with life challenges, and managing stress (Funderburk et al., 1998). Children with attention deficit hyperactivity disorder and oppositional defiant disorder became more aware of their body's emotional and sensory components. By recounting their experiences (both positive and negative) and allowing thoughts to pass without labeling, they understood that thoughts are just thoughts. They stopped criticizing and ruminating and began actively and consciously accepting unpleasant experiences and reducing anxiety.

### Conflict of Interest

According to the authors, this article has no financial sponsor or conflict of interest.

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