

Comparison of the Effectiveness of Emotion Regulation-Based Play Therapy and a Child-Centered Mindfulness-Based Intervention on Executive Functions in Children with Attention-Deficit/Hyperactivity Disorder

Fatemeh. Chorami¹, Armin. Mahmoodi^{2*}

¹ PhD Student, Department of Psychology, Yas.C., Islamic Azad University, Yasuj, Iran

² Assistant Professor, Department of Psychology, Yas.C., Islamic Azad University, Yasuj, Iran

* Corresponding author email address: Armin.Mahmoudi@iau.ac.ir

Article Info

Article type:

Original Research

Section:

Health Psychology

How to cite this article:

Chorami, F. & Mahmoodi, A. (2026). Comparison of the Effectiveness of Emotion Regulation-Based Play Therapy and a Child-Centered Mindfulness-Based Intervention on Executive Functions in Children with Attention-Deficit/Hyperactivity Disorder. *KMAN Counseling and Psychology Nexus*, 4, 1-13.

<http://doi.org/10.61838/kman.hp.psynexus.5798>



© 2026 the authors. Published by KMAN Publication Inc. (KMANPUB), Ontario, Canada. This is an open access article under the terms of the Creative Commons Attribution-NonCommercial 4.0 International (CC BY-NC 4.0) License.

ABSTRACT

This study aimed to compare the effectiveness of emotion regulation-based play therapy and a child-centered mindfulness-based intervention on executive functions in children with attention-deficit/hyperactivity disorder. The present study was a quasi-experimental pretest–posttest design with a control group and a one-month follow-up. The statistical population included children aged 6 to 12 years with attention-deficit/hyperactivity disorder who were referred to child counseling centers in Yasuj, Iran, during 2025–2026. Using purposive sampling and based on the inclusion and exclusion criteria, 45 children were selected and assigned to three groups: emotion regulation-based play therapy, child-centered mindfulness-based intervention, and control group, with 15 participants in each group. The first experimental group received 12 sessions of emotion regulation-based play therapy, and the second experimental group received 10 sessions of child-centered mindfulness-based intervention. The control group was placed on a waiting list and received no intervention during the study. Data were collected using the Conners Parent Rating Scale for screening and the Barkley Executive Functioning Scale for measuring executive functions. Data were analyzed using repeated-measures analysis of variance and Bonferroni post hoc test in SPSS version 27. The results showed that the main effect of time was significant for executive functions, $F = 821.81$, $p < .001$, partial $\eta^2 = .95$. The main effect of group was also significant, $F = 8.41$, $p = .001$, partial $\eta^2 = .28$. Moreover, the interaction effect of time and group was significant, $F = 216.42$, $p < .001$, partial $\eta^2 = .91$. Bonferroni comparisons indicated that both intervention groups showed significantly lower executive-function difficulty scores than the control group at posttest and follow-up, $p < .001$. However, no significant difference was found between the two intervention groups at posttest or follow-up. Emotion regulation-based play therapy and child-centered mindfulness-based intervention were both effective in improving executive functions in children with attention-deficit/hyperactivity disorder, and their effects remained stable at the one-month follow-up. Since no significant difference was observed between the two interventions, both approaches may be considered useful child-centered methods for reducing executive-function difficulties in this population.

Keywords: Attention-Deficit/Hyperactivity Disorder; Executive Functions; Play Therapy; Emotion Regulation-Based Play Therapy; Child-Centered Mindfulness.

1. Introduction

Attention-deficit/hyperactivity disorder is one of the most common neurodevelopmental disorders of childhood and is typically characterized by developmentally inappropriate patterns of inattention, hyperactivity, and impulsivity that interfere with learning, behavioral regulation, family interactions, and classroom functioning. Contemporary clinical and developmental accounts describe ADHD not merely as a disorder of observable activity level or attentional weakness, but as a multidimensional condition involving neurocognitive, behavioral, motivational, and self-regulatory impairments that may persist across developmental stages if not addressed through timely and appropriate intervention (Faraone et al., 2024). The importance of ADHD extends beyond childhood because difficulties associated with the disorder can affect educational attainment, peer relationships, self-control, and later functional outcomes, making early intervention a major priority in child mental health and school-based psychological services (Ophir, 2025). The etiology of ADHD is complex and multifactorial, involving genetic, neurobiological, environmental, and developmental factors. Evidence from genetically informed research has emphasized the broad range of exposures and outcomes associated with ADHD liability, suggesting that ADHD should be understood within a wider developmental and biopsychosocial framework rather than through a narrow symptom-based perspective (Soler Artigas et al., 2023). In addition, childhood ADHD is frequently accompanied by sleep problems, difficulties in sustained attention, impulsive responding, and reduced behavioral persistence, all of which can intensify executive-function problems and compromise adaptive performance in home and school settings (Yin et al., 2022). Therefore, interventions for children with ADHD increasingly focus not only on reducing overt symptoms, but also on strengthening the underlying cognitive and self-regulatory capacities that support daily functioning.

Executive functions occupy a central position in current explanations of ADHD. Executive functions refer to a set of higher-order cognitive processes that enable children to regulate behavior, inhibit inappropriate responses, hold information in working memory, plan actions, organize tasks, shift flexibly between demands, and monitor goal-directed behavior. These capacities are especially important during primary school years, when children are expected to follow multi-step instructions, delay immediate impulses, manage time, complete assignments, participate in

structured activities, and regulate behavior according to classroom expectations. Systematic evidence on neurodevelopmental conditions shows that executive-function weaknesses are not limited to a single cognitive domain, but may include inhibition, working memory, planning, attentional control, and cognitive flexibility, all of which are directly relevant to ADHD-related impairment (Sadozai et al., 2024). Developmental research has also shown that children and adolescents with ADHD may display impulsive and risky decision-making, suggesting that problems in inhibition and evaluation of consequences should be interpreted within the child's developmental stage and environmental demands (Dekkers et al., 2022). In school contexts, children with ADHD and their teachers frequently report difficulties in maintaining attention, completing classroom tasks, organizing learning materials, and sustaining effort over time, which indicates that executive-function impairments are not abstract cognitive weaknesses but daily functional problems experienced in real educational environments (McDougal et al., 2023). For this reason, strengthening executive functions has become an important target in psychosocial and educational interventions for children with ADHD.

Although pharmacological treatment is frequently used in ADHD management, medication alone does not fully address the broad developmental and functional needs of all children. Methylphenidate remains one of the most widely studied pharmacological treatments for children and adolescents with ADHD, and evidence has shown its value in symptom management; however, medication-based approaches may vary in acceptability, side effects, long-term adherence, and responsiveness across children (Storebo et al., 2023). Consequently, psychosocial and non-pharmacological interventions have received increasing attention as complementary or alternative approaches for improving executive functions and daily functioning in children with ADHD. A systematic review and meta-analysis of non-pharmacological interventions on executive functions in children and adolescents with ADHD indicated that targeted psychological, behavioral, cognitive, and activity-based interventions can produce meaningful gains in executive processes, although the magnitude and durability of effects may differ across intervention types and implementation conditions (Qiu et al., 2023). Neurofeedback has also been investigated as a non-pharmacological intervention for ADHD, with systematic evidence highlighting both the potential and the methodological complexities of training self-regulation

through neurophysiological feedback (Kuznetsova et al., 2023). Other studies have examined motor, perceptual, and self-regulatory strategies, including visual perception exercises and self-regulation strategy training, as ways to improve attention-related capacities in children with ADHD (Shadfar et al., 2023; Shahi et al., 2024). These findings collectively show that ADHD intervention research is moving toward multidimensional approaches that aim to strengthen the child's regulatory systems rather than merely suppressing behavioral symptoms.

Play therapy is one of the most developmentally appropriate psychological interventions for children because play is the natural medium through which children communicate, express internal experiences, practice roles, test rules, and acquire self-regulation skills. For children with ADHD, play-based interventions may be particularly suitable because they provide structured but engaging opportunities to practice inhibition, attention control, turn-taking, working memory, planning, and problem solving within emotionally meaningful and motivating activities. Child-centered play therapy has been shown to influence executive functions in children with ADHD, suggesting that therapeutic play can support improvement in cognitive and behavioral regulation when activities are designed around children's developmental needs and capacities (Wong et al., 2023). Recent work on child-centered play therapy has also emphasized its contribution to mindful expression and social-emotional competencies in preschool children, indicating that play can function as a bridge between internal self-awareness and external behavioral control (Robinson et al., 2024). In addition, play-based interventions have been applied to children with emotional and behavioral difficulties in different contexts, demonstrating that symbolic play, role-play, storytelling, and structured games can help children recognize internal states, practice alternative responses, and strengthen regulatory skills in a non-threatening therapeutic environment (Benu, 2023). Evidence from studies on cognitive-behavioral play therapy and play therapy for children with ADHD further supports the idea that play-based methods can be adapted to address resilience, self-control, and regulatory functioning in children who struggle with impulsivity and attentional instability (Karoubi, 2023). Therefore, emotion regulation-based play therapy can be conceptualized as a structured intervention that uses the motivational and symbolic power of play to exercise core executive processes.

The rationale for emotion regulation-based play therapy in children with ADHD is grounded in the close relationship

between emotional arousal, impulsivity, attention, and executive control. Children with ADHD often experience rapid shifts in arousal and difficulty pausing before responding, and these difficulties can interfere with planning, inhibition, and sustained attention. Emotion regulation-based play therapy uses techniques such as emotional storytelling, role-playing, stop-and-think games, frustration-tolerance activities, breathing exercises, and problem-solving play to help children practice executive control within emotionally activating situations. Studies in related child populations have indicated that play therapy can improve children's capacity to regulate internal states and respond more flexibly to challenging situations (Esmaeili Shahna & Rahmanian, 2025). Research on play therapy among children and adolescents with behavioral and technology-related problems has also suggested that structured play interventions can influence regulatory processes and interpersonal functioning by creating repeated opportunities for guided practice in self-control and reflective responding (Darakhsh et al., 2024). Moreover, comparative research has increasingly examined play-based interventions alongside other child-focused psychological approaches, indicating that play therapy can be positioned within a broader evidence-based intervention framework for children with difficulties in attention, self-regulation, and developmental functioning (Giori et al., 2024). These findings justify the use of an emotion regulation-based play therapy protocol for children with ADHD, especially when the intervention activities are organized to target executive components such as inhibition, working memory, planning, attention maintenance, and behavioral monitoring.

Mindfulness-based interventions represent another promising approach for improving executive functions in children with ADHD. Mindfulness is commonly defined as purposeful, present-moment, nonjudgmental awareness of internal and external experiences. In child-focused interventions, mindfulness practices are typically adapted through brief, concrete, sensory, and movement-based exercises such as mindful breathing, body scan, mindful listening, mindful eating, mindful movement, and noticing thoughts and sensations. These practices may enhance executive functions by strengthening attentional control, reducing automatic responding, increasing response inhibition, and helping children observe impulses before acting on them. Systematic review and meta-analytic evidence has indicated that mindfulness interventions can be beneficial for individuals with ADHD, although effects may depend on age, delivery format, intervention duration, and

the degree of adaptation to children's developmental characteristics (Kretschmer et al., 2022). More recent systematic evidence focusing on children and adolescents with ADHD has also supported the potential of mindfulness programs for improving attention-related and self-regulatory outcomes, while emphasizing the need for rigorously designed studies that compare mindfulness with other active interventions (Sultan et al., 2025). Child-centered mindfulness skills training has been shown to improve self-control in children with ADHD, suggesting that mindfulness practices can be translated into concrete skills relevant to executive functioning (Keshavarz Valian et al., 2022). Similarly, studies using child-centered mindfulness in children with learning and developmental difficulties have reported improvements in attention and response inhibition, supporting the relevance of mindfulness exercises for executive processes that overlap with ADHD-related impairments (Sarvarian et al., 2023). These findings suggest that mindfulness-based intervention may be an appropriate method for strengthening executive functions in children with ADHD.

Child-centered mindfulness may be especially relevant for children aged 6 to 12 years because it can be taught through simple, experiential, and parent-supported exercises that fit children's cognitive and emotional development. Rather than relying on abstract meditation instructions, child-centered mindfulness programs use play-like and sensory practices, such as breathing with visual aids, mindful movement, progressive muscle relaxation, and exercises that help children distinguish between a busy mind and a calm mind. This format is important because children with ADHD may have difficulty sustaining attention in conventional verbal interventions, while brief and interactive mindfulness exercises can create repeated opportunities to practice pausing, noticing, and redirecting attention. Research on child-centered mindfulness has shown its usefulness in clinical and educational contexts beyond ADHD, including children with specific learning difficulties and children with social anxiety, which supports the adaptability of this approach to different developmental needs (Rashidi Ahmadabadi et al., 2024; Zare Nejad et al., 2024). Mindfulness-based approaches have also been discussed alongside interventions targeting academic and self-control processes in students with ADHD, indicating that awareness-based and self-regulation-based methods may share a common pathway through improved inhibitory control and intentional behavior (Sadeghi, 2023). At the same time, evidence-based psychosocial intervention

research emphasizes that ADHD treatments should be developmentally sensitive, feasible for families, and applicable in real-world child service settings, rather than being limited to highly controlled research contexts (Evans et al., 2024). Therefore, child-centered mindfulness provides a theoretically coherent and practical approach for targeting executive-function difficulties in children with ADHD.

Despite the expanding literature on play therapy and mindfulness-based interventions, comparative evidence remains limited, particularly in relation to executive functions among children with ADHD. Many studies have examined only one intervention, one outcome domain, or one population, making it difficult to determine whether different child-centered interventions produce comparable or distinct patterns of change. For example, mentalization-based drama therapy has been shown to influence sustained attention in children with ADHD, indicating that structured expressive interventions may support attention-related executive processes (Kaboli et al., 2023). Other studies have compared executive-function-based play therapy and child-centered mindfulness in children with ADHD in relation to cognitive regulatory outcomes, suggesting that both approaches may have therapeutic value but require further comparative investigation across core executive-function indicators (Babaei Mahdiah et al., 2025). Research on child-centered mindfulness interventions for executive functions in children with anxiety-related difficulties also suggests that mindfulness may influence cognitive control processes beyond diagnostic boundaries, but the extent to which such findings generalize to ADHD populations requires additional study (Zare Nejad et al., 2024). Likewise, recent comparative work in school-age children has shown growing interest in examining mindfulness-based and play-based interventions side by side, but more focused research is needed to clarify their relative effectiveness for executive functioning in children with ADHD (Gilori et al., 2024). Given that executive dysfunction is a central mechanism of impairment in ADHD and that both emotion regulation-based play therapy and child-centered mindfulness are developmentally appropriate, engaging, and potentially feasible in child counseling centers, direct comparison of these two interventions can provide useful evidence for clinicians, parents, and educational specialists.

Therefore, the aim of the present study was to compare the effectiveness of emotion regulation-based play therapy and a child-centered mindfulness-based intervention on executive functions in children with attention-deficit/hyperactivity disorder.

2. Methods and Materials

2.1. Study Design and Participants

The present study was conducted using a quasi-experimental pretest–posttest design with a control group and a one-month follow-up. The statistical population consisted of all children aged 6 to 12 years with attention-deficit/hyperactivity disorder who were referred to child counseling centers in Yasuj, Iran, during 2025–2026. The study included two experimental groups and one control group. The first experimental group received emotion regulation-based play therapy, the second experimental group received a child-centered mindfulness-based intervention, and the control group was placed on a waiting list and received no intervention during the study period. The final sample consisted of 45 children with attention-deficit/hyperactivity disorder, selected through purposive sampling according to the inclusion and exclusion criteria and then matched and assigned to three groups of 15 participants. The sample size was determined using G*Power software, with an alpha level of 0.05, statistical power of 0.95, and an effect size of 0.70, indicating that 15 participants per group would be adequate. Inclusion criteria were age between 6 and 12 years, a formal diagnosis of attention-deficit/hyperactivity disorder based on DSM-5 criteria, written informed consent from parents or legal guardians, age-appropriate willingness of the child to participate in group activities, and absence of concurrent psychological or medical interventions that could interfere with executive-function outcomes. Exclusion criteria included withdrawal of the child or parents from the study at any stage and absence from more than two intervention sessions. After obtaining the necessary approval from the Ethics Committee of Islamic Azad University, Yasuj Branch, under the code IR.IAU.YASOOJ.REC.1404.055, the researcher contacted child counseling centers in Yasuj and identified eligible children. Parents were invited to an orientation session, in which the objectives, procedures, number of sessions, confidentiality principles, voluntary participation, and follow-up assessment were explained. After written informed consent was obtained, the pretest was administered to all three groups. The interventions were then implemented for the two experimental groups, while the control group remained on the waiting list. Immediately after completion of the interventions, the posttest was administered, and one month later, the follow-up assessment was conducted using the same measurement procedure.

2.2. Measures

Data were collected using the Conners Parent Rating Scale and the Barkley Executive Functioning Scale. The Conners Parent Rating Scale was used to support the screening and identification of children with symptoms of attention-deficit/hyperactivity disorder. The short parent form contains 48 items rated on a four-point Likert scale ranging from 0 to 3, and the total score is used to indicate the severity of ADHD-related behavioral symptoms. The scale has been widely used in clinical and research settings, and previous studies have reported acceptable reliability and validity for the parent form. The main research outcome was assessed using the Barkley Executive Functioning Scale for children and adolescents, developed by Barkley in 2012. This scale consists of 70 items scored on a four-point Likert scale ranging from “never” to “always.” The scale assesses major domains of executive functioning, including time management, organization and problem solving, inhibition, self-directed motivation, and broader self-regulatory executive processes. The total score is obtained by summing the item scores, with higher scores indicating greater executive-function difficulties. Barkley reported high internal consistency for the total scale, and Iranian validation studies have also confirmed acceptable reliability for the total score and its domains. In the present study, the parent-report form was completed at pretest, posttest, and one-month follow-up.

2.3. Interventions

The emotion regulation-based play therapy protocol was implemented for the first experimental group in 12 group sessions, each lasting 60 minutes, held twice weekly over six weeks. The protocol was adapted from Beniou’s play therapy program and was designed for children aged 6 to 12 years with attention-deficit/hyperactivity disorder. Each session included an opening phase for greeting, warm-up, and review of the previous session, a main phase involving structured therapeutic play activities, and a closing phase for summary and home practice. The first session focused on establishing a therapeutic relationship, creating a sense of safety, introducing group rules, and observing the child’s attention, impulsivity, and interaction patterns through free play, drawing, and introductory games. The second session introduced recognition and labeling of basic internal states through feeling cards, storytelling, guessing games, and a feeling thermometer. The third session focused on impulse control and behavioral inhibition through games such as “red

light, green light,” “freeze game,” and the “stop–think–act” technique. The fourth session targeted sustained attention and concentration through puzzles, spot-the-difference games, and listening tasks followed by questions. The fifth session emphasized problem solving and decision-making through unfinished stories, solution-selection games, and discussion of consequences. The sixth session trained children to identify bodily and behavioral signs of anger and to use calming strategies such as deep breathing, balloon breathing, reverse counting, and role-playing. The seventh session focused on working memory through visual memory games, movement-sequence repetition, and auditory instruction-following activities. The eighth session strengthened cooperative participation, turn-taking, and peer interaction through group games and role-play. The ninth session addressed frustration tolerance and resilience through win–lose games, motivational stories, and self-calming statements. The tenth session focused on planning and organization using visual schedules, sorting games, and step-by-step activities. The eleventh session emphasized self-awareness, recognition of strengths, and self-confidence through activities such as the “success box.” The final session reviewed all learned skills, allowed children to express their perceived progress, and provided parents with guidance for continued practice at home.

The child-centered mindfulness-based intervention was implemented for the second experimental group in 10 group sessions, each lasting 45 minutes, held twice weekly over five weeks. The protocol was adapted from the mindfulness training model of Burdick and Jennings and was designed to help children practice present-moment awareness, attention control, bodily awareness, and non-reactive responding through developmentally appropriate exercises. Parents were actively involved in the process and were asked to support daily home practice and record brief practice notes. The first session introduced mindfulness, explained the purpose of the program to parents and children, described how mindfulness exercises could be incorporated into daily routines, and taught basic meditation postures such as sitting on a chair, lying down, cross-legged sitting, lotus posture, and hand positioning. The second session focused on mindful breathing and abdominal breathing and used a glitter bottle activity to demonstrate the difference between a scattered mind and a calm mind. The third session introduced body scan practice after reviewing mindful breathing. The fourth session focused on awareness of the present moment through the glass-of-water exercise and simple mindful movements. The fifth session trained

awareness through the five senses, including mindful eating, mindful listening, mindful touching, mindful smelling, and mindful seeing. The sixth session focused on awareness of inner experiences using relaxation breathing, guided noticing exercises, reflective notes, and child-friendly scenarios such as the “helpful inspector and unhelpful inspector.” The seventh session reviewed breathing exercises and body scan practice and introduced awareness of thoughts through the “flowing river meditation.” The eighth session focused on progressive muscle relaxation and included the “changing the channel” game to strengthen attentional flexibility. The ninth session used breathing meditation, mindful movement, and repeated child-friendly scenarios to practice awareness of bodily movement and response patterns. The tenth session reviewed all mindfulness practices taught in previous sessions and focused on applying mindfulness in daily activities, together with loving-kindness practice through friendly wishes. Home practice was assigned at the end of each session to strengthen continuity between the sessions and the child’s daily environment.

2.4. Data Analysis

Data were analyzed using SPSS version 27. Descriptive statistics, including mean and standard deviation, were calculated for executive-function scores in the three groups across the pretest, posttest, and one-month follow-up stages. To test the research hypotheses and compare the effectiveness of the two interventions over time, repeated-measures analysis of variance was used because the study included three groups and three measurement stages. Before conducting the main analysis, the statistical assumptions were examined. The normality of score distributions was assessed using the Shapiro–Wilk test, homogeneity of variances was examined using Levene’s test, sphericity was evaluated using Mauchly’s test, and homogeneity of covariance matrices was assessed using Box’s M test. When the assumption of sphericity was not met, Greenhouse–Geisser or Huynh–Feldt corrections were applied. Bonferroni post hoc comparisons were used to examine pairwise differences between measurement stages and between groups. The significance level for all statistical tests was set at 0.05, and partial eta squared was used to estimate effect size.

3. Findings and Results

The final sample consisted of 45 children with attention-deficit/hyperactivity disorder, assigned to three equal groups: emotion regulation-based play therapy, child-centered mindfulness-based intervention, and control group, with 15 participants in each group. In the emotion regulation-based play therapy group, 4 participants were girls and 11 were boys, representing 26.6% and 73.4% of the group, respectively. In the child-centered mindfulness-based intervention group, 5 participants were girls and 10 were boys, representing 33.4% and 66.6% of the group,

respectively. In the control group, 4 participants were girls and 11 were boys, representing 26.6% and 73.4% of the group, respectively. The chi-square test showed no significant difference among the groups in terms of gender distribution, $\chi^2 = 0.47$, $df = 2$, $p = .790$. The mean age of participants was 9.35 years in the emotion regulation-based play therapy group, 8.95 years in the child-centered mindfulness-based intervention group, and 8.88 years in the control group. The results of one-way analysis of variance showed no significant difference among the groups in terms of age, $F = 1.64$, $df = 2$, $p = .439$. Therefore, the three groups were demographically comparable before the intervention.

Table 1

Descriptive Statistics for Executive Functions by Group and Measurement Stage

Variable	Measurement Stage	Group	Mean	Standard Deviation	N
Executive functions	Pretest	Emotion regulation-based play therapy	168.93	7.36	15
Executive functions	Pretest	Child-centered mindfulness-based intervention	166.66	13.02	15
Executive functions	Pretest	Control	171.26	8.58	15
Executive functions	Pretest	Total	168.95	9.91	45
Executive functions	Posttest	Emotion regulation-based play therapy	155.00	7.84	15
Executive functions	Posttest	Child-centered mindfulness-based intervention	153.33	12.51	15
Executive functions	Posttest	Control	171.46	8.78	15
Executive functions	Posttest	Total	159.93	12.74	45
Executive functions	Follow-up	Emotion regulation-based play therapy	155.00	8.21	15
Executive functions	Follow-up	Child-centered mindfulness-based intervention	153.00	12.46	15
Executive functions	Follow-up	Control	171.53	8.98	15
Executive functions	Follow-up	Total	159.84	12.92	45

As shown in Table 1, the mean score of executive-function difficulties in the emotion regulation-based play therapy group decreased from 168.93 at pretest to 155.00 at posttest and remained stable at 155.00 at follow-up. In the child-centered mindfulness-based intervention group, the mean score decreased from 166.66 at pretest to 153.33 at posttest and 153.00 at follow-up. In contrast, the control group showed no meaningful improvement, with mean scores of 171.26 at pretest, 171.46 at posttest, and 171.53 at follow-up. Since higher scores on the executive-function scale indicate greater executive-function difficulties, these descriptive findings suggest that both interventions were associated with a reduction in executive-function deficits, whereas the control group remained almost unchanged across the three measurement stages.

Before conducting the repeated-measures analysis of variance, the statistical assumptions were examined. The

Shapiro–Wilk test showed that executive-function scores were normally distributed across all groups and measurement stages, with p values greater than .05. Specifically, the normality assumption was confirmed for the emotion regulation-based play therapy group at pretest, posttest, and follow-up, for the child-centered mindfulness-based intervention group at all three stages, and for the control group at all three stages. The homogeneity of variances was also confirmed using Levene’s test at pretest, posttest, and follow-up, with p values of .236, .382, and .430, respectively. The homogeneity of covariance matrices was supported by Box’s M test, Box’s $M = 21.40$, $F = 1.59$, $p = .085$. However, Mauchly’s test indicated that the assumption of sphericity was not met, $W = .319$, $df = 2$, $p < .001$. Therefore, the Greenhouse–Geisser correction was applied in the repeated-measures analysis of variance.

Table 2*Repeated-Measures Analysis of Variance for Executive Functions*

Source of Variation	Sum of Squares	df	Mean Square	F	p	Partial Eta Squared	Statistical Power
Time	2466.31	1.35	1816.36	821.81	< .001	.95	1.000
Time × Group	1298.97	2.71	478.32	216.42	< .001	.91	1.000
Error Time	126.04	57.02	2.21	—	—	—	—
Group	4977.64	2	2488.82	8.41	.001	.28	.950
Error Group	12423.95	42	295.80	—	—	—	—

As shown in Table 2, the main effect of time was statistically significant, $F = 821.81$, $p < .001$, partial $\eta^2 = .95$, indicating that executive-function scores changed significantly across pretest, posttest, and follow-up. The main effect of group was also statistically significant, $F = 8.41$, $p = .001$, partial $\eta^2 = .28$, showing that the three groups differed significantly when the measurement stages were considered together. More importantly, the interaction effect

of time and group was statistically significant, $F = 216.42$, $p < .001$, partial $\eta^2 = .91$. This finding indicates that the pattern of change in executive-function scores over time differed significantly across the three groups. In other words, the reduction in executive-function difficulties observed in the two intervention groups was significantly different from the pattern observed in the control group.

Table 3*Bonferroni Post Hoc Comparisons for Executive Functions*

Measurement Stage	Group I	Group J	Mean Difference I-J	Standard Error	p
Pretest	Emotion regulation-based play therapy	Control	-2.33	3.63	1.000
Pretest	Emotion regulation-based play therapy	Child-centered mindfulness-based intervention	2.27	3.63	1.000
Pretest	Child-centered mindfulness-based intervention	Control	-4.60	3.63	.639
Posttest	Emotion regulation-based play therapy	Control	-16.46	3.62	< .001
Posttest	Emotion regulation-based play therapy	Child-centered mindfulness-based intervention	1.67	3.62	1.000
Posttest	Child-centered mindfulness-based intervention	Control	-18.13	3.62	< .001
Follow-up	Emotion regulation-based play therapy	Control	-16.53	3.67	< .001
Follow-up	Emotion regulation-based play therapy	Child-centered mindfulness-based intervention	2.00	3.67	1.000
Follow-up	Child-centered mindfulness-based intervention	Control	-18.53	3.67	< .001

As shown in Table 3, there were no significant differences among the three groups in executive-function scores at the pretest stage, indicating that the groups were comparable before the interventions. At the posttest stage, the emotion regulation-based play therapy group had significantly lower executive-function difficulty scores than the control group, with a mean difference of -16.46, $p < .001$. Similarly, the child-centered mindfulness-based intervention group had significantly lower scores than the control group, with a mean difference of -18.13, $p < .001$. These results show that both interventions significantly reduced executive-function difficulties compared with the control

condition. At the follow-up stage, the significant differences remained stable. The emotion regulation-based play therapy group continued to show significantly lower scores than the control group, with a mean difference of -16.53, $p < .001$, and the child-centered mindfulness-based intervention group also remained significantly lower than the control group, with a mean difference of -18.53, $p < .001$. However, the difference between the two intervention groups was not statistically significant at either posttest or follow-up, $p = 1.000$. Therefore, both interventions were effective in improving executive functions in children with attention-

deficit/hyperactivity disorder, and no significant difference was found between their effectiveness.

4. Discussion

The present study aimed to compare the effectiveness of emotion regulation-based play therapy and a child-centered mindfulness-based intervention on executive functions in children with attention-deficit/hyperactivity disorder. The findings showed that executive-function difficulty scores decreased significantly from pretest to posttest in both intervention groups, while the control group showed no meaningful change across the same period. Since higher scores on the executive-function scale indicate greater impairment, the observed decrease in the two intervention groups indicates improvement in executive functioning. The significant time effect demonstrated that scores changed across the three measurement stages, and the significant group effect showed that the three groups differed in their overall executive-function scores. More importantly, the significant interaction between time and group indicated that the pattern of change across pretest, posttest, and follow-up was different among the groups. Post hoc comparisons confirmed that both emotion regulation-based play therapy and child-centered mindfulness-based intervention produced significantly lower executive-function difficulty scores than the control condition at posttest and follow-up. However, no significant difference was found between the two intervention groups at either posttest or follow-up. Therefore, the findings support the effectiveness of both interventions in improving executive functions in children with ADHD, while also suggesting that neither method was statistically superior to the other in the present sample.

The effectiveness of emotion regulation-based play therapy on executive functions can be explained by the developmental compatibility of play with the cognitive and behavioral characteristics of children with ADHD. Children in this age range often learn more effectively through concrete, active, symbolic, and emotionally engaging experiences than through purely verbal instruction. In the play therapy protocol used in this study, children repeatedly practiced stopping before acting, following rules, taking turns, sustaining attention, remembering instructions, solving problems, tolerating frustration, organizing activities, and reviewing behavioral consequences. These activities directly correspond to core components of executive functioning, including inhibition, working memory, attentional control, planning, organization, and

self-monitoring. This interpretation is consistent with evidence showing that child-centered play therapy can improve executive functions in children with ADHD, particularly because play-based activities provide an emotionally safe context in which children can practice self-directed control without experiencing the task as punitive or academically demanding (Wong et al., 2023). The findings are also aligned with research emphasizing that play therapy supports children's reflective awareness and social-emotional competencies, which may indirectly strengthen the cognitive control processes needed for better executive functioning (Robinson et al., 2024). In addition, evidence from play-based interventions with children who experience behavioral and regulatory problems suggests that structured therapeutic play can create repeated opportunities for children to rehearse adaptive responses and internalize behavioral control strategies (Benu, 2023; Darakhsh et al., 2024).

Another explanation for the effectiveness of play therapy is that ADHD is strongly associated with impaired inhibition, impulsive decision-making, and difficulty delaying immediate responses. Executive-function deficits in ADHD are not limited to attention weakness; they also include difficulty evaluating consequences, organizing goal-directed behavior, and regulating responses under conditions of emotional or environmental stimulation (Dekkers et al., 2022). In the current study, the play therapy sessions included games such as "red light, green light," freeze games, sequencing tasks, memory games, problem-solving stories, and structured planning activities. These exercises required the child to pause, remember rules, inhibit dominant responses, and choose a planned action. Such repeated practice may explain the significant reduction in executive-function difficulty scores after the intervention. This interpretation is consistent with systematic evidence showing that executive-function impairment is a transdiagnostic feature of neurodevelopmental conditions and that children with ADHD often need interventions targeting multiple executive domains rather than only one isolated skill (Sadozai et al., 2024). The findings also correspond with studies showing that expressive, cognitive-behavioral, and play-based approaches can improve attention-related and self-regulatory capacities in children with ADHD (Kaboli et al., 2023; Karoubi, 2023). Therefore, the present result adds support to the view that play therapy can function as an executive-function training context when therapeutic games are intentionally designed around

inhibition, working memory, planning, and attentional persistence.

The significant effect of the child-centered mindfulness-based intervention is also theoretically meaningful. Mindfulness exercises train children to notice present-moment experiences, redirect attention, observe impulses, and return to a selected attentional anchor such as breathing, body sensations, sound, movement, or sensory experience. These processes overlap closely with executive functions, especially sustained attention, response inhibition, attentional shifting, and monitoring of internal and external cues. The intervention used in the present study included mindful breathing, abdominal breathing, body scan, mindful movement, five-sense awareness, progressive muscle relaxation, awareness of thoughts, and application of mindfulness in daily activities. These exercises may have helped children develop the ability to pause before responding, reduce distractibility, and maintain attention on structured tasks. This explanation is supported by systematic review and meta-analytic findings indicating that mindfulness interventions can be beneficial for individuals with ADHD and may improve attention and self-regulatory processes when they are adapted to developmental level (Kretschmer et al., 2022). Similarly, a recent systematic review of mindfulness programs for children and adolescents with ADHD reported that mindfulness-based interventions can improve attention-related outcomes and behavioral regulation, although the strength of effects may vary according to intervention structure and implementation quality (Sultan et al., 2025). The current findings are consistent with this literature because the child-centered mindfulness group showed a clear reduction in executive-function difficulty scores compared with the control group.

The effectiveness of child-centered mindfulness can also be understood in relation to the school and family demands experienced by children with ADHD. Children with ADHD often have difficulty sustaining attention, completing classroom tasks, organizing materials, and following instructions, and these challenges are directly observed by teachers and parents in everyday educational settings (McDougal et al., 2023). Mindfulness practices may provide children with simple and repeatable strategies for returning attention to the task, noticing distraction, and slowing impulsive reactions. Prior Iranian and international research has shown that child-centered mindfulness skills training can improve self-control and attentional capacities in children with ADHD and related developmental difficulties (Keshavarz Valian et al., 2022; Sarvarian et al., 2023).

Studies on child-centered mindfulness in children with specific learning difficulties and anxiety-related problems also suggest that mindfulness exercises can strengthen attentional awareness and inhibitory processes, which are core mechanisms of executive functioning (Rashidi Ahmadabadi et al., 2024; Zare Nejad et al., 2024). In this regard, the present findings support the use of developmentally adapted mindfulness practices for children with ADHD, especially when exercises are short, sensory, concrete, and supported by parental practice at home.

The persistence of the intervention effects at the one-month follow-up is another important finding. Both intervention groups maintained improved executive-function scores at follow-up, while the control group remained essentially unchanged. This suggests that the acquired skills were not limited to the immediate post-intervention period and may have been retained for at least one month. In the play therapy group, durability may be related to the repeated rehearsal of skills through enjoyable and memorable activities, making it easier for children to transfer learned behaviors to daily routines. In the mindfulness group, durability may be explained by the use of daily home practice and parental involvement, which could have increased continuity between intervention sessions and the child's natural environment. This interpretation is consistent with contemporary ADHD intervention literature, which emphasizes that psychosocial interventions are more likely to be effective when they are feasible, developmentally sensitive, and connected to the environments in which children function, including home and school (Evans et al., 2024). It is also consistent with the broader evidence that non-pharmacological interventions can improve executive functions in children and adolescents with ADHD, particularly when they involve repeated practice and target real-world self-regulatory skills (Qiu et al., 2023). The maintenance of effects in the present study therefore strengthens the clinical relevance of both interventions.

The lack of a significant difference between emotion regulation-based play therapy and child-centered mindfulness-based intervention is also noteworthy. Although the two interventions differ in technique, both appear to influence common executive mechanisms. Play therapy uses structured games, symbolic expression, turn-taking, and behavioral rehearsal, whereas mindfulness uses breathing, sensory awareness, body awareness, and attention redirection. Despite these differences, both interventions require the child to practice pausing, attending, following

instructions, monitoring responses, and shifting from automatic behavior to intentional action. This shared mechanism may explain why both groups improved significantly compared with the control group but did not differ significantly from each other. This finding is consistent with comparative research showing that both play-based and mindfulness-based interventions can be useful in improving developmental and psychological capacities in children, although one approach is not always superior to the other (Gilori et al., 2024). It also aligns with research comparing executive-function-based play therapy and child-centered mindfulness in children with ADHD, which supports the potential value of both child-centered methods in this population (Babaei Mahdiah et al., 2025). Therefore, the present findings suggest that clinicians may consider both intervention models as viable methods for improving executive functions in children with ADHD.

The present findings should also be interpreted in the broader context of ADHD treatment. ADHD is a complex condition with biological, cognitive, behavioral, educational, and family-related dimensions (Faraone et al., 2024). Pharmacological interventions such as methylphenidate can be effective for symptom reduction, but they may not be sufficient for all children, and they do not necessarily provide direct practice in executive skills such as planning, organization, working memory, and self-monitoring (Storebo et al., 2023). Moreover, genetically informed and developmental studies show that ADHD is associated with a broad network of exposures and outcomes, supporting the need for comprehensive intervention models that address functional capacities, not only diagnostic symptoms (Soler Artigas et al., 2023). Sleep problems, classroom demands, perceptual-motor functioning, and self-regulatory weaknesses may further complicate the daily functioning of children with ADHD (Shadfar et al., 2023; Shahi et al., 2024; Yin et al., 2022). From this perspective, the present study contributes to the literature by comparing two non-pharmacological, child-centered, and developmentally appropriate interventions that can be implemented in counseling and educational settings. The results also correspond with emerging intervention research suggesting that different modalities—including mindfulness, play therapy, behavioral self-regulation training, neurofeedback, and expressive interventions—may improve ADHD-related functioning when they target the child's capacity for sustained, intentional, and organized behavior (Kuznetsova et al., 2023; Sadeghi, 2023).

5. Conclusion

Overall, the results indicate that both emotion regulation-based play therapy and child-centered mindfulness-based intervention were effective in reducing executive-function difficulties in children with ADHD. The improvement observed in the two intervention groups, together with the stability of effects at follow-up, suggests that structured, developmentally appropriate psychological interventions can strengthen executive functioning in children who experience attention, inhibition, planning, and self-regulation difficulties. The absence of a significant difference between the two interventions indicates that both methods may be similarly beneficial, and intervention selection may therefore depend on child characteristics, therapist expertise, parental preference, available resources, and implementation setting. The study supports the growing movement toward integrative, non-pharmacological, and skill-oriented interventions for ADHD and highlights the importance of targeting executive functions as a central outcome in child-focused treatment.

One limitation of the present study was the relatively small sample size and the use of purposive sampling from child counseling centers in Yasuj, which may limit the generalizability of the findings to broader populations of children with ADHD. The study also used a one-month follow-up, which is useful for examining short-term maintenance but does not provide evidence about the long-term durability of intervention effects. In addition, executive functions were assessed through parent-report measures, and the inclusion of teacher reports, direct neuropsychological tasks, or classroom observations could have provided a more comprehensive evaluation of executive functioning across settings. Another limitation was that the control group was a waiting-list group rather than an active comparison group, meaning that nonspecific therapeutic factors such as attention from the therapist, structured group participation, and parental expectation could not be fully controlled.

Future research is suggested to replicate the present study with larger samples, randomized allocation procedures, and participants from multiple cities and educational contexts. Longer follow-up periods, such as three-month, six-month, and one-year follow-ups, would help determine whether the effects of these interventions remain stable over time. Future studies should also use multi-informant and multi-method assessment strategies, including parent ratings, teacher ratings, behavioral observations, and performance-based executive-function tasks. It would also be valuable to

examine whether child characteristics such as age, ADHD presentation, baseline severity, comorbid learning difficulties, family involvement, and session attendance moderate the effectiveness of play therapy and mindfulness-based interventions. Comparative studies using active control groups or combined intervention models may further clarify the specific and shared mechanisms through which these interventions improve executive functions.

In practice, the findings suggest that child counseling centers, school psychologists, and child therapists can use both emotion regulation-based play therapy and child-centered mindfulness-based intervention as practical methods for improving executive functions in children with ADHD. Play therapy may be especially suitable for children who respond well to movement, symbolic activities, games, stories, and role-play, whereas mindfulness-based intervention may be suitable for children who can benefit from brief, structured, sensory, and breathing-based attention exercises. Practitioners are encouraged to involve parents in the intervention process, assign simple home practices, and coordinate with teachers so that learned skills are reinforced across home and school environments. Because the two interventions showed comparable effectiveness, clinical decision-making should be based on the child's developmental level, interests, family readiness, therapist training, and available institutional resources.

Authors' Contributions

Authors equally contributed to this article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

Acknowledgments

We would like to express our gratitude to all individuals helped us to do the project.

Declaration of Interest

The authors report no conflict of interest.

Funding

According to the authors, this article has no financial support.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

References

- Babaei Mahdieh, E., Netaj Bisheh, K., & Khalili, G. (2025). Comparing the Effectiveness of Executive-Function-Based Play Therapy and Child-Centered Mindfulness on Cognitive Emotion Regulation in Children with Attention-Deficit/Hyperactivity Disorder. *Journal of Pediatric Nursing*, 12(2), 11-21.
- Benu, J. M. Y. (2023). Emotional Regulation Play Therapy for Maltreated Children: A Single Case Study. *Journal of Health and Behavioral Science*, 5(2), 172-181. <https://doi.org/10.35508/jhbs.v5i2.3639>
- Darakhsh, M., Heidari, S., & Hassanzadeh, R. (2024). The Effectiveness of Play Therapy on Improving Emotion Regulation and Social Adjustment among Students Dependent on Online Games. *Psychological Studies of Adolescents and Youth*, 4(10), 155-166. <https://doi.org/10.61838/kman.jayps.4.10.12>
- Dekkers, T. J., de Water, E., & Scheres, A. (2022). Impulsive and Risky Decision-Making in Adolescents with Attention-Deficit/Hyperactivity Disorder (ADHD): The Need for a Developmental Perspective. *Current opinion in psychology*, 44, 330-336. <https://doi.org/10.1016/j.copsyc.2021.11.002>
- Esmaili Shahna, F., & Rahmadian. (2025). The Effectiveness of Play Therapy on Emotion Regulation, Social Competencies, and Resilience in 6- to 10-Year-Old Children with Social Anxiety. *Exceptional Children*, 25(1), 19-31.
- Evans, S. W., Owens, J. S., & Bunford, N. (2024). Improving the Efficacy and Effectiveness of Evidence-Based Psychosocial Interventions for Attention-Deficit/Hyperactivity Disorder in Children and Adolescents. *Translational psychiatry*, 14, 244. <https://doi.org/10.1038/s41398-024-02890-3>
- Faraone, S. V., Bellgrove, M. A., Brikell, I., Cortese, S., Hartman, C. A., Hollis, C., & Buitelaar, J. K. (2024). Attention-Deficit/Hyperactivity Disorder. *Nature Reviews Disease Primers*, 10(1), 11. <https://doi.org/10.1038/s41572-024-00495-0>
- Gilori, A., Mohammadi, A., & Haghighat, S. (2024). Comparing the Effectiveness of Mindfulness-Based and Play-Based Interventions on Social Skills and Creativity among Elementary School Students in Garmsar. *Journal of Psychological Science*, 23(143), 217-233.
- Kaboli, K., Bardideh, M., Samani, S., & Khabir, L. (2023). The Effectiveness of Mentalization-Based Drama Therapy on Sustained Attention in Children with Attention-Deficit/Hyperactivity Disorder. *Psychology of Exceptional Individuals*, 13(52), 219-246.
- Karoubi, A. (2023). The Effectiveness of Cognitive-Behavioral Play Therapy on Resilience and Emotion Regulation in Children with Attention-Deficit/Hyperactivity Disorder. Proceedings of the 8th National Conference on Modern

- Research in Educational Sciences and Psychology in Iran, Tehran, Iran.
- Keshavarz Valian, N., Hassanzadeh, S., Kashani Vahid, L., & Asaseh, M. (2022). The Effectiveness of Child-Centered Mindfulness Skills Training on Self-Control and Social Competence in Children with Attention-Deficit/Hyperactivity Disorder. *Modern psychological research*, 17(68), 225-234.
- Kretschmer, C. R., Goz Tebrizcik, B., & Dommett, E. J. (2022). Mindfulness Interventions for Attention Deficit Hyperactivity Disorder: A Systematic Review and Meta-Analysis. *Psychiatry International*, 3(4), 363-399. <https://doi.org/10.3390/psychiatryint3040031>
- Kuznetsova, E., Veilähti, A. V. P., Akhundzadeh, R., Radev, S., Konicar, L., & Cowley, B. U. (2023). Evaluation of Neurofeedback Learning in Patients with ADHD: A Systematic Review. *Applied Psychophysiology and Biofeedback*, 48(1), 11-25. <https://doi.org/10.1007/s10484-022-09562-2>
- McDougal, E., Tai, C., Stewart, T. M., Booth, J. N., & Rhodes, S. M. (2023). Understanding and Supporting Attention Deficit Hyperactivity Disorder in the Primary School Classroom: Perspectives of Children with ADHD and Their Teachers. *Journal of Autism and Developmental Disorders*, 53(9), 3406-3421. <https://doi.org/10.1007/s10803-022-05639-3>
- Ophir, Y. (2025). Life Expectancy and Years of Life Lost for Adults with Diagnosed ADHD in the UK: Matched Cohort Study: Commentary, Ophir. *The British Journal of Psychiatry*, 1-2. <https://doi.org/10.1192/bjp.2025.122>
- Qiu, H., Liang, X., Wang, P., Zhang, H., & Shum, D. H. (2023). Efficacy of Non-Pharmacological Interventions on Executive Functions in Children and Adolescents with ADHD: A Systematic Review and Meta-Analysis. *Asian Journal of Psychiatry*, 87, 103692. <https://doi.org/10.1016/j.ajp.2023.103692>
- Rashidi Ahmatabadi, E., Zamzi, R., & Kakavandi, K. (2024). The Effectiveness of Child-Centered Mindfulness on Social Isolation and Emotion Regulation in Children with Specific Learning Disorder. *Research in Teaching Methods*, 2(4), 74-87.
- Robinson, H. B., Ray, D. C., & Lemberger-Truelove, M. (2024). Impact of Child-Centered Play Therapy on the Mindful Expressions and Social-Emotional Competencies of Head Start Preschoolers. *International Journal of Play Therapy*, 33(2), 67. <https://doi.org/10.1037/pla0000216>
- Sadeghi, A. (2023). The Effectiveness of Dialectical Behavior Therapy on Academic Emotion Components and Self-Control in Students with Attention-Deficit/Hyperactivity Disorder. *Research in School and Virtual Learning*, 11(3), 85-95.
- Sadozai, A. K., Sun, C., & Demetriou, E. A. (2024). Executive Function in Children with Neurodevelopmental Conditions: A Systematic Review and Meta-Analysis. *Nature Human Behaviour*, 8, 2357-2366. <https://doi.org/10.1038/s41562-024-02000-9>
- Sarvarian, Z., Roshan Chesli, R., Nainian, M., Farahani, H., & Yaghoubnejad, S. (2023). The Effectiveness of Child-Centered Mindfulness on Attention and Response Inhibition in Students with Dysgraphia. *Journal of Rehabilitation Research in Nursing*, 10(1), 74-85.
- Shadfar, R., Sheikh, M., & Ghayour, M. (2023). The Effect of Visual Perception Exercises on Depth Perception in Children with Attention-Deficit/Hyperactivity Disorder. *Motor Behavior*, 15(53), 17-30.
- Shahi, A., Amiri, M., & Ebrahimi, L. (2024). The Effectiveness of Self-Regulation Strategy Training on Attention Deficit, Social Adjustment, and Self-Efficacy in Children with Attention-Deficit/Hyperactivity Disorder. *Rehabilitation Medicine*, 13(1), 106-119. <https://doi.org/10.32598/SJRM.13.1.7>
- Soler Artigas, M., Sanchez-Mora, C., Rovira, P., Vilar-Ribo, L., Ramos-Quiroga, J. A., & Ribases, M. (2023). Mendelian Randomization Analysis for Attention Deficit/Hyperactivity Disorder: Studying a Broad Range of Exposures and Outcomes. *International journal of epidemiology*, 52(2), 386-402. <https://doi.org/10.1093/ije/dyac128>
- Storebo, O. J., Storm, M. R. O., Ribeiro, J. P., Skoog, M., Groth, C., Callesen, H. E., & Gluud, C. (2023). Methylphenidate for Children and Adolescents with Attention Deficit Hyperactivity Disorder (ADHD). *Cochrane Database of Systematic Reviews*, CD009885. <https://doi.org/10.1002/14651858.CD009885.pub3>
- Sultan, M. A., Nawaz, F. A., Alattar, B., Khalaf, E., Shadan, S., El-Abiary, N., & Jogia, J. (2025). Assessing the Impact of Mindfulness Programs on Attention-Deficit/Hyperactivity Disorder in Children and Adolescents: A Systematic Review. *BMC pediatrics*, 25(1), 32. <https://doi.org/10.1186/s12887-024-05310-z>
- Wong, T. Y., Chang, Y. T., Wang, M. Y., & Chang, Y. H. (2023). The Effectiveness of Child-Centered Play Therapy for Executive Functions in Children with Attention-Deficit/Hyperactivity Disorder. *Clinical Child Psychology and Psychiatry*, 28(3), 877-894. <https://doi.org/10.1177/13591045221128399>
- Yin, H., Yang, D., Yang, L., & Wu, G. (2022). Relationship between Sleep Disorders and Attention-Deficit-Hyperactivity Disorder in Children. *Frontiers in Pediatrics*, 10, 919572. <https://doi.org/10.3389/fped.2022.919572>
- Zare Nejad, S., Soltani Kouhbanani, S., Hojjati, F., Arshadi Nejad, A., & Zare Nejad, S. (2024). Determining the Effectiveness of Child-Centered Mindfulness Intervention on Executive Functions and Difficulties in Emotion Regulation in Children with Social Anxiety. *Exceptional Children*, 24(2), 43-59.