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Comparison of the Effectiveness of Storytelling Therapy and Cognitive-Behavioral Play Therapy in Improving Cognitive Emotion Regulation in Children with Attention-Deficit/Hyperactivity Disorder

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A B S T R A C T

This study aimed to determine and compare the effects of storytelling therapy and cognitive-behavioral play therapy on improving cognitive emotion regulation in children with attention-deficit/hyperactivity disorder. In terms of variable control, the present study was quasi-experimental and was conducted using an extended pretest–posttest–follow-up design with a control group. The statistical population included all children aged 7–10 years with attention-deficit/hyperactivity disorder in the city of Jam during 2025–2027. A total of 36 participants were selected through purposive sampling and were randomly and equally assigned to two experimental groups and one control group. The experimental groups separately received the interventions, consisting of eight 60-minute sessions, while the control group received no intervention. Data were collected using the SNAP test and the Cognitive Emotion Regulation Questionnaire developed by Garnefski et al. (children's version). The data were analyzed using two-way analysis of variance with repeated measures on one factor, also known as mixed-design analysis of variance, and Bonferroni post hoc tests. The results showed that both interventions led to a significant improvement in cognitive emotion regulation, including adaptive and maladaptive cognitive emotion regulation strategies, and that there was no significant difference between the two interventions. Moreover, the intervention effects remained stable at the follow-up stage. The findings emphasize the necessity of using play-based and narrative-based interventions as complementary interventions in the treatment of children with attention-deficit/hyperactivity disorder.

Keywords: *Storytelling therapy, cognitive-behavioral play therapy, cognitive emotion regulation, attention-deficit/hyperactivity disorder*

1. Introduction

Attention-deficit/hyperactivity disorder (ADHD) is one of the most common neurodevelopmental disorders of childhood and is characterized by persistent patterns of inattention, hyperactivity, and impulsivity that interfere with developmentally appropriate functioning in academic, social, familial, and behavioral domains. According to the diagnostic framework of the Diagnostic and Statistical Manual of Mental Disorders, ADHD is not limited to observable behavioral restlessness or poor concentration; rather, it reflects a broader pattern of self-regulatory impairment that affects attention control, inhibitory control, planning, persistence, emotional responsiveness, and adaptive behavior across settings (American Psychiatric, 2022). Although the clinical presentation of ADHD varies according to developmental stage, symptom subtype, contextual demands, and comorbid conditions, children with ADHD frequently experience difficulty sustaining attention, delaying responses, regulating impulses, following rules, completing tasks, and adapting their behavior to social and educational expectations. The prevalence and recognition of ADHD have attracted increasing scientific and clinical attention, partly because changes in diagnostic awareness, service access, educational demands, and parental and professional sensitivity have influenced patterns of identification and referral (Safer, 2018). For this reason, ADHD is now understood not only as a diagnostic category but also as a multidimensional developmental condition requiring interventions that address cognitive, behavioral, emotional, and interpersonal functioning simultaneously.

One of the most important psychological domains affected in children with ADHD is emotion regulation. Children with ADHD often react intensely to frustration, experience difficulty shifting attention away from upsetting events, show impulsive emotional responses, and struggle to use adaptive strategies when faced with interpersonal conflict, academic failure, parental criticism, or peer rejection. In contemporary clinical psychology, emotion regulation refers to the processes through which individuals monitor, evaluate, modulate, and express emotional states in ways that are compatible with situational demands and long-term goals. Cognitive emotion regulation, more specifically, refers to the cognitive strategies individuals use after encountering stressful or negative events, such as positive reappraisal, refocusing on planning, putting events into perspective, rumination, catastrophizing, self-blame, and blaming others. In children with ADHD, deficits in executive functioning can undermine the capacity to select adaptive cognitive strategies and inhibit maladaptive ones, thereby increasing vulnerability to emotional dysregulation, behavioral outbursts, interpersonal conflict, and academic maladjustment. Recent evidence has emphasized that improving working memory, attention, and cognitive emotion regulation can be an important therapeutic target in adolescents and children with ADHD (Mehranizadeh & Khoshlahjeh, 2025). Similarly, interventions aimed at attention training and executive function enhancement have shown that strengthening attention-related capacities may reduce behavioral symptoms and improve functional outcomes in children with ADHD (Nejati & Derakhshan, 2024).

The importance of emotion regulation in ADHD is further supported by studies showing that children with attentional and behavioral difficulties often exhibit impairments in executive functions, including response inhibition, cognitive flexibility, working memory, planning, and emotional self-regulation. These impairments make it more difficult for the child to pause before acting, reinterpret negative events, tolerate delay, use problem-solving strategies, and regulate affective arousal in social contexts. Research on play-based and cognitive-behavioral interventions has indicated that targeting executive functions and emotion regulation through structured, developmentally appropriate activities can improve children's behavioral and psychosocial functioning. For example, cognitive-behavioral play therapy has been reported to improve executive functions and social competence in female students with symptoms of ADHD (Aminian & Asli Azad, 2024), and similar interventions have been found to enhance attention and planning in students with ADHD (Taghizadeh Hir et al., 2022). Studies on play-based approaches such as Floortime play therapy have also demonstrated improvements in emotion management, self-control, and executive functions among students with ADHD (Bodaghi et al., 2021), while earlier work has reported beneficial effects of Floortime play therapy on executive functions (Roghani, 2018). These findings suggest that when therapeutic procedures are organized in an engaging, child-centered format, they may help children practice cognitive and emotional control in a context that is more accessible than direct verbal instruction alone.

Cognitive-behavioral play therapy is particularly relevant for children with ADHD because it integrates the structured principles of cognitive-behavioral therapy with the natural language of childhood, namely play. In this approach, play

is not used only as entertainment or rapport-building; rather, it becomes a therapeutic medium through which children can identify emotions, recognize thoughts, practice self-control, rehearse alternative behaviors, strengthen problem-solving, and learn socially adaptive responses. The cognitive-behavioral component helps children connect thoughts, feelings, and behaviors, while the play component allows these connections to be experienced concretely and symbolically. This combination is especially suitable for children who may have limited abstract reasoning, low frustration tolerance, and reduced capacity for sustained verbal discussion. The theoretical and clinical foundations of cognitive-behavioral play therapy emphasize the modification of maladaptive cognitions and behaviors through structured activities, modeling, rehearsal, reinforcement, and emotion-focused exercises (Khatoon et al., 2021). Empirical studies have also supported the effectiveness of cognitive-behavioral play therapy in reducing impulsivity, increasing responsibility, and improving emotional control in elementary school students (Morshedi, 2021), as well as improving emotion regulation, social skills, and alexithymia in children with internalizing behavior problems (Baharlouei, 2021). In addition, compassion-based play therapy has been developed and compared with cognitive-behavioral play therapy for improving emotion regulation, self-control, irritability, and anger in children with disruptive mood dysregulation disorder, further indicating the clinical relevance of structured play-based interventions for emotional and behavioral dysregulation (Zad Afshar, 2021).

The broader literature on ADHD interventions also shows that behavioral and cognitive-behavioral approaches can address not only core symptoms but also associated emotional and behavioral difficulties. A randomized community-based trial comparing behavior therapy with usual care for adolescent ADHD demonstrated that structured behavioral interventions may have effects beyond primary ADHD symptoms, including outcomes related to comorbidity and broader psychosocial functioning (Sibley et al., 2023). Similarly, cognitive-behavioral therapy has been considered a relevant intervention for aggressive behavior in children with ADHD and emotion dysregulation, particularly when emotional reactivity and behavioral control difficulties occur together (Vacher et al., 2022). Integrated psychological interventions have also been compared with pharmacological treatments and neurofeedback for behavioral problems related to ADHD, highlighting the need to consider multimodal and psychosocial approaches rather than relying exclusively on medication-based models (Torkaman et al., 2021). Moreover, play puzzle therapy has been used to improve attention and promote self-regulation in children with ADHD, indicating that therapeutic play can support attentional control and self-regulatory processes through structured, repeated, and goal-directed activities (Winarsunu et al., 2022). These studies collectively indicate that interventions for children with ADHD should be developmentally appropriate, engaging, structured, and capable of addressing both cognitive and emotional mechanisms.

Alongside play therapy, storytelling therapy has gained increasing attention as a child-centered intervention for emotional, behavioral, and cognitive difficulties. Storytelling is deeply compatible with children's developmental needs because stories allow children to understand emotions, conflicts, consequences, moral choices, social roles, and coping strategies in symbolic and concrete forms. Through stories, children can identify with characters, observe alternative responses, understand cause-and-effect relationships, externalize problems, and reconstruct meanings attached to difficult experiences. Storytelling can also help children name emotions, differentiate between adaptive and maladaptive responses, and recognize how thoughts influence feelings and behavior. Roshan's work on storytelling emphasizes the practical use of stories to help children resolve life problems and develop healthier coping strategies (Roshan, 2020). From a psychophysiological perspective, storytelling has also been shown to increase positive emotions and oxytocin while decreasing cortisol and pain in hospitalized children, suggesting that stories may influence both psychological and biological stress-related processes (Brockington et al., 2021). In clinical and educational contexts, storytelling interventions have been found to reduce anxiety in hospitalized children when combined with play therapy (Abdi et al., 2025), and storytelling has also been associated with improvements in resilience among children with special educational needs (Mostafaei Paydar et al., 2021). These findings support the view that storytelling may function as more than a didactic technique; it may operate as an emotional, relational, and cognitive regulatory tool.

Storytelling therapy may be especially useful for children with ADHD because it provides an organized narrative structure that can guide attention, reduce emotional ambiguity, and facilitate reflection on behavior. Children with ADHD often have difficulty anticipating consequences,

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delaying responses, and organizing emotional experiences into coherent meanings. A story-based intervention can help them observe a character facing a problem, experiencing an emotion, choosing a response, encountering consequences, and learning a more adaptive strategy. This symbolic distance may reduce defensiveness and allow children to discuss difficult emotions indirectly. Previous studies have shown that storytelling therapy can improve cognitive emotion regulation in children with ADHD (Darvish-Damavandi et al., 2020), reduce aggression and attention deficit while improving academic achievement in children with ADHD through emotional-word play methods (Ghasemian Koops, 2021), and contribute to the management of aggression and anxiety in hyperactive children (Ghaderi, 2022). Narrative-based therapies have also been applied to children with anxiety and ADHD symptoms in vulnerable populations, including orphaned and abandoned children, with evidence supporting their therapeutic efficacy (Karibwende et al., 2023). Furthermore, narrative therapy and play therapy training have been compared in relation to compatibility, attention, and concentration among female students with oppositional defiant disorder, suggesting that both narrative and play-based methods may affect attentional and adaptive functioning in children with externalizing problems (Yadi et al., 2020).

Although storytelling therapy and cognitive-behavioral play therapy are conceptually distinct, both approaches share mechanisms that may be relevant to cognitive emotion regulation. Both use developmentally meaningful methods, rely on indirect and experiential learning, involve emotional labeling and expression, and provide opportunities for rehearsal of adaptive responses. Cognitive-behavioral play therapy may be particularly strong in behavioral rehearsal, self-control practice, rule-following, problem-solving, and cognitive restructuring through play-based tasks. Storytelling therapy may be particularly strong in symbolic meaning-making, emotional insight, empathy development, perspective-taking, and narrative reconstruction of difficult experiences. Previous comparative evidence has shown that play therapy and storytelling can improve ADHD symptoms (Bayat et al., 2019), and both interventions have also been applied to social skills in children with ADHD (Amel et al., 2023). Other comparative work has examined anger management training based on a cognitive-behavioral approach and narrative therapy in students with ADHD, showing the relevance of both cognitive-behavioral and narrative-based methods for academic self-efficacy and resilience (Hosseinnezhad et al., 2020). In addition, studies comparing psychodrama group therapy and cognitive-behavioral play therapy have shown that experiential group-based interventions can influence executive functions, including emotional self-regulation, even in children with social anxiety disorder (Norouzi Homayoun et al., 2023). These findings indicate that both play-based and narrative-based therapeutic procedures may operate through overlapping but not identical pathways.

Despite the growing body of research on ADHD interventions, several gaps remain. First, many studies have focused on reducing overt symptoms such as inattention, hyperactivity, impulsivity, aggression, and anxiety, while fewer studies have directly examined cognitive emotion regulation as a central outcome. Second, although cognitive-behavioral play therapy and storytelling therapy have each been separately supported, fewer studies have directly compared their effectiveness in children with ADHD using a pretest–posttest–follow-up design. Third, because emotion regulation difficulties in children with ADHD can persist beyond the immediate intervention period, follow-up assessment is necessary to determine whether treatment gains remain stable. Finally, children in the early elementary school years require interventions that are both clinically structured and developmentally engaging; therefore, comparing two child-centered interventions can help clinicians, school counselors, and child psychologists select appropriate complementary methods for improving adaptive emotional functioning. Based on the theoretical and empirical literature, cognitive-behavioral play therapy and storytelling therapy both appear promising for improving adaptive cognitive emotion regulation and reducing maladaptive cognitive emotion regulation, but their comparative effectiveness requires further investigation in children diagnosed with ADHD.

The present study aimed to determine and compare the effectiveness of storytelling therapy and cognitive-behavioral play therapy in improving adaptive and maladaptive cognitive emotion regulation in children with attention-deficit/hyperactivity disorder.

2. Methods and Materials

2.1. Study Design and Participants

The present study was a quasi-experimental investigation conducted using an extended pretest–posttest–follow-up design with a control group. The statistical population consisted of all children aged 7–10 years in the city of Jam

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who were studying in the first cycle of elementary school during the 2025–2026 academic year and had received a diagnosis of attention-deficit/hyperactivity disorder based on clinical interview and psychological assessment results. Because the target group of the study comprised children with attention-deficit/hyperactivity disorder, participants were required to meet specific inclusion and exclusion criteria. The inclusion criteria were receiving a diagnosis of attention-deficit/hyperactivity disorder based on clinical interview, the SNAP rating scale, and psychiatrist confirmation; being between 7 and 10 years of age; having an intelligence quotient above 90; and willingness to participate in the training sessions. The exclusion criteria were severe comorbid disorders such as oppositional defiant disorder, autism spectrum disorder, and depression; absence from more than two intervention sessions; failure to complete the assigned homework; and unwillingness to continue cooperation. To diagnose the disorder in children, psychiatric interview and the SNAP test for attention-deficit/hyperactivity disorder were used. After completion of the diagnostic assessment and interview process, 36 children were selected through purposive sampling based on the inclusion and exclusion criteria and were randomly assigned to three equal groups: two experimental groups, each consisting of 12 participants, and one control group consisting of 12 participants. Ultimately, data obtained from all 36 participants were included in the final analysis. Informed consent was obtained from the parents of the children who entered the study, and the children were matched according to intelligence level and disorder severity. The matched participants were then randomly allocated to the cognitive-behavioral play therapy group, the storytelling therapy group, and the control group. After group allocation, pretest, posttest, and one-month follow-up assessments were conducted according to the predetermined schedule. Ethical principles, including confidentiality, privacy protection, informed consent, voluntary participation, and the participants' right to withdraw from the intervention sessions or questionnaire completion at any stage, were observed throughout the study. During questionnaire completion, participants and their parents were informed that responding to all questions was important, but that providing personal information and remaining in the study were voluntary. To observe ethical considerations, after completion of the study, the control group received an intensive four-session psychological intervention program based on play therapy training.

2.2. Measures

Two categories of instruments were used in this study: tools for screening, identifying comorbid disorders, and confirming entry criteria, and tools for measuring the dependent variables. The SNAP test, developed by Swanson, Nolan, and Pelham in 1980, was used to assess symptoms of attention-deficit/hyperactivity disorder. This instrument has a single form that can be completed by parents and teachers and includes 18 items. The first nine items assess the predominantly inattentive presentation of attention-deficit/hyperactivity disorder, and the second nine items assess the predominantly hyperactive presentation; all 18 items are used to identify the combined presentation. The test has shown acceptable validity and reliability. Bussing et al. (2008) reported Cronbach's alpha coefficients of .94 for the total scale and .90 and .79 for its subcomponents. Sadr al-Sadat et al. (2007) reported a test–retest reliability coefficient of .82, a Cronbach's alpha coefficient of .90, and a split-half reliability coefficient of .76. The content validity of the scale has also been confirmed by specialists, as cited in Asghari Nekah and Abedi (2014) and Moradian et al. (2014). In the study by Asghari Nekah and Abedi (2014), Cronbach's alpha was reported as .73 for the total scale, .63 for the first subscale, and .76 for the second subscale. Cognitive emotion regulation was assessed using the Cognitive Emotion Regulation Questionnaire for Children, developed by Garnefski et al. (2007) based on the original version of the Cognitive Emotion Regulation Questionnaire. The children's version is similar to the original version in scoring method, number of items, and subscales, but the content of the items has been adapted to be comprehensible for children. This self-report multidimensional questionnaire includes 36 items and is grounded in a strong empirical and theoretical basis. It consists of nine subscales assessing nine cognitive strategies: self-blame, acceptance, rumination, positive refocusing, refocus on planning, positive reappraisal, putting into perspective, catastrophizing, and blaming others. Responses are scored on a five-point Likert scale ranging from 1, meaning almost never, to 5, meaning almost always. Each subscale includes four items, and the total score for each subscale is obtained by summing the item scores; therefore, scores for each subscale range from 4 to 20. Higher scores on each subscale indicate greater use of that strategy when coping with stressful and negative events (Mehranizadeh & Khoshlahjeh, 2025). In the original version, Garnefski et al. (2001) reported Cronbach's alpha coefficients of .87, .91, and .93. The divergent validity of the

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questionnaire with the Children's Depression Inventory was reported as .50. In the study by Mashhadi et al. (2012), the validity of the instrument was examined through correlations between the total score and subscale scores, with coefficients ranging from .40 to .68 and a mean of .56, all of which were significant and indicated construct validity. Cronbach's alpha reliability was reported as .79 in that study. In the study by Mehranizadeh and Khoshlahjeh (2025), Cronbach's alpha reliability was reported as .74. In the present study, internal consistency based on Cronbach's alpha was .87 for adaptive emotion regulation and .69 for maladaptive emotion regulation, while test–retest reliability coefficients were .68 for adaptive emotion regulation and .67 for maladaptive emotion regulation.

2.3. Intervention

In the cognitive-behavioral play therapy group, all participants received an eight-session intervention, with each session lasting 60 minutes. The cognitive-behavioral play therapy protocol was developed based on the studies and intervention protocols used by Ghodousi et al. (2017), Turkman (2021), and Sohrabi Shegefti (2011). Before the intervention, the research questionnaires were completed, and the same assessment procedure was repeated at posttest and at the one-month follow-up. The first phase of the intervention focused on familiarizing the child with the playroom, building rapport, introducing the rules of the play setting, and allowing free play with toys. The subsequent sessions targeted emotional education, emotion recognition, and emotional expression through activities such as emotional-word games, coloring one's life, raising colored sticks, the worry box game, and guessing emotions. Later sessions focused on emotion control and management through activities such as the emotion tower, anger balloon game, bubble-making game, and placing a party hat on a monster. Other sessions were designed to strengthen memory, accuracy, attention, concentration, motor skills, self-control, problem-solving, school-related behavioral management, home behavior recording, behavioral reinforcement methods, and coping with future difficulties. These therapeutic aims were implemented through structured games such as finding differences, direct and reverse memory games, "listen and find," accurate imitation games, memory cards, alarm-clock games, bowling, throwing a ball into a hoop, darts, hopscotch, slow-motion games, clay and statue games, free stop games, walking on one foot, snakes and ladders, eye-contact games, puppet theater, and social stories focused on problem-solving. The final session emphasized social skills and social adjustment through activities such as chair games, sand play, pantomime, the wolf–horse–turtle game, and the driver–passenger game.

In the storytelling therapy group, all participants received an eight-session storytelling therapy intervention, with each session lasting 60 minutes. The educational sessions were designed based on the storytelling therapy protocol derived from Arthur Roshan's storytelling book (2020) and the study by Darvish Damavandi et al. (2020). The intervention began with introduction, establishment of a positive therapeutic relationship, explanation of group rules, and administration of the pretest. The first therapeutic session focused on strengthening healthy communication skills through a researcher-made sequential pictorial story and marked cards, which were used to compare one of four sequential cards in terms of differences, similarities, and concepts, thereby enhancing the verbal skills required for communication. The second session focused on cognitive emotion regulation, awareness of one's emotions, and naming emotions through stories such as "The Lion and the Mouse" and the book "Your Feelings." The third session addressed teasing others, empathy, recognition of behaviors that upset others, understanding the consequences of such behaviors, and awareness of the negative outcomes and psychological implications of maladaptive behaviors through stories such as "Hasan Kachal and the Bullying Boy" and "The Closed-Mouth Pistachio." The fourth session focused on losing one's temper, emotion and feeling management, awareness of impulsive behaviors, and understanding the consequences of lack of patience and reflection before responding or behaving toward others, using the story "The Little Mouse and the Bullying Snake." The fifth session emphasized interpersonal relationship skills, social skills, rule-following, cooperation, division of responsibilities, communication skills, and social interaction, including listening and speaking skills, participation in group activities, and cooperation with others, through stories such as "The Statue of Friendship" and "The Sunshade Umbrella." The sixth session focused on learning new skills through problem-solving and anger management, using the story "The Owl and the Woodpecker." The seventh session included paper-and-pencil activities such as paper war, creative drama, and role-playing centered on problem identification and recognition. The eighth session was devoted to summarizing and reviewing the sessions and administering the posttest.

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The control group received no intervention during the main study period.

2.4. Data Analysis

After completion of the intervention sessions, the posttest was administered to all three groups, and a one-month follow-up assessment was subsequently conducted to examine the stability of intervention effects. Data were analyzed using two-way analysis of variance with repeated measures on one factor, also referred to as mixed-design analysis of variance. This method was appropriate because the study included one within-subject factor, namely time of measurement across pretest, posttest, and follow-up, and one between-subject factor, namely group membership across the cognitive-behavioral play therapy, storytelling therapy, and control groups. Bonferroni post hoc tests were used to examine pairwise comparisons when statistically significant main or interaction effects were observed. The analyses were conducted to compare changes in adaptive and maladaptive cognitive emotion regulation across the three measurement stages and to determine whether the two active interventions differed significantly from each other and from the control condition.

3. Findings and Results

Before testing the research hypotheses, descriptive indices of cognitive emotion regulation were examined separately by group and measurement stage. Table 1 presents the mean and standard deviation of adaptive and maladaptive cognitive emotion regulation scores in the storytelling therapy, cognitive-behavioral play therapy, and control groups across the pretest, posttest, and follow-up stages.

Table 1

Descriptive Statistics of Cognitive Emotion Regulation Scores by Group and Measurement Stage

Variable	Subscale	Measurement Stage	Storytelling Therapy (n = 12) M	Storytelling Therapy SD	Cognitive-Behavioral Play Therapy (n = 12) M	Cognitive-Behavioral Play Therapy SD	Control Group (n = 12) M	Control Group SD
Cognitive emotion regulation	Adaptive	Pretest	38.58	5.23	35.83	2.66	34.50	3.66
Cognitive emotion regulation	Adaptive	Posttest	49.92	4.08	48.08	4.83	34.25	3.65
Cognitive emotion regulation	Adaptive	Follow-up	51.67	3.08	48.33	5.50	34.08	3.58
Cognitive emotion regulation	Maladaptive	Pretest	42.50	7.85	47.58	4.48	44.58	4.10
Cognitive emotion regulation	Maladaptive	Posttest	37.17	6.49	39.33	4.56	44.50	4.93
Cognitive emotion regulation	Maladaptive	Follow-up	36.58	4.36	38.67	3.38		

As shown in Table 1, adaptive cognitive emotion regulation increased in both intervention groups from pretest to posttest and remained improved at the follow-up stage. In the storytelling therapy group, the mean score of adaptive cognitive emotion regulation increased from 38.58 at pretest to 49.92 at posttest and 51.67 at follow-up. In the cognitive-behavioral play therapy group, the corresponding mean score increased from 35.83 at pretest to 48.08 at posttest and 48.33 at follow-up. By contrast, the control group showed no meaningful improvement, with mean scores of 34.50, 34.25, and 34.08 at the three measurement stages. Regarding maladaptive cognitive emotion regulation, the mean score decreased in the storytelling therapy group from 42.50 at pretest to 37.17 at posttest and 36.58 at follow-up, while in the cognitive-behavioral play therapy group it decreased from 47.58 at pretest to 39.33 at posttest and 38.67 at follow-up. The control group showed no reduction in maladaptive cognitive emotion regulation, with mean scores of 44.58 at pretest, 44.50 at posttest, and 45.08 at follow-up. These descriptive findings indicate that both storytelling therapy

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and cognitive-behavioral play therapy were associated with improvement in adaptive strategies and reduction in maladaptive strategies, whereas the control group remained relatively stable.

The assumptions required for parametric statistical analysis were examined before conducting the main analysis. Because the research data were continuous and measured at an interval level, the normality of score distributions was evaluated using the Shapiro–Wilk test. The results showed that the significance level of the Shapiro–Wilk W statistic for the study variables across the three measurement stages and the three research groups was greater than .05 in all cases except one; therefore, with 95% confidence, the distribution of the study variables was considered approximately normal. In addition, to examine the homogeneity of the three research groups at the pretest stage, one-way analysis of variance was used. The results indicated that the observed F values were smaller than the critical F value at the .05 level with 2 and 33 degrees of freedom, which was 3.29. Therefore, the null hypothesis indicating no significant difference among the three groups in pretest scores was confirmed with 95% confidence. Accordingly, the three research groups were homogeneous at baseline with respect to the study variables.

Table 2

Summary of Mixed-Design Analysis of Variance for Cognitive Emotion Regulation

Subscale	Effect	df	F	p	Partial η²
Adaptive cognitive emotion regulation	Group	2, 33	55.13	< .01	.770
Adaptive cognitive emotion regulation	Time	1.64, 54.04	68.08	< .01	.674
Adaptive cognitive emotion regulation	Time × Group	3.28, 54.04	18.64	< .01	.530
Maladaptive cognitive emotion regulation	Group	2, 33	5.65	< .01	.255
Maladaptive cognitive emotion regulation	Time	2, 66	26.48	< .01	.445
Maladaptive cognitive emotion regulation	Time × Group	4, 66	8.25	< .01	.333

The results of the mixed-design analysis of variance presented in Table 2 showed that the interaction effect of time and group was statistically significant for both adaptive and maladaptive cognitive emotion regulation. For adaptive cognitive emotion regulation, the calculated F value for the time × group interaction was greater than the critical value at the .01 level, $F(3.28, 54.04) = 18.64$, $p < .01$, partial $\eta^2 = .530$. Therefore, the null hypothesis of equal mean changes across the three measurement stages, considering the three research groups, was rejected with 99% confidence. For maladaptive cognitive emotion regulation, the time × group interaction was also significant, $F(4, 66) = 8.25$, $p < .01$, partial $\eta^2 = .333$. This finding indicates that changes in maladaptive cognitive emotion regulation across pretest, posttest, and follow-up differed significantly among the storytelling therapy, cognitive-behavioral play therapy, and control groups. The significant interaction effects justified the use of Bonferroni post hoc comparisons to examine the effectiveness of the two interventions and compare them with the control group.

Table 3

Bonferroni Pairwise Comparisons of Pretest–Posttest Differential Scores Among the Three Groups

Subscale	Group	Mean Differential Score	Comparison Group	Mean Difference	p
Adaptive cognitive emotion regulation	Storytelling therapy	-11.33	Cognitive-behavioral play therapy	0.92	> .05
Adaptive cognitive emotion regulation	Storytelling therapy	-11.33	Control group	-11.58	< .01
Adaptive cognitive emotion regulation	Cognitive-behavioral play therapy	-12.25	Storytelling therapy	-0.92	> .05
Adaptive cognitive emotion regulation	Cognitive-behavioral play therapy	-12.25	Control group	-12.50	< .01
Adaptive cognitive emotion regulation	Control group	0.25	Storytelling therapy	11.58	< .01
Adaptive cognitive emotion regulation	Control group	0.25	Cognitive-behavioral play therapy	12.50	< .01
Maladaptive cognitive emotion regulation	Storytelling therapy	5.33	Cognitive-behavioral play therapy	-2.92	> .05

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Maladaptive cognitive emotion regulation	Storytelling therapy	5.33	Control group	5.25	< .05
Maladaptive cognitive emotion regulation	Cognitive-behavioral play therapy	8.25	Storytelling therapy	2.92	> .05
Maladaptive cognitive emotion regulation	Cognitive-behavioral play therapy	8.25	Control group	8.17	< .01
Maladaptive cognitive emotion regulation	Control group	0.08	Storytelling therapy	-5.25	< .05
Maladaptive cognitive emotion regulation	Control group	0.08	Cognitive-behavioral play therapy	-8.17	< .01

As shown in Table 3, the Bonferroni pairwise comparisons of pretest–posttest differential scores indicated that both intervention groups differed significantly from the control group in adaptive cognitive emotion regulation. The difference between storytelling therapy and the control group was significant, with a mean difference of -11.58, $p < .01$, and the difference between cognitive-behavioral play therapy and the control group was also significant, with a mean difference of -12.50, $p < .01$. However, the difference between storytelling therapy and cognitive-behavioral play therapy was not statistically significant, with a mean difference of 0.92, $p > .05$. Regarding maladaptive cognitive emotion regulation, storytelling therapy differed significantly from the control group, with a mean difference of 5.25, $p < .05$, and cognitive-behavioral play therapy also differed significantly from the control group, with a mean difference of 8.17, $p < .01$. However, the difference between the two intervention groups was not statistically significant, with a mean difference of 2.92, $p > .05$. Overall, these results indicate that both storytelling therapy and cognitive-behavioral play therapy were effective in improving adaptive cognitive emotion regulation and reducing maladaptive cognitive emotion regulation in children with attention-deficit/hyperactivity disorder, while no statistically significant difference was observed between the effectiveness of the two intervention methods.

4. Discussion

The present study aimed to determine and compare the effectiveness of storytelling therapy and cognitive-behavioral play therapy in improving adaptive and maladaptive cognitive emotion regulation in children with attention-deficit/hyperactivity disorder. The findings showed that both interventions significantly improved cognitive emotion regulation compared with the control group. More specifically, the mean scores of adaptive cognitive emotion regulation increased from pretest to posttest and remained stable at the one-month follow-up in both the storytelling therapy and cognitive-behavioral play therapy groups, whereas the control group showed no meaningful change across the three measurement stages. In addition, the mean scores of maladaptive cognitive emotion regulation decreased in both intervention groups from pretest to posttest and remained reduced at follow-up, while the control group remained almost unchanged. The mixed-design analysis of variance confirmed significant time, group, and time × group effects for both adaptive and maladaptive cognitive emotion regulation, indicating that the observed changes were not merely the result of repeated measurement but were associated with participation in the interventions. Bonferroni comparisons further showed that both storytelling therapy and cognitive-behavioral play therapy were significantly superior to the control condition; however, no significant difference was found between the two intervention groups. Therefore, the results indicate that both play-based and narrative-based interventions can be effective complementary approaches for improving cognitive emotion regulation in children with ADHD.

The effectiveness of cognitive-behavioral play therapy in improving adaptive cognitive emotion regulation and reducing maladaptive strategies can be explained through the combined mechanisms of cognitive restructuring, emotional labeling, behavioral rehearsal, reinforcement, and self-control training. Children with ADHD frequently experience difficulties in inhibition, sustained attention, working memory, planning, and emotional self-regulation, which can limit their ability to pause, evaluate the emotional meaning of events, and choose adaptive responses (American Psychiatric, 2022). Cognitive-behavioral play therapy translates abstract cognitive-behavioral concepts into concrete, symbolic, and experiential activities that are developmentally appropriate for children. Through games focused on recognizing emotions, managing anger, solving problems, delaying responses, following rules, and practicing social behaviors, children can repeatedly rehearse adaptive emotion regulation strategies in a structured but engaging context. This interpretation is consistent with studies showing that cognitive-behavioral play therapy improves executive functions and social competence in

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students with ADHD symptoms (Aminian & Asli Azad, 2024), enhances attention and planning in students with ADHD (Taghizadeh Hir et al., 2022), and contributes to reductions in impulsivity and improvements in responsibility and emotional control among elementary school students (Morshedi, 2021). The present findings are also aligned with evidence indicating that cognitive-behavioral play therapy can improve emotion regulation, social skills, and alexithymia in children with internalizing behavioral problems (Baharlouei, 2021).

The reduction of maladaptive cognitive emotion regulation in the cognitive-behavioral play therapy group may also be understood in relation to the intervention's direct focus on behavioral inhibition and emotional control. Maladaptive cognitive strategies such as rumination, catastrophizing, self-blame, and blaming others often become more likely when children cannot regulate emotional arousal or shift attention away from negative stimuli. Play-based cognitive-behavioral activities provide opportunities for children to slow down responses, identify the emotional trigger, examine alternative interpretations, and practice more constructive reactions. This mechanism is supported by studies showing that play-based interventions can improve self-regulation and attention in children with ADHD (Winarsunu et al., 2022), and that Floortime play therapy can enhance emotion management, self-control, and executive functions among students with ADHD (Bodaghi et al., 2021). Similarly, previous research on Floortime play therapy has emphasized its role in strengthening executive functioning, which is closely connected to children's ability to regulate emotions and behavior (Roghani, 2018). These findings are also compatible with broader evidence that cognitive-behavioral and behavioral interventions can reduce behavioral and emotional difficulties in ADHD, including comorbid and aggressive symptoms (Sibley et al., 2023; Vacher et al., 2022). Therefore, the improvement observed in the present study may reflect the ability of cognitive-behavioral play therapy to strengthen the cognitive control processes underlying adaptive emotional responses.

The effectiveness of storytelling therapy in improving cognitive emotion regulation can be explained through the therapeutic functions of narrative organization, symbolic identification, emotional expression, perspective-taking, and meaning reconstruction. Children with ADHD often respond impulsively to emotional events and may have difficulty organizing experiences into coherent sequences of cause, emotion, behavior, and consequence. Storytelling therapy helps children observe characters who face problems, experience emotions, make choices, and encounter outcomes. This symbolic distance allows children to discuss emotional conflicts indirectly and safely, without feeling personally criticized or blamed. In this way, stories can promote emotional awareness, empathy, self-reflection, and cognitive reappraisal. The present finding is consistent with previous research showing that storytelling therapy improves cognitive emotion regulation in children with ADHD (Darvish-Damavandi et al., 2020). It is also in line with evidence that storytelling therapy can reduce aggression and attention deficit and improve academic achievement in children with ADHD when implemented through emotional-word play methods (Ghasemian Koops, 2021). In addition, narrative therapy has been found effective for children with anxiety and ADHD symptoms in vulnerable populations, indicating that narrative-based interventions can influence both emotional and attentional difficulties (Karibwende et al., 2023). The present results therefore support the view that storytelling can function as a structured psychological intervention rather than merely an educational or recreational activity.

The significant improvement in the storytelling therapy group is also compatible with the emotional and physiological effects attributed to stories in child-focused interventions. Storytelling can increase positive emotions, reduce stress-related arousal, and create a relational context in which the child feels psychologically safe enough to process difficult emotions. Research has shown that storytelling may increase oxytocin and positive emotions while decreasing cortisol and pain in hospitalized children (Brockington et al., 2021). Similarly, a randomized controlled trial found that play therapy and storytelling reduced anxiety among hospitalized children, demonstrating the emotional regulatory value of these child-centered methods in stressful conditions (Abdi et al., 2025). The theoretical and applied foundations of storytelling also emphasize that stories help children understand life problems, identify emotions, and develop adaptive solutions through characters and symbolic situations (Roshan, 2020). The present findings are consistent with this framework because children in the storytelling therapy group learned to recognize emotions, understand the consequences of maladaptive behaviors, manage anger, improve empathy, and practice social problem-solving through selected stories and related activities. These mechanisms can explain why storytelling therapy increased adaptive cognitive emotion regulation and reduced maladaptive strategies.

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Another important finding was that there was no significant difference between the effectiveness of storytelling therapy and cognitive-behavioral play therapy. This result suggests that although the two interventions differ in method and therapeutic medium, they may influence cognitive emotion regulation through partially overlapping mechanisms. Both interventions are developmentally appropriate, experiential, indirect, engaging, and emotionally expressive. Both help children identify emotions, understand consequences, practice alternative responses, and move from impulsive reactions toward more reflective regulation. This finding is consistent with studies comparing play therapy and storytelling in children with ADHD, which have reported improvements in ADHD symptoms following both approaches (Bayat et al., 2019). It also corresponds with research indicating that play therapy and storytelling interventions can improve social skills in children with ADHD (Amel et al., 2023). Moreover, comparative evidence on narrative therapy and play therapy training has shown that both approaches can improve compatibility, attention, and concentration in children with behavioral difficulties (Yadi et al., 2020). The lack of a significant difference between the two interventions in the present study may therefore indicate that both methods are clinically useful, and that the choice between them can be guided by child preference, therapist expertise, treatment setting, and specific therapeutic goals.

The stability of the intervention effects at the one-month follow-up is another noteworthy finding. The maintenance of gains suggests that the children did not merely show temporary improvement immediately after the sessions, but may have acquired practical cognitive-emotional skills that remained available after the intervention ended. In cognitive-behavioral play therapy, repeated practice through structured games may have helped children internalize behavioral inhibition, emotional labeling, and problem-solving strategies. In storytelling therapy, repeated exposure to narrative models may have helped children remember adaptive responses and apply them in real-life situations. These interpretations are consistent with evidence that psychological and educational interventions targeting attention, executive functions, emotional self-regulation, and behavioral problems can produce meaningful changes in children and adolescents with ADHD (Nejati & Derakhshan, 2024; Torkaman et al., 2021). The findings also align with studies showing the value of narrative and cognitive-behavioral approaches in improving academic resilience, self-efficacy, and emotional functioning in students with ADHD (Hosseinnezhad et al., 2020), as well as research indicating that storytelling can strengthen resilience in children with special needs (Mostafaei Paydar et al., 2021). Furthermore, the present results are consistent with research on cognitive rehabilitation showing that improving cognitive capacities can be accompanied by improvements in working memory, cognitive emotion regulation, and attention deficits in adolescents with ADHD (Mehranizadeh & Khoshlahjeh, 2025). Overall, the persistence of effects supports the clinical value of brief, structured, child-centered interventions for emotional regulation difficulties in ADHD.

5. Conclusion

From a broader clinical perspective, the findings confirm that ADHD should not be treated only as a disorder of attention and activity level, but also as a condition involving emotional and cognitive self-regulation difficulties. Children with ADHD may know what behavior is expected, yet still fail to regulate emotional reactions when confronted with frustration, criticism, waiting, competition, or interpersonal conflict. Therefore, interventions that combine emotional education, cognitive reframing, behavioral rehearsal, and social problem-solving can be particularly beneficial. The present findings are also compatible with studies showing that psychodrama group therapy and cognitive-behavioral play therapy can influence executive functions, including emotional self-regulation, in children with psychological symptoms (Norouzi Homayoun et al., 2023), and with research comparing cognitive-behavioral and narrative-based approaches for improving psychological and academic outcomes in students with ADHD (Hosseinnezhad et al., 2020). In addition, the results are theoretically consistent with the development of compassion-based play therapy and its comparison with cognitive-behavioral play therapy for improving emotion regulation, self-control, irritability, and anger in children with disruptive mood dysregulation disorder (Zad Afshar, 2021). Taken together, the findings suggest that both storytelling therapy and cognitive-behavioral play therapy can be considered promising complementary interventions for improving the emotional regulatory capacities of children with ADHD.

The present study had several limitations that should be considered when interpreting the findings. First, the sample size was relatively small, with 12 participants in each group, which may limit the statistical power and generalizability of the results. Second, the participants were selected from

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children aged 7–10 years in the city of Jam, and therefore the findings may not be directly generalizable to children from other age groups, educational levels, cultural contexts, or clinical settings. Third, although the study included a one-month follow-up, this period was relatively short and does not allow conclusions about the long-term durability of intervention effects. Fourth, the study relied on questionnaire-based assessment, and the use of additional behavioral observations, teacher reports, clinical interviews, or neuropsychological measures could have provided a more comprehensive evaluation of change. Fifth, although children were matched based on intelligence and disorder severity, other variables such as parenting style, family functioning, medication status, school climate, and comorbid subclinical symptoms may have influenced the outcomes.

Future studies are recommended to replicate this research with larger samples and in different cities, schools, and clinical contexts to increase the generalizability of the findings. It is also suggested that future research include longer follow-up periods, such as three-month, six-month, or one-year follow-ups, to determine whether the intervention effects remain stable over time. Future studies could also compare these interventions with other active treatments, such as parent management training, mindfulness-based interventions, executive function training, neurofeedback, or combined multimodal programs. In addition, researchers may examine potential mediating variables, such as executive functions, parent–child interaction quality, emotional awareness, self-control, empathy, and social problem-solving, to clarify how storytelling therapy and cognitive-behavioral play therapy produce change. It would also be useful to investigate whether child characteristics such as ADHD presentation, gender, baseline emotional dysregulation, verbal ability, motivation, and severity of symptoms moderate the effectiveness of each intervention.

Based on the findings, it is suggested that child psychologists, school counselors, rehabilitation specialists, and mental health professionals use storytelling therapy and cognitive-behavioral play therapy as complementary interventions for children with ADHD, particularly when emotional dysregulation, impulsivity, poor frustration tolerance, and maladaptive cognitive responses are present. Schools and counseling centers can implement brief structured programs that include emotional education, anger management, problem-solving, perspective-taking, and social skills training through play and stories. Parents and teachers should also be involved in the intervention process so that the strategies practiced during therapy sessions can be reinforced at home and school. Because both interventions were effective and neither was superior to the other, practitioners may select the intervention according to the child's developmental level, verbal ability, interest in play or stories, therapeutic goals, and available resources. Combining narrative techniques with cognitive-behavioral play activities may also provide a flexible and engaging intervention model for improving cognitive emotion regulation in children with ADHD.

Authors' Contributions

Authors equally contributed to this article.

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

Transparency Statement

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

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