International Journal of Applied Behavioral Sciences **2025; Vol. 12, No.2:48-56**
DOI: 10.22037/ijabs.v12i2.47423 **Online ISSN: 2423-5253**

Case Report

Evaluating the Effectiveness of Attachment-based Play Therapy on Emotional Self-Regulation in Female Students with ADHD Combined Type and their Mothers' Parental Self-Efficacy: A Case Study

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Received: 03 May 2025; Revised: 21 May 2025; Accepted: 31 May 2025

Abstract

Background and Aim: Attention-Deficit/Hyperactivity Disorder (ADHD) is one of the most prevalent childhood disorders with significant consequences. This study examined the effectiveness of attachment-based play therapy on emotional self-regulation in female students with ADHD (combined type) and their mothers' parental self-efficacy.

Materials and Methods: This semi-experimental, single-subject study employed an A-B baseline approach. Four female students (ages 7–9) with combined-type ADHD symptoms in Isfahan City (2023–2024) participated in this study. Initially, they were given the necessary informed consent, and ethical approval was acquired. The DSM-5-TR diagnostic criteria, the Revised Conners Scale for Parents, and a diagnostic interview were applied to select samples. Data collection was conducted using the Emotional Regulation Checklist and Domka's Parental Self-Efficacy Questionnaire. Students and their mothers completed eight therapy sessions (45 minutes each). Data analysis used percentage improvement and Cohen's d effect size. The study ran from January 2023 to May 2024 without financial support.

Results: Emotional self-regulation improved significantly (effect size: post-test = 1.30; follow-up = 1.51), as did parental self-efficacy (post-test = 1.24; follow-up = 0.95). Given that: - Effect size < 0.2 = minimal impact, - 0.5 = moderate effect, - ≥0.8 = strong effect, results confirm Theraplay's effectiveness.

Conclusion: Theraplay strengthens mother-child bonds, fostering secure attachment. It enhances children's emotional regulation, social skills, and overall development, alleviating maternal stress and improving parental self-efficacy. The findings confirm Theraplay's potential as a powerful intervention for female students with ADHD and their mothers.

Keywords: Attention deficit/ Hyperactivity disorder, Attachment-based play therapy, Emotional self-regulation, Parental self-efficacy

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Please cite this article as:
Shoushtari, F., Kalantari, M., Amiri, S., & Afshari, A. Evaluating the Effectiveness of Attachment-based Play Therapy on Emotional Self-Regulation in Female Students with ADHD Combined Type and their Mothers' Parental Self-Efficacy: A Case Study. Int. J. Appl. Behav. Sci. 2025;12(2):48-56

Introduction

Attention-Deficit/Hyperactivity Disorder (ADHD) is a neurodevelopmental condition that profoundly affects children's cognitive, emotional, and behavioral functioning, as well as the dynamics within their families. It is characterized by inattention, disorganization, and/or hyperactivity-impulsivity. Inattention and disorganization manifest as difficulty in following through on tasks, apparent inattentiveness, and failure to retain essential materials. Hyperactivity-impulsivity is associated with excessive restlessness, inability to remain seated, disruption of others' activities, and difficulty waiting for one's turn—symptoms that exceed typical expectations based on age or developmental level (1). One of the most critical and distressing challenges for children with ADHD is their inability to regulate emotions, or a lack of emotional self-regulation. As demonstrated in a study by Rahimi and Shojaie, individuals with ADHD experience significantly greater difficulties in emotion regulation compared to neurotypical individuals (2).

Emotional self-regulation includes skills that not only manage the intensity and expression of emotions but also facilitate the generation and maintenance of positive emotional states. Thus, emotional regulation is not only about controlling negative emotions; it also plays a fundamental role in sustaining and creating positive emotional experiences (3). As a result, in emotional situations, children with a lack of proper emotional self-regulation display an improper reaction to the situation because they are not able to regulate their negative and positive emotions (4). Attachment theory states that attachment in infancy lays the foundation for emotion regulation throughout a person's life. An individual's emotion regulation depends on the extent to which and how the child has experienced attachment development (5).

According to attachment theory, emotion regulation skills are formed as a result of the child's interactions with the family, and this pattern remains stable throughout a person's life (6). As Atkinson and Goldberg (7) have stated, the ability to self-regulate emotions depends partly on genetic factors (how the child responds to stress and distress) and partly on whether the child has had opportunities to experience appropriate relief during stress and distress. In fact, for the development of self-regulation of emotion in children, the caregiver must not overactivate the attachment system, which results in the child's excessive dependence on the attachment figure for self-regulation, and also not overstimulate the child's efforts to acquire alternative means of regulation. Therefore, it is likely that the ability to self-regulate emotions develops in children who have a secure attachment (i.e., the caregiver supports the child's independent learning and self-care while not abandoning the child when they are highly aroused) (7). Attachment theory also draws attention to understanding the etiology of ADHD.

Children with problems in attachment may have difficulties in emotional and behavioral regulation, impulse control, self-calming, and maintaining social ties. As the study of Asadi et al. (8) demonstrated, the links between insecure attachment, emotion regulation problems, and ADHD symptoms were clear. In a recent study, attachment insecurity was found to be positively correlated with ADHD symptoms through problems of executive functioning and emotion regulation (9). Children with attention deficit hyperactivity disorder, just as they suffer from hyperactivity and impulsivity problems, face emotional regulation deficits that can present many challenges to their lives at different stages and parts of their lives. As mentioned, a major part of children's emotional regulation is taught to children by their mothers or primary caregivers, and mothers of children with this disorder struggle with many problems, including psychological disorders. Given the importance of the mother-child relationship in the formation of emotional self-regulation, it is worth noting that mothers of children with ADHD describe their parenting conditions as stressful and difficult. These mothers feel that they are always feeling very tense. Also, since parents of children with ADHD face very serious pressures in trying to manage and organize the child's daily activities and tasks, they feel that they are not worthy parents. Most parents of such children report feelings of failure and stress in raising their child (10).

Mothers of children with this disorder also face many negative emotions such as feelings of guilt and blame, feelings of anger, feelings of hopelessness and depression, feelings of being forgotten and neglected by others, feelings of loneliness and helplessness, anxiety

and decreased self-confidence, which have a great impact on their mental health and the dynamics of the entire family (11). Therefore, efforts to use therapy that, in addition to paying attention to the child's emotional self-regulation issues, is relationship-oriented and unites both mother and child in a therapeutic action can be fruitful in improving and reducing many of these children's symptoms. Emotionally focused relationship therapy used for children must, in addition to its proven effectiveness, be appropriate to the children's level of cognition and abilities. In this regard, the use of play can be influential because games are selected according to the child's level of cognition and can be very useful for attracting children with attention deficit hyperactivity disorder who have difficulty attracting and maintaining attention. Furthermore, it's worth noting that the role of play therapy in improving attachment-related disorders has been shown in Dousti et al.'s study (12).

In planning a treatment plan for children with this disorder, it is important to note that these children's disregard for instructions, rules, and self-discipline, as well as their abnormal behaviors, cause discomfort to mothers and disrupt the mother-child communication channel and as much as an abnormal behaviour, that can decrease parental self-efficacy. Therefore, an improvement in ADHD symptoms in children can also improve the parental self-efficacy of mothers (13). Considering that both emotional self-regulation and parental self-efficacy are generally associated with attachment (13), application of an attachment-based therapy is justified. A recent review done by Johnson and Wilson suggests that attachment-based interventions such as Theraplay improve emotional regulation in children with neurodevelopmental disorders

Attachment-based play therapy (theraplay) is an interactive therapy that focuses on the emotions of the child and the parent involved in the sessions. This therapy was developed by Gerenberg in 1976. According to Norris and Radwell (14), theraplay is a way of being together that leads to a deeper relationship between the parent and child. This approach involves a range of simple activities that occur in the moment and lead to increased intimacy between the two. Theraplay is a short-term intervention based on attachment theory and responsive, coordinated, and empathetic interaction between the caregiver and the child. The goal of this play therapy is to strengthen trust, increase self-regulation, participate with joy, and empower parents' self-efficacy in order to establish and maintain appropriate relationships with their children by strengthening attachment during therapy sessions (15). Theraplay attempts to replicate the normal interactions that occur between parents and a young child in ideal circumstances. During these play therapy sessions, the therapist, as the main guide, guides the parent in managing play sessions based on the four basic dimensions of play therapy: Structure: The adult, the leader in the relationship, creates organization and predictability for the child, which conveys safety to him. Engagement: Adults are present in sessions in such a way that the child experiences being seen, heard, felt, and accepted. Nurturing: The adult provides care that can calm the child in a way that makes him feel good physically and emotionally. Challenge: The adult supports the child in acquiring and mastering new skills and strengthens the child's sense of competence and self-confidence (14).

Attachment-based play therapy is employed in the treatment of a range of emotional, social, and behavioral difficulties. It has been specifically used for impulsive and disorganized children, those experiencing fearful emotions, such as selective mutism, as well as neurotic children or those exhibiting symptoms related to personality disorders. Moreover, it has supported children struggling with sadness, depression, and suicidal thoughts (16). A study conducted by Rezaianzadeh and Yazdanfar confirmed the effectiveness of this therapy in reducing negative emotions in children, particularly those associated with violent externalized behaviors (17). Accordingly, the present study aimed to evaluate the effectiveness of attachment-based play therapy in enhancing emotional self-regulation among female students diagnosed with attention-deficit/hyperactivity disorder (ADHD) and improving the self-efficacy of their mothers.

Methods

This study employed a single-case design with a single-baseline A-B approach. The data collection process was

designed to include all female students aged 7 to 9 who exhibited symptoms of ADHD during the 2023-2024 academic year, forming the statistical population of the study. After obtaining the necessary permits from the Directorate General of Education and Training, the management of the selected elementary school, and the Code of Ethics (IR.UI.REC.1403.094) from the University of Isfahan, we conducted group play sessions to identify children suspected of having ADHD. Following initial identification, we sought confirmation from teachers and school staff regarding the identified cases. Subsequently, interview sessions were held with the mothers of the selected children, and the revised Connors questionnaire for parents was completed to finalize the confirmation of ADHD diagnosis. Based on the questionnaire results, four cases were selected, prioritizing those who obtained the highest scores. The first session with parents also served as a training session, during which mothers completed the research survey.

Materials

To establish the baseline, Shields' Emotional Self-Regulation and Dumka's Parental Self-Efficacy measures were administered. The sessions with parents and their children were conducted in a private setting. As a procedural preference, portions of the play therapy sessions were filmed for future review. After every two sessions, the mother and a senior expert in clinical child and adolescent psychology reviewed and discussed the recorded videos. The expert then provided recommendations to improve general mother-child communication. Additionally, during these review sessions with mothers and the researcher, Shields' self-regulation test and Dumka's parental self-efficacy questionnaire were re-administered. After eight sessions, a final post-test was administered, followed by a 30-day follow-up assessment. The study concluded with a symbolic celebration to mark the completion of the intervention.

The revised Conners' Parent Rating Scale

This questionnaire, developed by Connors, initially had 48 items, but its revised 26-item form is now used to diagnose attention deficit hyperactivity disorder in children. This questionnaire was developed for parents to respond to questions about their children. A 4-point Likert scale is used in this questionnaire (not at all true = 1, only somewhat true = 2, often true = 3, completely true = 4). Connors reported the reliability of this scale as 0.90. The validity of this questionnaire was reported as 0.85 by the Institute of Cognitive Sciences (18).

Dumka's Parental Self-Efficacy Scale (PSAM)

It was first used by Domka to assess parental self-efficacy. This scale consists of 10 items, five positive and five negative, and measures parents' overall sense of confidence in their role as parents. A high score in this test indicates high parenting self-efficacy, and a low score indicates low parenting self-efficacy. The highest and lowest scores obtained in this test are 70 and 10. The questions are in a 7-point Likert format, with a range from 1 = rarely to 7 = always. The scoring method of the test is that 5 questions (1, 3, 5, 6, 8) are scored in reverse, and the remaining 5 questions (2, 4, 7, 9, 10) are scored directly. In one study, the validity of this scale was reported to be 0.79, and its reliability was 0.73 (19).

Emotional Regulation Q Scale (ERQ)

The Emotion Regulation Q-Scale (20) was developed to study emotion regulation among school-age children. The Emotion Regulation Q-Scale was then constructed from the 10 items (i.e., the 5 highest and 5 lowest items) rated as most salient for the construct. Substantial interrater reliability was found among criterion raters, suggesting consistency and clarity in the experts' use of Q-sort descriptors to define affective regulation. The Cronbach's alpha for this Q-scale was .85. The multitrait-multimethod matrix and confirmatory factor analyses indicated impressive convergence among the Emotion Regulation Q-Scale and established measures of affect regulation (20). Cronbach's alpha of the Iranian version of this checklist in a nonclinical population of 3- to 6-year-old children was reported as 0.57 and 0.81 for the subscales of emotional regulation and instability/negativity, respectively. Also, the negative and significant correlation of the emotional regulation subscale of the scale with the Children's Behavior Checklist (0.35) and the positive correlation of the instability/negativity subscale (0.57) with the Children's Behavior Checklist, respectively, confirm the divergent and convergent validity of the emotional

regulation checklist in Iranian society (21). The results of the study by Shafie Tabar et al. regarding the psychometric properties of the Persian version of this checklist indicate its appropriate and acceptable validity and reliability (19).

Demographic Characteristics of Participants and a Summary of Therapeutic Sessions (Table 1)

Subject 1: The subject is an eight-and-a-half-year-old girl and has been studying in the third grade of primary school. She has an older brother. Both parents have bachelor's degrees. The mother is a housewife, and the father has a freelance job. The child lives with her parents. The most notable difficulty in their relationship was the lack of trust toward the mother that the child showed at every time she got, and the low parental self-efficacy the mother had with parenting skills.

Subject 2: The subject is an 8 years and 4 months old girl and has an older sister. Both parents have bachelor's degrees and are employed; therefore, a lot of the child's time after school is spent alone. Both mother and child showed signs of distrust and doubt toward each other. The mother describes the child as inattentive and mindless, and the child seems not to have the secure trust of having a caring, loving mother. The child is underweight and doesn't seem to enjoy eating food from his mother's hand, which was required for one of our games during the sessions.

Subject 3: The subject is a 9-year-old girl and has been studying in the third grade of primary school. She is an only child. The father has a master's degree and an office job, and the mother has a bachelor's degree and a part-time job. The child is rarely left alone at home, and as a result of having a loving mother, both the child and mother have a good picture of each other and describe their relationship as healing and nutritious. The issue is that neither one of them can imagine themselves as independent individuals; therefore, they grew some sort of unhealthy dependence on each other, which led to the child's misbehavior in the class (more than what one might expect from ADHD symptoms).

Subject 4: The girl is 8 years old and is studying in the second grade of elementary school. She has a younger sister. Both her mother and father have bachelor's degrees. Her father has an office job, and her mother is a full-time housewife. In this case the problem with having a child with ADHD symptomes got worse when the new sister came into piture, the child's lack of self regulation and impulsive behavior led into dangerous situation for the younger one and the mother's inability to moderate and manage the child's emotion and behavior effected in more troubeld condition in home for everyone.

Table 1. Content of therapoutic sessions (22)

Session	Task
1	Establishing initial communication with parents. Explaining the purpose of the sessions and the principles of treatment, examining the mother's perspective on the child's behavioral symptoms, and conducting the pre-tests.
2	Investigating early mother-child interaction. Implementing basic play activities (structure, engagement, nurturing, challenge).
3	Establishing a relationship between therapist and child and building a sense of trust. Reviewing pre-session interaction, increasing maternal insight, implementing basic therapy activities.
4	Implementing basic theraplay activities, guiding and educating parents in response to difficult child behaviors
5	Guiding the parent in managing the child's play, creating a positive parent-child relationship, reassuring the child about the parent's support, and focusing the parent on the child's positive points and abilities.
6	Implementing self-regulation exercises based on the 4 principles of Trapley
7	Self-regulation activities based on the 4 principles of Traplay, recreating the correct parent-child response system based on attachment
8	Conducting post-test questionnaires, coordinating follow-up sessions, and simbolicly celebrating the end of an era and beginning the new days of better communication.

Results

This study employed the single baseline case study method, selecting 4 female students diagnosed with mixed-type ADHD through convenience sampling. Attachment-based play therapy was administered in 8 sessions for both the students and their mothers. The collected data were analyzed using graphical representations, mean and standard deviation calculations, percentage of improvement assessments, and effect size determination based on Cohen's D scale (23) utilizing SPSS version 27. The statistical data related to each participant for the emotion regulation variable is presented in Table 2, and the data corresponding to each participant for the parental self-efficacy variable is provided in Table 3.

The effect sizes obtained using Cohen's Dscale (23) for the adaptive emotion regulation and instability subscales in the post-test phase were 1.30 and 0.72, respectively, while in the follow-up phase, they were 1.51 and 0.68. According to Cohen's D formula, an effect size of 0.2 indicates weak effectiveness, 0.5 denotes moderate effectiveness, and 0.8 or above signifies high effectiveness. These findings suggest that attachment-based play therapy is highly effective in improving emotional self-regulation in female students with ADHD. Regarding the second variable, parental self-efficacy, the effect sizes obtained using Cohen's D scale in the post-test phase were 1.24 and in the follow-up phase 0.95, indicating a strong impact of the therapy. The obtained values are sufficiently large to confirm the effectiveness of attachment-based play therapy in enhancing maternal self-efficacy. Table 4 and 5 and Figure 1 and 2 illustrating the observed progress in these variables are presented. Additionally, to further evaluate the therapy's effectiveness in improving emotional self-regulation and parental self-efficacy, the percentage of improvement formula was applied. This metric was calculated by subtracting the pre-test score from the post-test score and dividing the result by the pre-test score. The percentage of improvement for adaptive emotion regulation and negativity instability was 30% and 11.9% in the post-test phase, and 30% and 12% in the follow-up phase. For parental self-efficacy, the percentage of improvement was 25% in the post-test phase and 20% in the follow-up phase.

Table 2. ERQ scores of emotional self-regulation aspect(Adaptive Emotion Regulation(AER)/ Instability(IN)) at baseline, intervention and follow-up Steps

Subjects	Baseline(AER/IN)	Post-test (AER/IN)	Follow-up (AER/IN)	Improvement perecentage(AER/IN)
Sub no1	22/38	34/36	32/36	Post test:54/5, Follow up:45/5
Sub no2	20/40	21/38	24/37	Post test:5/5, Follow up:20/7
Sub no3	22/30	28/24	29/24	Post test:28/20, Follow up:31/20
Sub no4	18/44	23/37	21/39	Post test:28/15, Follow up:16/11

Table 3. PSAM scores of Paental Self-Efficacy aspect, at baseline, intervention and follow-up Steps

Subjects	Baseline	Post-test	Follow-up	Improvement perecentage
Sub no1	38	44	42	Post test:15, Follow up:10
Sub no2	41	42	42	Post test:2, Follow up:2
Sub no3	29	34	31	Post test:17, Follow up:6
Sub no4	25	48	46	Post test:92, Follow up:84

Table 4. Precentage of Improvment and effect size(using Cohen's D) of the first component; emotional self- regulation

Variables	Test	Mean	SD	Improvement perecentage	Effect Size (Cohen's D)
Adaptive Emotion Regulation	Pre-test	20.1	2.59	--	--
	Post-test	26.25	6.13	30	1.30
	Follow up	26.25	5.12	30	1.51
Instability	Pre-test	38.62	6.87	--	--
	Post-test	33.75	6.55	12	0.72
	Follow up	34	6.55	11.9	0.68

Table 5. Improvment precentage and effect size(using Cohen's D) of the second component;parental self-efficacy.

Variable	Test	Mean	SD	Improvement perecentage	Effect size (cohen's D)
Parental Self-Efficacy	Pre-test	32.75	7.03	--	--
	Post test	42	5.88	25	1.24
	Follow up	40.25	6.44	20	0.95

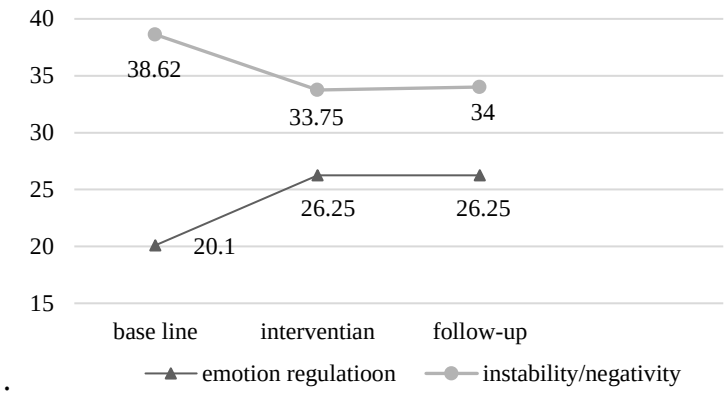

Figure 1. The average scores of adaptive emotional regulation,instability/negativity

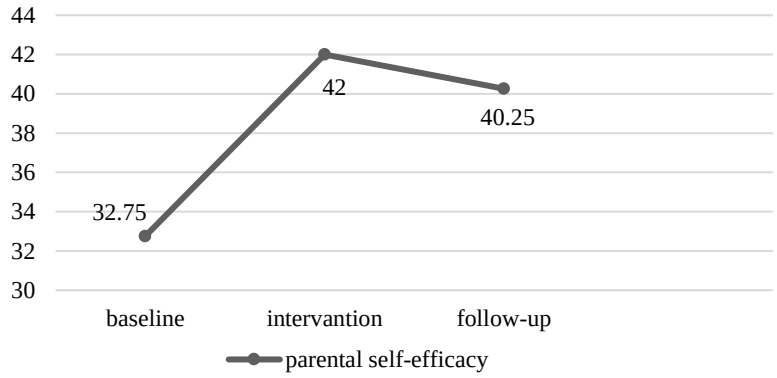

Figure 2. The average scores of parental self -efficacy

Discussion

The results of the present study suggest that emotional self-regulation of girls with ADHD and the parental self-efficacy of their mothers improved as a result of attachment-based play therapy sessions. Therefore, this study explores the impact of attachment-based play therapy on two critical psychological variables: the emotional self-regulation of female students with ADHD and the self-efficacy of their mothers. By examining these effects, the research aims to provide a deeper understanding of how a structured therapeutic intervention called attachment-based play therapy can enhance both child and parental outcomes. The overall results of this study regarding the first hypothesis indicate that the emotional self-regulation scores of female students with attention deficit hyperactivity disorder increased by implementing this intervention. In the theoretical explanation of this hypothesis, emotional regulation is perceived as a series of internal and external functions—both unconscious and involuntary, as well as conscious and voluntary—that refine emotional responses in cognitive and emotional processes. The significance of emotional self-regulation in psychological stages of life has been demonstrated in various studies. Emotional self-regulation is defined as “the demonstration of self-efficacy in the context of emotion-eliciting social transactions.” To expand on this definition, emotional regulation can also be understood as the ability to perceive and regulate the expression of emotions individually and in response to others, facilitating cognitive tasks such as problem-solving (22).

Since attachment serves as a model for the internal working models of both parents and child, and because emotion regulation represents the operational aspect of attachment in a child's life, early parent-child attachment paves the way for emotional growth, adaptation, and emotional regulation (24).

Furthermore, through the process of experiencing emotional responses from parents, children learn to manage their emotions. Secure parent-child attachment

provides children with opportunities for learning and exploration within their environment. In addition to these theoretical perspectives, research has demonstrated that attachment has a significant effect on children's emotion regulation (25), Insecure attachment in children can lead to disruptions in emotional regulation and a decrease in positive emotion regulation (26). Thus, improving the attachment relationship between a mother and her child is expected to enhance the child's emotional self-regulation. A child with a secure attachment can rely on the mother's availability to alleviate distress in challenging situations and respond lovingly to their needs, thereby facilitating better emotional regulation (7). Children with emotional and behavioral disorders, such as attention deficit hyperactivity disorder, encounter difficulties in managing emotions and regulating behavior. According to Ainsworth's attachment theory, parents of such children may struggle to establish a secure attachment and inadequately support the child's developmental needs. Properly addressing these needs requires focusing on the child's independence and exploratory abilities while reassuring them of a stable and supportive base. Throughout the therapy sessions, both the child's and mother's working models undergo significant improvement, leading to positive adjustments in expectations. For instance, children learn to perceive their mother as reliable, available, and responsive to their needs, fostering a joyful and intimate relationship. Consequently, a previously dysfunctional attachment relationship between mother and child begins to transform positively. Likewise, mothers experience shifts in their perception of their child with ADHD—not solely as a challenging individual who is difficult to manage—but as someone with whom they can enjoy quality time. With an improved ability to manage and regulate their child's behavior, mothers perceive themselves as more effective and efficient in their parenting role, thus enhancing their sense of self-efficacy.

As previously noted, parental self-efficacy is closely related to attachment, just as emotional regulation is. Strengthening the attachment relationship between mother and child not only improves children's emotional regulation but also enhances maternal self-efficacy. Given that self-efficacy determines how much time individuals devote to completing tasks, their adaptability to various situations, and their resilience in overcoming difficulties (27), improving parental self-efficacy contributes to better parenting practices. Furthermore, as the mother's and child's working models undergo positive changes, attachment processing at the interpersonal level leads to more accurate message transmission and reception between them(interpersonal level). Under such conditions—where attachment is improved at the individual, interpersonal, and metacognitive levels—the mother's ability to regulate her child strengthens alongside improved attachment in both mother and child. Ultimately, the child's emotional regulation is enhanced through strengthened maternal attachment, increased sensitivity in the mother's responsiveness to her child's needs, and greater support for the child's attachment and exploratory behaviors.

Conclusion

Attachment-based play therapy is a structured intervention in which a mother and child engage in interactive games to foster a joyful relationship and enhance positive communication. Barkley notes that children with ADHD often struggle with emotional regulation, an issue that tends to receive limited academic and research attention. This therapeutic approach is particularly valuable as it supports the development of emotional regulation in children, thereby reducing problematic behaviors. Additionally, it strengthens the mother-child bond, enabling mothers to better manage their child's emotions while enhancing their sense of parenting effectiveness. This study was subject to certain limitations, as it exclusively focused on female students and did not include male students or fathers as participants. The findings demonstrate that attachment-based play therapy effectively improves both emotional self-regulation in children and parental self-efficacy in mothers. Therefore, future research should consider examining the role of fathers in this therapeutic process, either as active participants or observers. Additionally, studies should incorporate male students to assess the effects of this intervention on them and to explore potential gender differences in response to attachment-based play therapy.

Acknowledgment

The authors express their appreciation to all the participants who were involved.

Conflict of Interest

The authors declare that they have no conflict of interest.

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