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Original Article

The effectiveness of storytelling therapy on academic self-regulation, resilience, and aggression in students with ADHD

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Abstract

Background: Students with attention deficit hyperactivity disorder (ADHD) often face significant challenges in academic self-regulation, resilience, and aggression. Storytelling therapy, a creative and engaging intervention, offers a promising avenue for enhancing their cognitive, emotional, and behavioral skills. The present study aimed to investigate the effectiveness of storytelling therapy on aggression, resilience, and academic self-regulation in students with ADHD.

Methods: The study utilized a quasi-experimental pretest-posttest control group design. The target population encompassed all students with ADHD residing in Ahvaz City during 2023. A convenience sample of 40 students was selected and randomly assigned to either the experimental (n=20) or control (n=20) group. Data collection instruments included the Academic Self-Regulation Questionnaire (ASRQ), the Connor-Davidson Resilience Scale, and the Aggression Questionnaire. The experimental group underwent 12, 60-minute storytelling therapy sessions, while the control group received no intervention. Data analysis was conducted using analysis of covariance (ANCOVA).

Results: The results indicated a significant difference between the experimental and control groups of students with ADHD in all three variables of aggression, resilience, and academic self-regulation. Storytelling therapy led to a decrease in aggression and an increase in resilience and academic self-regulation in students with ADHD ($P=0.001$).

Conclusion: Storytelling therapy effectively reduced aggression and improved resilience and academic self-regulation in students with ADHD. This creative intervention engages students emotionally and cognitively, fostering empathy, emotional regulation, and cognitive skills. While promising, further research is needed to fully understand its long-term impact and optimal implementation.

Introduction

Attention deficit hyperactivity disorder (ADHD) is a chronic and prevalent neurodevelopmental disorder associated with severe disruptions in relationships with parents, siblings, teachers, peers, and adults during childhood and adolescence.[1] Storytelling therapy, a psychotherapeutic approach involving the creation and sharing of stories to explore emotions, problem-solve, and develop coping strategies, offers a creative method to address these challenges.[2,3] Compared to their typically developing peers, students with ADHD exhibit more disruptive behaviors, participate less in social and collaborative activities, and are less compliant with parental and adult authority.[4] The fifth edition of the Diagnostic and Statistical Manual of Mental Disorders reports a prevalence of ADHD in children of 5%, with boys being more affected than girls. In Iran, the prevalence among students aged 7-12 years was estimated at 8.62% (12.55% for boys, 5.34% for girls) based on regional studies.[5] ADHD is categorized into three subtypes: predominantly inattentive, predominantly hyperactive-impulsive, and combined type. The hyperactive-impulsive subtype, characterized by excessive motor activity, restlessness, and impulsivity, has a profound negative impact on social relationships.[6] The hasty and chaotic behaviors of students with ADHD are a primary source of stress and frustration for both the students themselves and those around them, including family, peers, and others.[7]

Due to psychosocial and academic difficulties, students with ADHD often face numerous challenges at home, school, and in the community, such as learning disabilities, aggression, and academic underachievement.[8] Aggression is a deliberate behavior aimed at causing physical or psychological harm, leading to peer rejection, low self-esteem, poor academic and social functioning, and heightened arousal.[9] It is a common reason for referral to counseling and psychological services, as students quickly learn that aggression can be an effective means of

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achieving their goals.[10] Aggression in students is linked to delinquency, low self-esteem, reduced well-being, impaired peer relationships, depression, poor academic skills, difficulty recognizing emotional cues, and deficits in social communication.[11]

Another challenge faced by students with ADHD is a decrease in resilience,[12] which is a dynamic process that enables individuals to exhibit more positive and adaptive behaviors when confronted with difficulties. In other words, resilience refers to the ability to return to one's original state or situation after undergoing significant changes and facing challenges.[13,14] Resilience helps individuals overcome adverse events and achieve desired outcomes by leveraging positive emotions and experiences.[15] Resilient individuals employ effective coping strategies when faced with psychological stressors and challenges, overcome these challenges independently or with the help of others, and demonstrate greater competence and flexibility in the face of adversity.[16]

Another challenge faced by students with ADHD is a decline in academic self-regulation,[17] a dynamic process that enables learners to transform their cognitive abilities into functional skills in the academic domain.[18] Self-regulation is a crucial construct that determines the activities individuals engage in, the effort they exert, and their persistence in the face of potential obstacles. Self-regulated learners set appropriate goals for themselves, employ suitable learning strategies to achieve these goals, and monitor their activities and evaluate their progress.[19] Academic self-regulation is a dynamic and constructive process in which learners attempt to control their cognition, behavior, and motivation in line with their goals.[20] According to this construct, learners identify their learning needs with or without the help of others, set learning goals, and assess their learning. Individuals with high academic self-regulation analyze the requirements of academic tasks, define their learning goals, and use strategic approaches to achieve these goals. Such individuals pay attention to the consequences of achieving their goals, evaluate their performance, and adjust their learning approaches.[21]

Various approaches have been employed to enhance students' characteristics, and storytelling therapy emerges as a suitable intervention due to the cognitive and linguistic limitations of students, as well as their lower motivation to participate in adult-oriented therapeutic methods.[2] Storytelling therapy is a significant and effective therapeutic approach for students, enabling them to empathize with story characters and utilize their imagination to seek solutions to problems and challenges.[22] Storytelling therapy incorporates the technique of reciprocal storytelling in child psychotherapy, where the child is asked to narrate a story with a beginning, middle, and end. Subsequently, the therapist selects psychoanalytic themes related to the child's issues and presents a similar story, offering more mature and healthier solutions to address problems and challenges.[3] Storytelling therapy provides students with an opportunity to explore their issues and confront them in a safe, imaginative, and unrestricted environment. Thus, children do not need to explicitly acknowledge their problems but can instead seek various options and solutions, selecting the most suitable one.[23] Storytelling therapy assists students in gaining a deeper understanding of themselves and their problems through engaging in joyful, enjoyable, and entertaining activities, thereby facilitating progress in addressing challenges.[24] The results of Jabbary Daneshvar et al's study indicated that both cognitive-behavioral play therapy and storytelling therapy increased assertiveness and decreased aggression in elementary school boys with specific learning disabilities, with storytelling therapy being more effective than cognitive-behavioral play therapy.[25] In their research, Skharninda and Setyowati concluded that storytelling enhanced the ability to control aggressive behaviors in early childhood students.[26]

Students with ADHD often struggle with academic self-regulation, resilience, and aggression. Traditional therapeutic interventions may not adequately address these multifaceted challenges. Storytelling therapy, a creative and engaging approach, presents a promising avenue for enhancing cognitive, emotional, and behavioral skills in these students. This research aims to evaluate the efficacy of storytelling therapy on aggression, resilience, and academic self-regulation in students with ADHD. By investigating the underlying mechanisms of action and providing empirical evidence, this study seeks to support the integration of storytelling therapy into educational and therapeutic settings.[24] Ultimately, this research contributes to the development of evidence-based interventions tailored to the specific needs of students with ADHD, advancing our understanding of storytelling therapy's potential to improve their lives.

Methods

method, chosen due to practical constraints such as accessibility to participants diagnosed with ADHD at the Ahvaz Psychiatric Clinic and limited resources for broader sampling. This approach facilitated timely recruitment but may limit generalizability, as the sample may not fully represent the broader ADHD population, particularly those outside clinical settings or in different geographic regions. Eligible participants were 7-13-year-old students diagnosed with ADHD at the Ahvaz Psychiatric Clinic in 2023, with established medical records. The sample size (n = 40) was determined based on power analysis, targeting a power of 0.80, alpha of 0.05, and a medium-to-large effect size (Cohen's f = 0.35), consistent with similar studies on behavioral interventions for ADHD.[27] A total of 70 questionnaires were distributed, and 40 students meeting the inclusion criteria were randomly assigned to either the experimental or control group (n = 20 per

group). Random allocation was implemented using a computer-generated random number sequence to ensure unbiased group assignment. Inclusion criteria included scoring below the 5th percentile on the Academic Self-Regulation Questionnaire (ASRQ) and Connor-Davidson Resilience Scale (CD-RISC), and above the 95th percentile on the Aggression Questionnaire (AQ), based on normative data for similar populations. Additional criteria included written parental consent, absence of other psychiatric disorders, and non-participation in concurrent therapies. Participants were excluded if they missed more than one intervention session or expressed unwillingness to continue.

Instruments

The Aggression Questionnaire

The AQ,[28] a validated Persian version of a 29-item self-report measure, was used to assess aggression. Participants rated items on a five-point Likert scale (1 = extremely uncharacteristic, 5 = extremely characteristic) across four dimensions: physical aggression, verbal aggression, anger, and hostility. Subscale scores were calculated by summing item responses within each dimension (e.g., physical aggression: items 1-9). Total AQ scores ranged from 29 to 145, with higher scores indicating greater aggression. The instrument exhibited good internal consistency in this study (Cronbach's alpha = 0.81), consistent with previous research using the Persian version.[29]

The Connor-Davidson Resilience Scale

The CD-RISC is a 25-item self-report measure assessing resilience on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree). Total scores range from 0 to 100, with higher scores indicating greater resilience. The CD-RISC has been validated across various populations and has demonstrated its ability to distinguish between resilient and non-resilient individuals.[30] The scale exhibits reliable psychometric properties, with a Cronbach's alpha of 0.78 reported in the literature.[31]

Academic Self-Regulation Questionnaire

This questionnaire was developed by Sevari and Arabzadeh[32] and consists of 30 items. A 5-point Likert scale was used for responses, with a minimum score of 30 and a maximum of 150, where higher scores indicate greater academic self-regulation. The construct validity of the instrument was examined and confirmed through exploratory factor analysis by the developers, and its reliability was reported as 0.87 using Cronbach's alpha.[32] In the present study, the reliability of the questionnaire was calculated using Cronbach's alpha, yielding a coefficient of 0.85.

Intervention

with each session lasting 60 mi Storytelling therapy was conducted over 12 weeks, nutes, facilitated by two licensed clinical psychologists trained in narrative and storytelling therapy techniques, each with over five years of experience working with children with ADHD. The intervention aimed to improve academic self-regulation, resilience, and aggression in students with ADHD. A structured treatment manual, adapted from established storytelling therapy protocols, was used to ensure consistency across sessions. The manual outlined session objectives, story themes, and activities, including reciprocal storytelling and guided discussions. Fidelity was maintained through weekly supervision meetings where facilitators reviewed session recordings to ensure adherence to the manual, with 95% adherence achieved across sessions. To minimize contamination, experimental and control group participants attended sessions at different times, and facilitators were instructed to avoid discussing intervention content with control group participants or their families. Following the completion of the intervention, both the experimental and control groups were administered a posttest under identical conditions. Subsequently, brief training sessions were provided to the control group participants to ensure ethical considerations. A summary of the storytelling therapy sessions is presented in Table 1.

Data Analysis

Data were analyzed using SPSS-27 statistical software. Analysis of covariance (ANCOVA) was used to compare the experimental and control groups on the dependent variables (aggression, resilience, and academic self-regulation) while controlling for pretest scores. Prior to ANCOVA, assumptions were tested: (1) homogeneity of regression slopes was confirmed by testing the interaction between group and pretest scores ($P > 0.05$ for all variables); (2) normality of residuals was verified using Shapiro-Wilk tests ($P > 0.05$); and (3) linearity between covariates and dependent variables was established through scatterplot inspections. Missing data were minimal (< 5%), with one participant in the experimental group missing one session; this was addressed using last-observation-carried-forward imputation to maintain sample size. Effect sizes (partial eta-squared) were calculated to complement *P*-values, providing insight into the practical significance of the intervention effects.

Results

The sample consisted of 40 male students diagnosed with ADHD. The mean age of participants in the experimental and control groups was 9.72 ± 2.60 and 10.35 ± 2.49 years, respectively. Table 2 presents the mean scores and standard deviations (SDs) of aggression, resilience, and academic self-regulation for the storytelling therapy and control groups at both the pre-test and post-test stages.

As evident from Table 2, the storytelling therapy group exhibited a significant decrease in aggression scores from the pre-test to the post-test ($P = 0.001$), while the control group showed no significant change. In contrast, the

Table 1. A summary of the storytelling therapy sessions

Sessions	Content
First to fourth	Introduction: Efforts to get to know the participants, build trust, and explain the session structure, group rules, and planning for future sessions. Topic: Identifying emotions using emotion cards. Telling a story using emotion cards and expressing the story's main character's emotions. Assignment: Providing several emotion cards and asking participants to create a story for the next session.
Fifth and sixth	Topic: "Guess the Story" game. Explanation: A story is told to the children, and they are asked to guess the story's theme based on the keywords provided that relate to their problems. Assignment: The therapist tells a story and then asks the children to guess the story's
Seventh and eighth	Topic: Metaphors and Storytelling. Explanation: Based on the information gathered from case histories and psychological assessments, the therapist identifies the individual needs, conflicts, worries, and stressors of each participant. Then, they create stories with protagonists who face similar problems and try to develop new skills and methods to overcome these challenges. Assignment: Participants are asked to suggest new ways to solve the protagonist's problems.
Ninth and tenth	Topic: Emotion Management. Explanation: A play is designed using the animal world, and dialogues are provided for participants to act out roles. In each dialogue, at some point, a character causes distress or upset to others, but another character prevents anger, hatred, aggression, and revenge by managing their emotions and using various coping strategies such as problem-solving, finding more effective solutions, planning, seeking guidance with emotional support from others, and emotional regulation. Assignment: A group performance is conducted to internalize emotion management and transfer it to the outside world.
Eleventh and twelfth	Topic: Storytelling with Positive Emotional Words. Explanation: The therapist tells previously selected stories using positive emotional words, concepts, and phenomena. Then, they discuss various aspects of the story with the children. The focus is on pleasant events, positive aspects of the topics, and effective solutions used in the story. Conclusion: Summarizing the results, thanking the children with small gifts, and announcing the end of the sessions.

Table 2. Descriptive findings for aggression, resilience, and academic self-regulation in the storytelling therapy and control groups

Variable	Phase	Storytelling therapy group		Control group	
		Mean	SD	Mean	SD
Aggression	Pre-test	74.56	9.01	77.64	8.58
	Post-test	68.40	7.84	77.84	8.23
Resilience	Pre-test	37.08	3.37	36.16	3.94
	Post-test	41.96	3.28	35.48	3.52
Academic self-regulation	Pre-test	48.44	7.01	45.24	5.79
	Post-test	53.92	7.06	44.88	5.74

storytelling therapy group demonstrated a significant increase in resilience and academic self-regulation scores ($P=0.001$), whereas the control group showed no significant change in these variables. These findings suggest that storytelling therapy may be an effective intervention for improving aggression, resilience, and academic self-regulation in students with ADHD.

The assumptions of ANCOVA were met, including the normality of aggression, resilience, and academic self-regulation scores for both the experimental and control groups of boys with ADHD at both pre- and post-test stages, as assessed by the Kolmogorov-Smirnov and Shapiro-Wilk tests. Additionally, the assumption of homogeneity of variances for aggression, resilience, and academic self-regulation was met as determined by Levene's test, and the assumption of homogeneity of covariance matrices was met as determined by Box's M test. Therefore, ANCOVA was deemed appropriate for data analysis. The results of the ANCOVA to determine the effectiveness of storytelling therapy on aggression, resilience, and academic self-regulation in students with ADHD are presented in Table 3, with exact P values and 95% confidence intervals for effect sizes.

Table 3 reveals significant differences in aggression, resilience, and academic self-regulation between the experimental and control groups of students with ADHD ($P=0.001$). Based on the large effect sizes ($\eta^2=0.87$ for aggression [95% CI: 0.79, 0.92], $\eta^2=0.88$ for resilience [95% CI: 0.80, 0.93], and $\eta^2=0.83$ for academic self-regulation [95% CI: 0.73, 0.89), it can be concluded that storytelling therapy had a substantial impact on reducing aggression and increasing resilience and academic self-regulation in students with ADHD.

Discussion

This study aimed to investigate the effectiveness of storytelling therapy on aggression, resilience, and academic self-regulation in students with ADHD. The findings demonstrated that storytelling therapy effectively reduced aggression in students with ADHD. These results align with previous research by Jabbary Daneshvar et al,[25] who found that storytelling therapy was effective in reducing aggression in primary school boys with intellectual disabilities, and Skharninda and Setyowati,[26] who reported the effectiveness of storytelling in enhancing the ability to control violent behaviors in early childhood students. Storytelling therapy likely reduces aggression by fostering emotional regulation and empathy through identification with story characters. By engaging with narratives, students process emotions indirectly, allowing them to explore alternative behavioral responses in a safe, imaginative context. The reciprocal storytelling technique, where students create and respond

Table 3. Results of ANCOVA on post-test scores for aggression, resilience, and academic self-regulation

Variables	SS	df	MS	F	*P*	η^2	95% CI for η^2
Aggression	475.09	1	475.09	301.75	0.001	0.87	[0.79, 0.92]
Resilience	364.39	1	364.39	324.29	0.001	0.88	[0.80, 0.93]
Academic self-regulation	394.32	1	394.32	211.59	0.001	0.83	[0.73, 0.89]

to stories, enhances perspective-taking and reduces impulsive, aggressive reactions.[33] These cognitive and emotional processes help students internalize adaptive strategies, mitigating aggressive tendencies.

The current study also revealed that storytelling therapy significantly increased resilience in students with ADHD. These findings are consistent with previous research by Ramamurthy et al,[24] who highlighted the effective role of storytelling therapy in enhancing children's resilience; Mostafaei Paydar et al,[34] who demonstrated the effectiveness of storytelling therapy in improving resilience in visually impaired students; and Karibwende et al,[35] who reported the positive impact of storytelling therapy on the resilience of orphaned and abandoned children. The mechanism underlying this improvement may involve the development of cognitive flexibility and problem-solving skills. Storytelling therapy encourages students to reflect on characters' challenges and solutions, fostering adaptive coping strategies. By engaging with positive emotional narratives, students enhance their self-efficacy and emotional awareness, which are critical components of resilience.[35] The interactive nature of storytelling also promotes social connectedness, further supporting resilience by strengthening interpersonal relationships.

Another significant finding of this study was that storytelling therapy increased academic self-regulation in students with ADHD. This finding aligns with previous research by Hosseinnezhad et al,[27] who demonstrated the effectiveness of storytelling therapy in enhancing academic self-regulation in students with ADHD. Storytelling therapy enhances academic self-regulation by improving attention, memory, and goal-setting skills. Through narrative engagement, students practice sustained attention to story details, which translates to improved focus in academic tasks. The structured storytelling process, involving planning and reflection, mirrors self-regulatory behaviors, enabling students to internalize strategies for goal-directed learning.[27] By connecting stories to personal experiences, students develop metacognitive awareness, which supports academic planning and persistence.

The study's limitations include the use of convenience sampling, which may introduce selection bias, as participants were drawn from a single clinic in Ahvaz, potentially limiting representativeness. Additionally, the sample was restricted to male students with ADHD aged 7-13 years, which may limit generalizability to female students with ADHD. Gender differences in ADHD presentation, such as higher internalizing behaviors in females, may influence the effectiveness of storytelling therapy, necessitating further research to explore its impact across genders. Future studies should also investigate the intervention's efficacy in preschool, adolescent, and female populations, as well as those with co-occurring disorders such as specific learning disabilities.

Conclusion

The findings of this study provide compelling evidence for the effectiveness of storytelling therapy in mitigating aggression and enhancing resilience and academic self-regulation in students with ADHD. The significant differences observed between the experimental and control groups underscore the potential of this creative therapeutic approach. Storytelling therapy, by engaging students' imaginations and emotions, appears to foster a sense of empathy, understanding, and emotional regulation. This, in turn, contributes to reduced aggression and increased resilience. Additionally, the therapeutic process may enhance cognitive skills, such as attention, memory, and problem-solving, which are crucial for academic self-regulation. While these results are promising, further research is needed to explore the long-term effects of storytelling therapy, identify optimal treatment parameters, and investigate potential mechanisms of action. Nevertheless, this study provides a strong foundation for considering storytelling therapy as a valuable adjunct to traditional interventions for students with ADHD.

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Authors' Contribution

Conceptualization: Zahra Dasht Bozorgi.
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Investigation: Kimiya Moulazadeh.
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Supervision: Zahra Dasht Bozorgi.
Writing–original draft: Kimiya Moulazadeh.
Writing–review & editing: Zahra Dasht Bozorgi.

Competing Interests

There was no conflict of interest in this research.

Ethical Approval

The current study was approved by the Ethics Review Board of Islamic Azad University Ahvaz Branch (approval number: IR.IAU.AHVAZ.REC.1403.001). Informed consent was obtained from the parents or legal guardians of all participants, ensuring voluntary participation and the right to withdraw at any time.

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