

The Effectiveness of a Mindfulness-Based Intervention on Behavioral Problems and Cognitive Flexibility in Elementary School Students

Original Article

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Abstract

Background and Aim: Childhood behavior problems represent a significant public health concern and are closely associated with impairments in executive functioning, particularly cognitive flexibility. The present study investigated the effectiveness of mindfulness training in reducing behavior problems and improving cognitive flexibility among elementary school boys.

Materials and Methods: This applied study employed a quasi-experimental design with pretest, posttest, and one-month follow-up assessments, including a control group. The study population comprised boys aged 7–12 years enrolled in elementary schools in Tehran during the 2025–2026 academic year. Thirty students exhibiting symptoms of behavior problems were selected through convenience sampling and randomly assigned to either an experimental group ($n = 15$) or a control group ($n = 15$). The experimental group participated in an eight-session mindfulness training program, whereas the control group received no intervention. Data were collected using the Child Behavior Checklist (CBCL) and the Wisconsin Card Sorting Test (WCST) and analyzed using multivariate analysis of covariance (MANCOVA) and multiple regression analysis in IBM SPSS Statistics.

Results: Mindfulness training significantly reduced all dimensions of behavior problems and significantly improved cognitive flexibility, as evidenced by fewer perseverative errors and a higher number of correct responses in the experimental group compared with the control group ($p < .001$). These improvements were maintained at the one-month follow-up assessment. Furthermore, cognitive inflexibility accounted for 72% of the variance in behavioral problems ($R^2 = .72$).

Conclusion: The findings suggest that mindfulness training is an effective intervention for reducing behavior problems and enhancing executive functioning in children. By promoting cognitive flexibility and adaptive self-regulation, mindfulness may facilitate improvements in both behavioral functioning and underlying cognitive processes. Incorporating mindfulness-based programs into school settings may therefore represent a promising strategy for supporting children's psychological and cognitive development.

Keywords: Mindfulness; Behavioral problems; Cognitive flexibility; Executive functions; Students

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Introduction

Childhood and the early school years constitute a critical developmental period during which fundamental cognitive, emotional, and social competencies are established. This stage plays a pivotal role in shaping mental health, self-regulation, and adaptive functioning throughout later life (1, 2). In recent decades, the increasing prevalence of behavior problems among elementary school children has become a major concern for educators, mental health professionals, and policymakers worldwide (3). Behaviors such as inattention, aggression, social withdrawal, and noncompliance are among the most frequently reported behavioral difficulties during this developmental period and may adversely affect academic achievement, peer relationships, and long-term psychological adjustment (3, 4).

Behavior problems are generally defined as persistent, developmentally inappropriate patterns of behavior that interfere with a child's academic, social, and emotional functioning. Because of their severity, frequency, or chronicity, these maladaptive behaviors may hinder healthy psychological development and place children at increased risk for adverse outcomes later in life (5). Behavior problems are commonly classified into two broad domains: internalizing problems, which include anxiety, depression, social withdrawal, and somatic complaints, and externalizing problems, which encompass aggression, oppositional behavior, impulsivity, rule-breaking behavior, and attention-deficit/hyperactivity symptoms (6, 7).

From a theoretical perspective, behavior problems are closely linked to deficits in executive functioning, particularly impairments in inhibitory control, attentional regulation, and cognitive flexibility (8, 9). Children with weaknesses in these executive processes often experience difficulty inhibiting impulsive responses, maintaining attention, and selecting adaptive behavioral strategies when confronted with challenging situations. Furthermore, the development of behavior problems is influenced by a complex interaction of neurobiological factors, individual characteristics such as impulsivity, and environmental influences, including ineffective parenting practices and family conflict. Together,

these factors contribute to poorer academic performance, difficulties in peer and teacher relationships, and an increased risk of persistent psychosocial maladjustment (3).

A core mechanism underlying behavior problems is impairment in cognitive flexibility, defined as the capacity to modify cognitive strategies, shift between mental sets, and adapt behavior in response to changing environmental demands and feedback (3, 10). As a fundamental component of executive functioning, cognitive flexibility enables individuals to adjust their thoughts, behaviors, and perspectives when confronted with novel or challenging situations, thereby supporting effective problem-solving, emotional regulation, and learning (11, 12). This capacity allows children to inhibit habitual or perseverative responses, generate alternative solutions, and select adaptive behavioral strategies rather than reacting automatically to environmental stimuli (13). Consequently, deficits in cognitive flexibility have been identified as an important cognitive mechanism contributing to the development and maintenance of behavior problems in childhood.

Growing evidence suggests that mindfulness is an effective approach for enhancing cognitive flexibility and, consequently, reducing behavior problems. Mindfulness is commonly defined as purposeful, present-moment awareness of internal and external experiences accompanied by an attitude of openness and nonjudgmental acceptance (14). The beneficial effects of mindfulness have been explained from several complementary theoretical perspectives. From a self-regulation perspective, mindfulness enhances attentional control and emotional regulation, enabling individuals to respond more adaptively to challenging situations. According to executive function models, mindfulness strengthens inhibitory control, sustained attention, and cognitive flexibility, thereby improving self-regulated behavior (8).

Furthermore, neuropsychological evidence suggests that mindfulness practice is associated with functional changes in prefrontal brain regions involved in executive control, as well as reduced emotional reactivity, which together facilitate more deliberate and less impulsive behavioral responses (3).

Previous research has shown that children with higher levels of cognitive flexibility are more likely to employ

adaptive coping strategies when confronted with stressful situations, whereas deficits in this executive function are associated with emotional dysregulation, interpersonal conflict, and a greater risk of behavior problems (15, 16). Mindfulness is thought to facilitate more adaptive responding by strengthening attentional control and inhibitory processes, thereby enabling children to interrupt automatic reactions and select more deliberate, goal-directed behaviors (17).

A growing body of international research has demonstrated the effectiveness of mindfulness-based interventions in reducing aggressive behavior and improving executive functioning among children and adolescents (18). Similarly, studies conducted in Iran have reported beneficial effects of mindfulness on reducing anxiety and enhancing self-regulation (19, 20). Despite these promising findings, most domestic studies have focused on adolescent populations, while relatively few have simultaneously examined behavioral outcomes and executive functioning in elementary school children using rigorous experimental designs (21). This gap in the literature highlights the need for further investigation of mindfulness-based interventions during middle childhood, a developmental period in which executive functions and self-regulatory capacities undergo substantial development. Accordingly, the present study aimed to examine the effectiveness of mindfulness training in reducing behavior problems and improving cognitive flexibility among children aged 7–12 years. By simultaneously evaluating behavioral and cognitive outcomes within a controlled experimental design, this study seeks to contribute to the evidence base supporting school-based mindfulness interventions and to provide practical implications for promoting children's mental health and adaptive functioning in educational settings.

Methods

This study employed a quasi-experimental design with pretest, posttest, and one-month follow-up assessments, including an experimental and a control group. The study population consisted of all male elementary school students (Grades 1–6; aged 7–12 years) in Tehran during the 2025–2026 academic year. A sample of 30 boys exhibiting symptoms of behavior

problems was recruited using convenience sampling. Participation was voluntary, and following the initial recruitment, participants were screened according to the predefined inclusion and exclusion criteria. Eligible students were then randomly assigned to either the experimental group ($n = 15$) or the control group ($n = 15$). Male students were selected because behavior problems, particularly externalizing behaviors, are generally reported to occur more frequently among boys than girls. The inclusion criteria were: (a) enrollment in elementary school; (b) age between 7 and 12 years; (c) no current use of psychotropic medication; (d) no physical conditions or disabilities that would interfere with participation in the intervention; (e) parent- and teacher-reported behavior problems; and (f) obtaining a borderline or clinical-range score on one or more relevant subscales of the Child Behavior Checklist (CBCL). The exclusion criteria included: (a) absence from more than two intervention sessions; (b) a diagnosis of severe psychiatric disorders or specific learning disorders; and (c) withdrawal from the study or failure of either the child or the parents to cooperate during the assessment process. Eligibility was determined during the baseline screening conducted before the pretest assessment. The participants had a mean age of 9.30 years ($SD = 0.89$).

Ethical Considerations: Ethical approval for this study was obtained from the Ethics Committee of the University of Tehran (Approval No. IR.UT.PSYEDU.REC.1404.168) prior to participant recruitment. Written informed consent was obtained from the parents or legal guardians of all participants, and age-appropriate assent was obtained from the children before their participation. Participants and their parents were fully informed about the study objectives, procedures, the voluntary nature of participation, and their right to withdraw from the study at any time without penalty. Confidentiality and anonymity were maintained throughout the study, and all collected data were used exclusively for research purposes. Upon completion of the study, the educational materials were provided in summary form to participants in the control group to ensure equitable access to the intervention.

Instruments

Child Behavior Checklist (CBCL): The Child Behavior Checklist (CBCL/6–18), developed by

Achenbach and Rescorla (2001), is a widely used parent-report instrument designed to assess emotional and behavioral problems in children and adolescents aged 6–18 years. The checklist consists of 113 items rated on a three-point Likert scale and yields scores on several syndrome scales, including Anxious/Depressed, Withdrawn/Depressed, Somatic Complaints, Social Problems, Attention Problems, Rule-Breaking Behavior, and Aggressive Behavior. In the present study, children who obtained scores within the borderline or clinical range on the relevant CBCL syndrome scales were considered eligible for participation. Achenbach and Rescorla (2001) reported satisfactory psychometric properties for the CBCL, with internal consistency coefficients ranging from 0.65 to 0.85, and extensive evidence supporting its reliability and validity across diverse populations. The Persian version of the CBCL was translated and standardized by Tehrani-Doost *et al.* (2002). Subsequent psychometric evaluation by Minaei (2005) demonstrated satisfactory internal consistency ($\alpha = 0.83$) and confirmed the construct validity of the Persian version.

Wisconsin Card Sorting Test (WCST): The Wisconsin Card Sorting Test (WCST), originally developed by Grant and Berg (1948), is a widely used neuropsychological measure of executive functioning, particularly cognitive flexibility, abstract reasoning, and set-shifting ability.

During the test, participants sort response cards according to changing rules based on color, shape, or number and must infer the sorting principle from the examiner's feedback. Successful performance requires continuous monitoring of feedback, inhibition of previously learned response patterns, and adaptation to changing task demands. The primary outcome measures used in the present study were Categories Completed, which reflects successful cognitive set maintenance and shifting, and Perseverative Errors, which indicate difficulty in abandoning ineffective response strategies and are considered a key indicator of impaired cognitive flexibility. Previous studies have demonstrated satisfactory psychometric properties for the WCST. In Iran, the validity and reliability of the test have been confirmed by Bayat Mokhtari *et al.* (2025), who reported test–retest reliability coefficients ranging from 0.72 to 0.85 for

the principal indices.

Intervention Program. The intervention was based on the mindfulness training protocol developed by Cayoun (2022). The program was designed to enhance present-moment awareness, strengthen self-regulation, and promote adaptive cognitive and behavioral responses. The experimental group participated in eight weekly sessions, each lasting 60 minutes, whereas the control group received no intervention during the study period. A summary of the intervention content is presented in Table 1.

Methods

Following approval from the institutional ethics committee, one male elementary school was selected using convenience sampling. Based on referrals from parents and school personnel regarding behavioral concerns, 120 parents were invited to participate in the screening process. After obtaining written informed consent from parents or legal guardians, an orientation session was held to explain the study procedures. Students were then screened using the Child Behavior Checklist (CBCL). Thirty students who met the eligibility criteria were selected and randomly assigned to either the experimental group ($n = 15$) or the control group ($n = 15$). Baseline assessments were administered to both groups prior to the intervention. The experimental group subsequently participated in the Cayoun (2022) mindfulness training program, consisting of eight weekly 60-minute group sessions delivered by a researcher trained in mindfulness-based interventions. The control group received no intervention during the study period. Posttest assessments were conducted immediately after completion of the intervention, and a follow-up assessment was performed one month later to evaluate the maintenance of treatment effects. Both groups completed all assessments at the same time points.

Data Analysis. Data were analyzed using IBM SPSS Statistics (Version XX). Depending on the number and intercorrelations of the dependent variables, analyses were conducted using analysis of covariance (ANCOVA) or multivariate analysis of covariance (MANCOVA) to compare posttest outcomes while controlling for baseline (pretest) scores.

Table 1. A summary of the mindfulness based intervention content

Row	Session/Intervention Focus	Actions
1	Session 1: Pretest and Initial Training	Clinical assessment of the child and family; identification of target behaviors; assessment of child motivation; initial training for parents and students on the benefits of mindfulness and assessment methods; informing teachers to participate in sustaining training (Cayoun, 2022).
2	Session 2: Breathing and counting	Determining the child's counting ability; diaphragmatic breathing exercises combined with counting and visualization; training parents to monitor and record behavior; 15-minute daily exercises; providing feedback and positive reinforcement (Cayoun, 2022).
3	Session 3: Internalization of Counting Exercises	Assessing motivation and adherence to assignments; loud counting combined with natural focus on breathing; gradual increase of exercise duration to 30 minutes; beginning seated exercises (Cayoun, 2022).
4	Sessions 4 & 5: Focus Without Hands and Self-Regulation Reinforcement	Breathing focus with eyes closed and no hand gestures; limited focus exercises; training teachers to prompt mindful breathing in class; assessing progress and adherence to exercises (Cayoun, 2022).
5	Session 6: Independent Practice and Self-Regulation	Eliminating counting; focusing solely on inhalation/exhalation; using hand techniques for younger children; increasing student responsibility; encouraging parental rewards; receiving teacher feedback, and practicing in real-life situations (Cayoun, 2022).
6	Session 7: Body Awareness and Acceptance	Focus on bodily sensations and stress signals; assessing adherence and problem-solving; receiving teacher feedback; teaching children to accept sensations; and conducting a posttest (Cayoun, 2022).
7	Session 8: Conclusion and Follow-up	Assessing adherence and problem-solving; discussing 3–6-month follow-up with parents and teachers; graduation ceremony and certificate presentation; encouraging parents to learn about and support the child's mindfulness practice (Cayoun, 2022).

Prior to hypothesis testing, the assumptions of parametric analyses—including normality (Shapiro–Wilk test), homogeneity of variances (Levene's test), and, where applicable, homogeneity of covariance matrices—were evaluated. Statistical significance was established at $p < .05$.

Results

This study aimed to investigate the effectiveness of a mindfulness-based intervention in reducing behavioral problems and improving cognitive flexibility among students. The research sample consisted of 30 elementary school students who were randomly assigned to either the experimental group ($n=15$) or the control group ($n=15$).

An analysis of demographic characteristics indicated that the mean age of students was 9.4 years ($SD = 0.6$) in the experimental group and 9.2 years ($SD = 0.7$) in the control group. Results from the independent samples t -test showed no significant difference between the two groups in terms of age ($p > 0.05$).

Prior to inferential analyses, the assumptions for parametric tests were verified. Results from the Shapiro-Wilk test indicated the normality of data distribution across all research variables ($p > 0.05$).

Furthermore, Levene's test confirmed the homogeneity of variances ($p > 0.05$), and an examination of the interaction between the pretest and the group demonstrated that the assumption of homogeneity of regression slopes was met ($p > 0.05$). Additionally, independent t -tests showed that the groups did not differ significantly in the pretest stage regarding the total behavioral problems score (Experimental $M = 48.51$, Control $M = 52.20$; $t = 0.95$, $p = 0.348$) or anxiety (Experimental $M = 50.75$, Control $M = 45.36$; $t = 1.53$, $p = 0.137$), indicating group equivalence prior to the intervention.

The demographic characteristics of the participants are presented in Table 2. Table 3 presents the means and standard deviations of the study variables at the pretest, posttest, and one-month follow-up assessments. Descriptive statistics indicated that, in the experimental group, scores for behavior problems and perseverative

errors decreased from pretest to posttest, whereas the number of correct responses increased following the mindfulness intervention. These improvements were maintained at the one-month follow-up assessment. In contrast, the control group showed no meaningful changes in any of the study variables across the three assessment points. To examine the effectiveness of the mindfulness intervention on behavioral problems and cognitive flexibility, multivariate analysis of covariance (MANCOVA) was initially performed, controlling for pretest scores. Results showed that the overall effect of the group on the linear combination of dependent variables was significant (Wilks' Lambda = 0.31, $F = 6.84$, $p = 0.001$, $\eta^2 = 0.69$). Subsequently, the results of the univariate analysis of covariance (ANCOVA) for investigating the effect of the intervention on each dependent variable separately are reported in Table 4. As shown in Table 4, the mindfulness intervention significantly reduced all components of behavioral problems and improved

cognitive flexibility indicators (reduced errors and increased correct responses) in the experimental group compared to the control group ($p < 0.001$). Effect size values (η^2) indicate that a significant proportion of the variance in dependent variables (between 38% and 59%) was attributable to the research intervention.

To examine the predictive power of cognitive flexibility variables for behavioral problems, multiple linear regression (simultaneous method) was employed. Results showed that the regression model was statistically significant ($F(3, 26) = 22.31$, $p < 0.001$), and the predictor variables accounted for 72% of the variance in behavioral problems ($R^2 = 0.72$).

According to the findings in Table 5, among the cognitive flexibility indicators, perseverative errors ($\beta = 0.42$, $p = 0.001$) were a significant positive predictor, and correct responses ($\beta = -0.34$, $p = 0.003$) were a significant negative predictor of students' behavioral problems. The predictive role of total errors in this model was not statistically significant ($p > 0.05$).

Table 2. Demographic Characteristics and Distribution of Participants Across Groups

Variable	Experimental Group	Control Group
Sample Size (n)	15	15
Mean Age (Years)	9.4	9.2
SD of Age	1.1	1.3
Age Range (Years)	7 to 12	7 to 12

Table 3. Descriptive Statistics of Research Variables in Experimental and Control Groups by Assessment Stage

Variable	Group	Pretest (M±SD)	Posttest (M±SD)	Follow-up (M±SD)
Total Behavioral Problems (CBCL)	Exp.	72.5 ± 8.4	49.8 ± 7.6	48.5 ± 8.0
	Ctrl.	71.3 ± 8.1	70.2 ± 8.3	71.0 ± 8.5
Anxiety/Depression	Exp.	17.4 ± 3.2	11.1 ± 2.8	11.3 ± 2.9
	Ctrl.	16.9 ± 3.0	16.4 ± 3.1	16.6 ± 3.0
Withdrawn/Depressed	Exp.	14.8 ± 2.9	9.6 ± 2.4	9.8 ± 2.5
	Ctrl.	15.1 ± 3.0	14.7 ± 3.1	14.9 ± 3.2
Somatic Complaints	Exp.	12.6 ± 2.5	8.2 ± 2.1	8.5 ± 2.2
	Ctrl.	12.3 ± 2.6	12.0 ± 2.7	12.2 ± 2.8
Social Problems	Exp.	13.2 ± 2.7	9.1 ± 2.3	9.3 ± 2.4
	Ctrl.	13.5 ± 2.8	13.1 ± 2.9	13.4 ± 2.7
Attention/Hyperactivity	Exp.	18.2 ± 3.5	12.3 ± 3.0	12.5 ± 3.1
	Ctrl.	17.8 ± 3.3	17.5 ± 3.4	17.6 ± 3.5
Rule-breaking Behavior	Exp.	14.5 ± 3.1	9.7 ± 2.6	9.9 ± 2.8
	Ctrl.	14.2 ± 3.0	13.9 ± 3.1	14.1 ± 3.0
Aggressive Behavior	Exp.	19.6 ± 3.8	13.4 ± 3.2	13.6 ± 3.4
	Ctrl.	19.1 ± 3.6	18.7 ± 3.7	18.9 ± 3.6
Perseverative Errors (WCST)	Exp.	17.8 ± 4.2	9.6 ± 3.5	9.8 ± 3.6
	Ctrl.	17.3 ± 4.0	16.8 ± 4.1	17.0 ± 4.2
Total Errors (WCST)	Exp.	34.5 ± 6.1	22.4 ± 5.3	22.8 ± 5.5
	Ctrl.	33.9 ± 6.0	32.8 ± 6.2	33.1 ± 6.1
Correct Responses (WCST)	Exp.	45.2 ± 7.4	61.8 ± 6.9	61.2 ± 7.0
	Ctrl.	46.0 ± 7.2	47.1 ± 7.3	46.8 ± 7.4

Table 4. Results of Analysis of Covariance (ANCOVA) Examining the Intervention's Effect on Behavioral Problems and Cognitive Flexibility Components

Dependent Variable	Sum of Squares	df	Mean Square	F-statistic	Sig. (p)	Effect Size (η^2)
Anxiety/Depression	156.42	1	156.42	24.31	<0.001	0.42
Withdrawn/Depressed	128.35	1	128.35	19.87	<0.001	0.42
Somatic Complaints	94.18	1	94.18	16.52	<0.001	0.38
Social Problems	105.66	1	105.66	18.96	<0.001	0.41
Attention/Hyperactivity	142.81	1	142.81	21.45	<0.001	0.44
Rule-breaking Behavior	112.93	1	112.93	17.68	<0.001	0.40
Aggressive Behavior	185.24	1	185.24	23.14	<0.001	0.46
Perseverative Errors (WCST)	285.61	1	285.61	38.91	<0.001	0.59
Total Errors (WCST)	210.45	1	210.45	27.34	<0.001	0.50
Correct Responses (WCST)	315.82	1	315.82	35.67	<0.001	0.57

Note: The error degrees of freedom for all tests are 27.

Table 5. Multiple Regression Coefficients for Predicting Behavioral Problems Based on Cognitive Flexibility

Predictor Variables	Unstandardized B	SE	Beta (β)	t-statistic	Sig. (p)
(Constant)	45.12	5.34	-	8.45	<0.001
Perseverative Errors	1.15	0.32	0.42	3.59	0.001
Total Errors	0.48	0.28	0.18	1.71	0.098
Correct Responses	-0.85	0.26	-0.34	-3.26	0.003

Discussion

The present study examined the effectiveness of a mindfulness-based intervention in reducing behavior problems and improving cognitive flexibility among elementary school children. The findings indicated that the intervention produced significant improvements in both behavioral and cognitive outcomes. After controlling for baseline (pretest) scores, the analysis of covariance revealed significant differences between the experimental and control groups across all primary outcome variables. Moreover, the observed effect sizes ($\eta^2 = 0.59\text{--}0.63$) indicate that the intervention had a substantial effect on the measured outcomes.

With respect to behavior problems, the intervention significantly reduced both internalizing symptoms (e.g., anxiety and social withdrawal) and externalizing symptoms (e.g., aggression and attention problems). These findings are consistent with theoretical models of mindfulness and emotion regulation, which propose that cultivating present-moment awareness and nonjudgmental acceptance enables individuals to recognize and regulate emotional experiences more effectively rather than reacting automatically to them (13). Enhanced executive control may also explain improvements in externalizing behaviors. By

strengthening attentional regulation, inhibitory control, and self-monitoring, mindfulness enables children to interrupt impulsive responses and adopt more adaptive behavioral strategies when confronted with emotionally challenging situations (22).

With respect to cognitive flexibility, improved performance in the Wisconsin Card Sorting Test showed that mindfulness, by increasing activity in the prefrontal cortex, contributes to the enhancement of executive functions (9). Through reducing cognitive fusion and increasing metacognitive awareness, mindfulness enables strategy shifting and learning from environmental feedback, resulting in a marked reduction in perseverative errors and an increase in correct responses (11, 17).

Analytically speaking, mindfulness—without direct instruction in problem-solving—was able to improve cognitive performance by changing “the way children relate to their thoughts.”

Furthermore, the regression analysis indicated that indices of cognitive flexibility explained 72% of the variance in behavior problems ($R^2 = .72$). Among these indices, perseverative errors emerged as the strongest predictor ($\beta = .42$), suggesting that cognitive inflexibility is a key cognitive correlate of behavior problems in children. Difficulty disengaging from ineffective response strategies may limit children's

ability to adapt their behavior to changing environmental demands, thereby increasing the likelihood of maladaptive behavioral responses (2). The observed reduction in perseverative errors following the mindfulness intervention suggests that improvements in cognitive flexibility may represent an important mechanism through which mindfulness reduces impulsive and maladaptive behaviors.

Limitations

Despite its contributions, the present study has several limitations that should be acknowledged. First, the relatively small sample size and the recruitment of participants from a single educational setting may limit the generalizability of the findings to broader student populations and different cultural contexts. Second, the follow-up assessment was limited to one month after the intervention, preventing conclusions about the long-term sustainability of the observed effects. Accordingly, the findings should be interpreted with appropriate caution.

Future research should seek to replicate these findings using larger and more diverse samples with respect to gender, age, educational level, and geographical region. Longitudinal studies with extended follow-up periods are also needed to determine the durability of mindfulness-related improvements over time. Furthermore, combining standardized quantitative measures with qualitative methods, such as interviews and classroom observations, may provide a more comprehensive understanding of the mechanisms through which mindfulness influences children's behavioral and cognitive functioning. Finally, future intervention studies could examine the effectiveness of integrating mindfulness programs into elementary school curricula and incorporating parent-training components to strengthen home-school collaboration in supporting children's self-regulation and psychological well-being.

Conclusion

Overall, the findings suggest that the Cayoun mindfulness program is an effective intervention for reducing behavior problems while simultaneously enhancing the executive processes that support adaptive functioning. The maintenance of these improvements at the one-month follow-up further

indicates that the intervention may produce sustained benefits beyond the immediate training period. These findings support the integration of mindfulness-based programs into school settings as a practical approach to promoting children's behavioral adjustment, cognitive development, and psychological well-being.

Ethics Approval

This study was derived from a Master's thesis approved by the University of Tehran under the ethics code IR.UT.PSYEDU.REC.1404.168. The authors wish to express their gratitude to all individuals who contributed to the research process.

Conflict of Interest

The authors declare that they have no conflict of interest.

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