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Effectiveness of Mindfulness-Based Cognitive Therapy on Academic Performance and Academic Motivation in Adolescent Girls with Test Anxiety

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A B S T R A C T

Objective: The present study aimed to determine the effectiveness of Mindfulness-Based Cognitive Therapy (MBCT) on academic performance and academic motivation among adolescent girls experiencing test anxiety.

Methods and Materials: This study employed a quasi-experimental design with a pretest–posttest control group. The statistical population consisted of adolescent girls with test anxiety in Juybar, Iran, during the 2025–2026 academic year. Initially, the Spielberger Test Anxiety Questionnaire was administered to 200 students. Thirty participants with the highest levels of test anxiety were selected through convenience sampling and randomly assigned to either an experimental group (n = 15) or a control group (n = 15). Data were collected using the Academic Performance Questionnaire developed by Pham and Taylor (1999), the Academic Motivation Scale based on Harter's framework (1980), and the Spielberger Test Anxiety Questionnaire. The experimental group received eight 90-minute sessions of Mindfulness-Based Cognitive Therapy, while the control group received no intervention. Following the intervention, both groups completed the posttest assessments.

Findings: Analysis of covariance (ANCOVA) revealed significant differences between the experimental and control groups after controlling for pretest scores. For academic performance, the intervention produced a statistically significant effect ($F = 6.328$, $p = 0.038$), indicating that students who participated in MBCT demonstrated greater improvements in academic performance than those in the control group. Similarly, a significant effect was found for academic motivation ($F = 8.375$, $p = 0.024$), showing that MBCT significantly enhanced students' motivation toward academic activities. Descriptive findings also indicated notable increases in posttest mean scores for both academic performance and academic motivation in the experimental group compared with their pretest scores, whereas only minimal changes were observed in the control group.

Conclusion: The findings suggest that Mindfulness-Based Cognitive Therapy is an effective intervention for improving academic performance and academic motivation among adolescent girls with test anxiety.

Keywords: *Mindfulness-Based Cognitive Therapy; Academic Performance; Academic Motivation; Adolescent Girls; Test Anxiety.*

1. Introduction

Mindfulness-based cognitive therapy (MBCT) has emerged as one of the most influential third-wave cognitive-behavioral approaches for addressing psychological distress and enhancing adaptive functioning across educational, clinical, and developmental contexts. In contemporary educational systems, increasing attention has been directed toward interventions that not only improve students' psychological well-being but also enhance their academic performance and motivation. Academic success is considered one of the primary indicators of educational effectiveness, reflecting the extent to which educational systems achieve their intended goals and meet students' developmental and learning needs. Consequently, identifying psychological factors that influence students' academic outcomes has become a major concern for educators, psychologists, and policymakers (Eskandari Khanqahi et al., 2024).

Academic performance represents the degree to which students successfully achieve educational objectives and acquire knowledge and skills through formal learning experiences. It is commonly assessed through academic achievements, grades, and performance evaluations that reflect students' mastery of educational content. Educational researchers have consistently emphasized that academic performance is influenced by a complex interplay of individual, familial, social, and school-related factors (Calamlam, 2023; Eskandari Khanqahi et al., 2024; Higgins et al., 2023). Among these factors, psychological variables such as anxiety, motivation, self-regulation, and emotional well-being play a particularly important role in determining students' educational outcomes. Research has demonstrated that students who possess stronger self-regulatory abilities and more adaptive psychological resources tend to exhibit higher academic achievement and greater persistence in learning activities (Calamlam, 2023; Higgins et al., 2023; Khorsand, 2024).

One of the most prevalent psychological challenges affecting students worldwide is test anxiety. Test anxiety is characterized by excessive worry, physiological arousal, fear of failure, and negative cognitive evaluations that occur before or during examination situations. Although a moderate level of anxiety may facilitate preparation and performance by increasing alertness and motivation, excessive anxiety often interferes with concentration, information processing, memory retrieval, and effective problem-solving during examinations (Postchi et al., 2022). Students experiencing high levels of test anxiety frequently report difficulties maintaining attention, managing stress, and demonstrating their actual knowledge and abilities during assessments. These difficulties can lead to lower academic achievement, reduced self-confidence, and diminished educational engagement (Bourbour & Jahandefaei, 2024; Panahi, 2019).

The adverse consequences of test anxiety extend beyond immediate examination performance. Persistent anxiety can negatively affect students' psychological health, social adjustment, and overall quality of life. Long-term exposure to academic stress and anxiety may contribute to emotional difficulties such as depression, generalized anxiety, low self-esteem, and academic burnout. Furthermore, students who repeatedly experience anxiety-related academic failures may develop maladaptive beliefs regarding their competence and future success, thereby creating a cycle of avoidance, poor performance, and reduced motivation (Panahi, 2019; Zare Bidaki & Dehghan, 2023). Given the prevalence and impact of test anxiety among adolescents, there is a growing need for effective interventions capable of reducing anxiety while simultaneously promoting positive academic outcomes.

Academic motivation represents another critical determinant of educational success. Motivation refers to the internal and external processes that energize, direct, and sustain behavior toward the achievement of specific goals. Within educational contexts, academic motivation influences students' willingness to engage in learning activities, persist in the face of challenges, and invest effort in academic tasks. Students with high levels of academic motivation are more likely to demonstrate active participation, effective learning strategies, and greater academic achievement than their less motivated peers (Arefi, 2024; Ranjbakhsh et al., 2021). Academic motivation has also been identified as a significant mediator between psychological resources and educational outcomes, highlighting its central role in students' learning experiences (Ranjbakhsh et al., 2021).

Recent educational research has increasingly emphasized the reciprocal relationship between motivation and academic achievement. Motivated students tend to experience greater academic success, which in turn reinforces their motivation and engagement. Conversely, repeated academic difficulties and anxiety-related experiences may weaken students' motivational beliefs, leading to reduced effort, procrastination, and disengagement from educational activities (Arefi, 2024; Shahmiri & Mirzaian, 2020). Therefore, interventions that effectively enhance academic

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motivation may have significant implications for students' long-term educational development and achievement.

Mindfulness has gained substantial attention as a promising approach for addressing psychological difficulties and enhancing adaptive functioning among students. Mindfulness is commonly defined as the intentional, nonjudgmental awareness of present-moment experiences, including thoughts, emotions, bodily sensations, and environmental stimuli. Rather than attempting to suppress or avoid distressing experiences, mindfulness encourages individuals to observe these experiences with openness, acceptance, and curiosity (Brown & Ryan, 2020; Mousavi et al., 2021). This approach is particularly relevant for students experiencing test anxiety, as it provides strategies for managing worry, reducing emotional reactivity, and improving attentional control.

Mindfulness-based cognitive therapy integrates traditional cognitive-behavioral techniques with mindfulness practices to help individuals recognize and disengage from maladaptive cognitive patterns. Through mindfulness exercises, participants learn to identify automatic negative thoughts, reduce rumination, and develop greater awareness of their internal experiences without becoming overwhelmed by them. These skills are especially valuable in educational settings where students frequently encounter stress, uncertainty, and performance-related pressures (Brown & Ryan, 2020; Jalilian & Hamidi, 2020). By fostering greater emotional regulation and cognitive flexibility, mindfulness-based interventions may help students respond more effectively to academic challenges.

Empirical evidence has consistently supported the effectiveness of mindfulness-based interventions in reducing anxiety and enhancing psychological well-being. Meta-analytic findings indicate that mindfulness-based programs significantly decrease symptoms of anxiety, depression, and stress while improving emotional regulation and overall mental health (Brown & Ryan, 2020; Kangas et al., 2021). Within student populations, mindfulness training has been associated with reductions in academic stress, improvements in concentration, and greater psychological resilience (Kazemi, 2020; Ramezani, 2021). These findings suggest that mindfulness may provide a valuable framework for addressing the emotional and cognitive challenges associated with test anxiety.

In addition to its psychological benefits, mindfulness has demonstrated considerable potential for improving educational outcomes. Research has shown that mindfulness practices enhance attentional control, self-regulation, and executive functioning, all of which are essential for effective learning and academic performance. Students who engage in mindfulness training often report improved concentration, greater task persistence, and increased engagement in academic activities (Jalilian & Hamidi, 2020; Shahmiri & Mirzaian, 2020). Moreover, mindfulness may reduce procrastination and other avoidance behaviors that interfere with successful academic functioning (Jalilian & Hamidi, 2020; Shahmiri & Mirzaian, 2020).

Recent studies have specifically examined the relationship between mindfulness and academic motivation. Findings suggest that mindfulness contributes to enhanced intrinsic motivation by increasing self-awareness, promoting goal-directed behavior, and reducing the impact of negative emotions on learning processes. For example, mindfulness has been found to predict higher levels of academic motivation and lower levels of academic procrastination among students (Çevik Kocagöz, 2025). Similarly, mindfulness training has been shown to improve psychological well-being and academic motivation among students experiencing academic difficulties (Sadighi et al., 2024). These findings indicate that mindfulness may influence academic outcomes not only through anxiety reduction but also through the enhancement of motivational processes.

The interplay between mindfulness, academic stress, emotional functioning, and motivation has become an increasingly important area of educational research. Contemporary evidence suggests that mindfulness may serve as a protective factor against the detrimental effects of academic stress by fostering emotional intelligence, psychological flexibility, and adaptive coping strategies. Students who demonstrate higher levels of mindfulness tend to report lower stress levels, greater emotional balance, and stronger academic motivation, which collectively contribute to better educational outcomes (Zhang et al., 2024). Such findings underscore the relevance of mindfulness-based interventions for promoting both psychological health and academic success among students.

Several studies conducted in educational settings have provided preliminary evidence regarding the effectiveness of mindfulness-based interventions for improving student outcomes. Ahmadvand and colleagues reported that brief mindfulness exercises significantly reduced test anxiety and enhanced concentration among secondary school students (Ahmadvand et al., 2024). Similarly, mindfulness-based cognitive therapy has been shown to reduce academic

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procrastination and improve academic functioning among students (Jalilian & Hamidi, 2020). Other investigations have demonstrated beneficial effects of mindfulness training on stress reduction, emotional well-being, and academic engagement (Kazemi, 2020; Ramezani, 2021; Sadighi et al., 2024). Despite these encouraging findings, relatively few studies have simultaneously examined the effects of mindfulness-based cognitive therapy on both academic performance and academic motivation among adolescent girls experiencing high levels of test anxiety.

Given the significant role of academic performance and academic motivation in educational success, the widespread prevalence of test anxiety among adolescents, and the growing empirical support for mindfulness-based interventions, further investigation of mindfulness-based cognitive therapy within this population appears warranted. Understanding whether MBCT can simultaneously enhance academic performance and academic motivation while addressing test anxiety may provide valuable implications for educational counseling, school-based mental health services, and intervention programs designed to support students' academic and psychological development. Therefore, the present study aimed to investigate the effectiveness of mindfulness-based cognitive therapy on academic performance and academic motivation among adolescent girls with test anxiety.

2. Methods and Materials

2.1. Study Design and Participants

This study employed a quasi-experimental design using a pretest–posttest format with a control group. The target population consisted of adolescent girls experiencing test anxiety in Juybar, Iran, during the 2025–2026 academic year. Participants were selected through convenience sampling. Initially, the Spielberger Test Anxiety Questionnaire was administered to a sample of 200 students to identify individuals with elevated levels of test anxiety. Based on the obtained scores, 30 students who demonstrated the highest levels of test anxiety were selected for participation in the study. The selected participants were then randomly assigned to either an experimental group (n = 15) or a control group (n = 15). Prior to the intervention, both groups completed the pretest measures assessing academic performance and academic motivation. The experimental group subsequently participated in a Mindfulness-Based Cognitive Therapy (MBCT) program, whereas the control group received no intervention during the study period. Following completion of the intervention, both groups completed the posttest assessments to evaluate changes in the outcome variables.

2.2. Measures

Academic performance was assessed using the Educational Performance Test (EPT) developed by Pham and Taylor (1999) and later validated for the Iranian population by Dortaj. The instrument consists of 48 items designed to evaluate various dimensions of students' academic functioning. Responses are recorded on a five-point Likert scale ranging from 1 (Never) to 5 (Very High), with higher scores indicating better academic performance. The questionnaire assesses multiple dimensions, including self-efficacy, planning, emotional influences, motivation, and perceived control over outcomes. Previous psychometric evaluations have confirmed the construct validity of the instrument through factor analysis, supporting a five-factor structure. Reported Cronbach's alpha coefficients for the subscales range from 0.64 to 0.93, while reliability coefficients for the total scale have been reported between 0.74 and 0.84. Test–retest reliability has also demonstrated acceptable stability over time, with a reported correlation coefficient of 0.89. In the present study, the overall internal consistency of the scale was satisfactory, with a Cronbach's alpha coefficient of 0.78.

Academic motivation was measured using the revised Academic Motivation Scale based on Harter's (1980) original framework. The questionnaire contains 33 items and was designed to assess students' motivation toward learning and academic achievement. Unlike the original Harter scale, which relied on bipolar items contrasting intrinsic and extrinsic motivation, the revised version developed by Lepper and colleagues (2005) evaluates motivational dimensions through conventional Likert-type items. Participants respond to each statement on a five-point scale ranging from 1 (Never) to 5 (Almost Always). Total scores can range from 33 to 165, with higher scores indicating stronger academic motivation. Scores between 33 and 66 represent low motivation, scores between 66 and 99 indicate moderate motivation, and scores above 99 reflect high academic motivation. Previous studies have reported strong psychometric properties for this instrument, including a Cronbach's alpha coefficient of 0.92. In the current study, the scale demonstrated acceptable reliability, with a Cronbach's alpha coefficient of 0.76.

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Test anxiety was assessed using the Spielberger Test Anxiety Questionnaire (1970), a widely used instrument designed to measure anxiety experienced in examination settings. The questionnaire consists of 20 items rated on a four-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree." The instrument evaluates cognitive, emotional, and physiological aspects of anxiety associated with academic examinations. Higher total scores indicate greater levels of test anxiety. The questionnaire has been extensively used in educational and psychological research and has demonstrated satisfactory validity and reliability across diverse populations, including Iranian student samples. In the present study, the instrument was used both as a screening tool for participant selection and as a criterion for identifying students with elevated levels of examination-related anxiety.

2.3. Intervention

The experimental group participated in a Mindfulness-Based Cognitive Therapy (MBCT) program consisting of eight sessions, each lasting approximately 90 minutes. The intervention integrated principles of cognitive therapy with mindfulness practices aimed at enhancing present-moment awareness, reducing maladaptive cognitive patterns, and improving emotional regulation. Throughout the sessions, participants were trained to observe thoughts and emotions without judgment, recognize automatic negative thinking patterns, and develop adaptive responses to stressful academic situations. Core therapeutic techniques included mindfulness meditation, breathing awareness exercises, body scan practices, cognitive restructuring, acceptance of internal experiences, and strategies for managing anxiety-provoking thoughts related to examinations. Participants were encouraged to engage in regular mindfulness practice between sessions to facilitate the transfer of acquired skills to daily academic experiences. The intervention sought to reduce test-related anxiety while simultaneously improving concentration, self-regulation, academic engagement, and motivation.

2.4. Data Analysis

Data were analyzed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics, including means and standard deviations, were calculated to summarize participant characteristics and study variables. Prior to conducting inferential analyses, assumptions of normality were examined using the Shapiro–Wilk test, which indicated that the distributions of the study variables did not significantly deviate from normality. To evaluate the effectiveness of the intervention while controlling for baseline differences, Analysis of Covariance (ANCOVA) was performed separately for academic performance and academic motivation. Pretest scores were entered as covariates, posttest scores served as dependent variables, and group membership (experimental versus control) was treated as the independent variable. Statistical significance was determined at the 0.05 level. This analytical approach enabled the researchers to assess the unique contribution of Mindfulness-Based Cognitive Therapy to changes in academic performance and academic motivation after accounting for participants' initial levels on the outcome measures.

3. Findings and Results

A total of 30 adolescent girls with high levels of test anxiety participated in the study and were randomly assigned to the experimental group (n = 15) and the control group (n = 15). The participants were enrolled in secondary schools in Juybar during the 2025–2026 academic year. The mean age of the participants was 15.87 ± 0.94 years in the experimental group and 15.73 ± 0.91 years in the control group, indicating that the two groups were relatively homogeneous in terms of age and educational level.

Table 1

Means and Standard Deviations of Academic Performance and Academic Motivation Scores in the Pretest and Posttest

Variables	Group	Pretest Mean	Pretest SD	Posttest Mean	Posttest SD
Academic Performance	Control	105.37	9.24	108.69	9.69
Academic Performance	Experimental	107.86	9.78	124.74	12.41
Academic Motivation	Control	54.68	7.57	55.68	7.78
Academic Motivation	Experimental	52.12	7.47	70.25	9.35

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As shown in Table 1, the mean scores of academic performance and academic motivation increased from pretest to posttest in the experimental group. Specifically, academic performance increased from 107.86 ± 9.78 to 124.74 ± 12.41, while academic motivation increased from 52.12 ± 7.47 to 70.25 ± 9.35. In contrast, only slight changes were observed in the control group across both variables, suggesting a positive effect of the intervention on the outcome measures.

Before conducting the main inferential analyses, the assumptions of parametric testing were examined. The normality of score distributions for academic performance and academic motivation at both measurement stages was assessed using the Shapiro–Wilk test. The results indicated that all significance values exceeded 0.05, demonstrating that the distributions did not significantly deviate from normality. Therefore, the assumption of normality was satisfied and the use of analysis of covariance (ANCOVA) was considered appropriate.

Table 2

Results of Analysis of Covariance (ANCOVA) for Academic Performance and Academic Motivation

Variable	Source	Sum of Squares	df	Mean Square	F	p	Statistical Power
Academic Performance	Pretest	56.867	1	56.867	1.132	0.654	0.056
	Group	512.124	1	512.124	6.328	0.038	0.559
	Error	2321.786	27	85.992	-	-	-
Academic Motivation	Pretest	10.978	1	10.978	0.056	0.698	0.056
	Group	1856.548	1	1856.548	8.375	0.024	0.623
	Error	3556.394	27	131.718	-	-	-

The ANCOVA results presented in Table 2 demonstrated that, after controlling for pretest scores, there was a statistically significant difference between the experimental and control groups in academic performance, $F(1, 27) = 6.33$, $p = 0.038$. This finding indicates that Mindfulness-Based Cognitive Therapy significantly improved academic performance among adolescent girls with test anxiety. Furthermore, a significant group effect was observed for academic motivation, $F(1, 27) = 8.38$, $p = 0.024$, indicating that participants who received the intervention reported significantly higher levels of academic motivation at posttest compared with those in the control group. The non-significant effects of the pretest covariates suggest that the observed posttest differences were primarily attributable to the intervention. Overall, the findings support the effectiveness of Mindfulness-Based Cognitive Therapy in enhancing both academic performance and academic motivation among adolescent girls experiencing test anxiety.

4. Discussion

The present study aimed to investigate the effectiveness of Mindfulness-Based Cognitive Therapy (MBCT) on academic performance and academic motivation among adolescent girls experiencing test anxiety. The findings revealed that MBCT significantly improved academic performance in the experimental group compared with the control group. Furthermore, the intervention produced a significant increase in academic motivation among participants who received the mindfulness-based treatment. These findings indicate that MBCT is an effective psychological and educational intervention for enhancing both academic functioning and motivational processes in adolescents who experience elevated levels of examination-related anxiety.

The first finding demonstrated that MBCT significantly improved academic performance among adolescent girls with test anxiety. This result is consistent with previous research suggesting that psychological factors play a critical role in determining students' academic achievement and educational success (Calamlam, 2023; Eskandari Khanqahi et al., 2024; Higgins et al., 2023). The present finding is also in line with studies showing that interventions aimed at reducing anxiety and improving self-regulation contribute to better academic outcomes (Ahmadvand et al., 2024; Khorsand, 2024). Academic performance is not solely determined by cognitive abilities; rather, it is strongly influenced by students' emotional regulation, concentration, stress management, and capacity to engage effectively with learning activities. Consequently, interventions that target these psychological mechanisms can indirectly improve educational achievement.

One explanation for the observed improvement in academic performance lies in the fundamental principles of mindfulness. Students with test anxiety frequently

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experience intrusive thoughts, excessive worry about future outcomes, and persistent self-doubt. These cognitive processes consume attentional resources that would otherwise be available for learning, information processing, and problem-solving. Mindfulness training teaches individuals to observe thoughts and emotions without becoming entangled in them. As students learn to redirect their attention toward the present moment, they become less vulnerable to the distracting effects of anxiety and rumination. Consequently, cognitive resources become available for academic tasks, resulting in improved concentration, learning efficiency, and academic performance (Brown & Ryan, 2020; Mousavi et al., 2021).

Another possible explanation involves the relationship between mindfulness and self-regulated learning. Successful academic performance requires students to monitor their learning processes, manage distractions, regulate emotions, and persist in the face of challenges. Mindfulness practices cultivate awareness of internal experiences and strengthen self-regulatory capacities, enabling students to respond more adaptively to academic demands. Research has shown that self-regulation is a significant predictor of academic achievement and educational success (Higgins et al., 2023; Khorsand, 2024). By enhancing self-regulatory skills, MBCT may have helped participants manage examination stress more effectively and maintain consistent engagement with their educational responsibilities.

The findings may also be understood through the role of mindfulness in reducing test anxiety. Excessive anxiety during examinations can impair working memory, attention, and decision-making processes, all of which are essential for academic success. Through mindfulness exercises such as breathing awareness, body scanning, and nonjudgmental observation of thoughts, students develop greater emotional balance and reduced physiological arousal. As anxiety decreases, students are better able to access their knowledge and demonstrate their actual abilities during examinations. This interpretation is supported by studies indicating that mindfulness-based interventions effectively reduce anxiety and improve psychological functioning among students (Kangas et al., 2021; Kazemi, 2020; Ramezani, 2021).

The present findings are also consistent with previous investigations examining mindfulness interventions in educational contexts. Ahmadvand and colleagues reported that brief mindfulness exercises reduced test anxiety and enhanced concentration among secondary school students (Ahmadvand et al., 2024). Similarly, mindfulness-based cognitive therapy has been found to reduce academic procrastination, a behavior often associated with anxiety and poor academic performance (Jalilian & Hamidi, 2020). Studies have further demonstrated that mindfulness promotes academic engagement and adaptive learning behaviors, which contribute to improved educational outcomes (Shahmiri & Mirzaian, 2020). Therefore, the current findings extend the existing literature by demonstrating that MBCT can effectively improve academic performance among adolescent girls specifically experiencing test anxiety.

The second major finding indicated that MBCT significantly enhanced academic motivation among the participants. This result supports theoretical perspectives emphasizing the importance of psychological well-being and emotional regulation in sustaining students' motivation toward learning. Academic motivation represents the driving force behind students' engagement, persistence, and effort in educational activities. Students who are highly motivated are more likely to set meaningful goals, overcome obstacles, and invest the necessary effort to achieve academic success (Arefi, 2024; Ranjbakhsh et al., 2021). Consequently, interventions that improve emotional functioning and reduce psychological distress may also positively influence motivation.

The positive effect of MBCT on academic motivation can be explained through several psychological mechanisms. First, mindfulness enhances self-awareness and promotes greater understanding of one's goals, values, and learning processes. As students become more aware of their thoughts and emotional reactions, they develop a stronger sense of autonomy and personal responsibility for their academic progress. This increased self-awareness may foster intrinsic motivation, encouraging students to engage in learning activities because they find them meaningful and personally relevant rather than merely responding to external pressures (Brown & Ryan, 2020; Çevik Kocagöz, 2025).

Second, mindfulness helps students reduce the impact of negative emotions that often undermine motivation. Test-anxious students frequently experience fear of failure, self-criticism, and hopelessness regarding their academic abilities. These emotions can decrease confidence and diminish willingness to engage in challenging tasks. By encouraging acceptance and nonjudgmental awareness of internal experiences, mindfulness reduces emotional avoidance and strengthens resilience. As students become less overwhelmed by negative emotions, they are more likely to maintain their commitment to academic goals and

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persist despite difficulties (Kangas et al., 2021; Mousavi et al., 2021).

Another explanation relates to the influence of mindfulness on psychological well-being. Numerous studies have demonstrated that mindfulness promotes positive affect, emotional stability, and overall well-being. Students who experience greater psychological well-being are more likely to approach learning with enthusiasm and optimism, which can enhance their academic motivation. The findings of the present study are consistent with research demonstrating that mindfulness training improves both psychological well-being and academic motivation among students facing educational challenges (Sadighi et al., 2024). Likewise, mindfulness has been identified as an important factor influencing motivation through its effects on emotional intelligence and adaptive coping strategies (Zhang et al., 2024).

The observed increase in academic motivation may also reflect reductions in stress and anxiety achieved through the intervention. When students experience chronic anxiety, a considerable portion of their psychological energy is devoted to coping with perceived threats rather than pursuing academic goals. By reducing anxiety and stress, mindfulness allows students to redirect cognitive and emotional resources toward learning activities. This process may enhance students' perceptions of competence and control, both of which are central determinants of motivation. Previous studies have emphasized the importance of reducing anxiety and increasing self-efficacy in promoting educational engagement and achievement (Bourbour & Jahandefaei, 2024; Zare Bidaki & Dehghan, 2023).

The relationship between mindfulness and academic motivation has received increasing attention in recent years. Research suggests that mindfulness contributes to motivation by facilitating present-moment engagement, reducing procrastination, and promoting adaptive goal-directed behavior (Çevik Kocagöz, 2025). Students who are mindful are more likely to focus on current learning tasks rather than becoming distracted by concerns about future outcomes or past failures. Such attentional focus can increase satisfaction with learning experiences and strengthen motivation to continue pursuing academic goals. The findings of the present study provide further support for these theoretical assumptions.

An additional interpretation of the findings can be derived from the integrated nature of academic performance and academic motivation. Motivation and achievement influence one another reciprocally. Increased motivation often leads to greater effort and improved academic outcomes, while academic success reinforces motivation through positive feedback and enhanced self-confidence (Arefi, 2024; Ranjbakhsh et al., 2021). Therefore, the improvements observed in academic performance and academic motivation may have mutually reinforced one another throughout the intervention process. As participants experienced greater emotional control and reduced anxiety, they likely became more engaged in learning activities, leading to improved academic outcomes that further strengthened their motivation.

5. Conclusion

Overall, the findings suggest that MBCT addresses several underlying mechanisms associated with academic difficulties among students with test anxiety. By reducing anxiety, enhancing self-regulation, increasing present-moment awareness, promoting emotional well-being, and strengthening intrinsic motivation, mindfulness-based cognitive therapy creates conditions that support both academic achievement and educational engagement. These findings contribute to the growing body of literature supporting mindfulness-based interventions as effective approaches for addressing psychological and academic challenges among adolescents (Brown & Ryan, 2020; Kangas et al., 2021; Zhang et al., 2024).

6. Limitations & Suggestions

One limitation of the present study was the relatively small sample size, which may limit the generalizability of the findings to broader student populations. In addition, all participants were adolescent girls from a single geographic area, reducing the extent to which the results can be generalized to boys, students from different age groups, or individuals from diverse cultural and educational contexts. Another limitation was the reliance on self-report measures, which may be influenced by social desirability bias and participants' subjective perceptions. Furthermore, the absence of a follow-up assessment prevented examination of the long-term sustainability of the intervention effects.

Future studies should examine the effectiveness of mindfulness-based cognitive therapy using larger and more diverse samples across different educational settings and age groups. Researchers may also investigate potential mediating variables such as self-regulation, emotional intelligence, resilience, and self-efficacy to better

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understand the mechanisms through which mindfulness influences academic outcomes. Longitudinal studies with extended follow-up periods are recommended to determine the durability of treatment effects. Additionally, comparative studies evaluating mindfulness-based interventions against other evidence-based educational and psychological programs would provide valuable information regarding their relative effectiveness.

The findings of this study have important practical implications for educational institutions, school counselors, psychologists, and policymakers. Schools may benefit from incorporating mindfulness-based programs into counseling services and student support initiatives aimed at reducing examination-related stress. Teachers and educational practitioners can integrate brief mindfulness exercises into classroom routines to enhance students' concentration and emotional regulation. Training programs focused on mindfulness may also be offered to parents and educators to create supportive environments that promote students' psychological well-being and academic success. Such initiatives may contribute to improved academic performance, stronger motivation, and healthier educational experiences for students facing academic stress and test anxiety.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

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

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

All authors equally contributed to this article.

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