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Comparison of the Effectiveness of Self-Efficacy Training and Mindfulness Training on the Academic Motivation of Female Secondary School Students

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A B S T R A C T

Purpose: The objective of this study was to compare the effectiveness of self-efficacy training and mindfulness training on the academic motivation of female secondary school students.

Methods and Materials: The study employed a quasi-experimental pretest–posttest design with one control group and two experimental groups. The population consisted of female students enrolled in the second level of secondary education in District 13 of Tehran during the 2024 academic year who demonstrated low academic motivation and self-efficacy. Using convenience sampling, 60 students were selected and randomly assigned to a self-efficacy training group, a mindfulness training group, and a control group, with 20 participants in each group. The self-efficacy intervention was implemented in nine 90-minute sessions based on Bandura's self-efficacy framework, while the mindfulness intervention was delivered in eight 90-minute sessions based on the mindfulness-based cognitive therapy model of Segal, Williams, and Teasdale. Academic motivation was assessed using the Harter Academic Motivation Scale before and after the interventions. Data were analyzed using descriptive statistics and analysis of covariance.

Findings: Analysis of covariance revealed statistically significant differences among the three groups in posttest academic motivation scores after controlling for pretest scores ($p < .05$). Both self-efficacy and mindfulness training significantly increased intrinsic motivation, extrinsic motivation, and total academic motivation compared with the control group. Moreover, the mindfulness training group demonstrated significantly greater improvements than the self-efficacy group across all motivational dimensions.

Conclusion: The findings indicate that both self-efficacy training and mindfulness training are effective interventions for enhancing academic motivation in female secondary school students, with mindfulness training exerting a stronger and more comprehensive impact.

Keywords: *academic motivation; self-efficacy; mindfulness; secondary school students; educational intervention*

1. Introduction

Academic motivation is widely recognized as one of the most fundamental determinants of students' academic engagement, persistence, and achievement across educational contexts. Contemporary educational psychology emphasizes that academic motivation is not merely a stable personality trait but rather a dynamic construct shaped by cognitive, emotional, and contextual influences that evolve throughout students' educational experiences (Marhadi et al., 2025; Shengyao et al., 2024). In secondary education, where learners encounter increasing academic demands, performance pressure, and developmental challenges, the maintenance and enhancement of academic motivation become particularly critical for both academic success and psychological well-being (Sadighi et al., 2024; Smith & Jones, 2023). Consequently, identifying effective interventions that strengthen academic motivation remains a central concern for researchers and educational practitioners.

Academic motivation has been conceptualized as a multifaceted construct encompassing intrinsic motivation, extrinsic motivation, and achievement-oriented goals that guide students' learning behaviors and academic persistence (Carranza Esteban et al., 2024; khawwaf et al., 2024). Intrinsic motivation reflects students' internal interest and enjoyment in learning activities, whereas extrinsic motivation is driven by external incentives such as grades, recognition, and social approval (Liu-jian & Caiga, 2024; Rachmawati et al., 2024). Extensive empirical evidence indicates that higher levels of academic motivation are consistently associated with improved academic performance, stronger engagement, lower procrastination, and greater resilience in the face of academic challenges (Marhadi et al., 2025; Rezvani & Abdi, 2024). Conversely, diminished academic motivation has been linked to disengagement, emotional exhaustion, academic procrastination, and increased vulnerability to psychological distress (Carranza Esteban et al., 2024; Sadighi et al., 2024).

Among the psychological variables most strongly associated with academic motivation, self-efficacy has received substantial empirical attention. Academic self-efficacy refers to students' beliefs about their capacity to successfully perform academic tasks and manage learning challenges (Aziz et al., 2024; Shengyao et al., 2024). Students with higher self-efficacy tend to adopt more adaptive learning strategies, display greater persistence, and maintain stronger academic motivation even under adverse conditions (Lahrab Galle et al., 2024; Namani et al., 2024). Self-efficacy has also been shown to mediate the relationship between various personal and contextual factors and academic outcomes, including academic enthusiasm, achievement, and academic resilience (Lahrab Galle et al., 2024; Rezvani & Abdi, 2024). These findings highlight self-efficacy not only as a predictor of academic motivation but also as a core mechanism through which motivational interventions exert their effects.

Parallel to the growing interest in self-efficacy, mindfulness has emerged as a prominent construct within educational psychology. Mindfulness is commonly defined as purposeful, non-judgmental awareness of present-moment experiences, encompassing cognitive, emotional, and bodily processes (Kuroda et al., 2022; Ulivia et al., 2022). In academic contexts, mindfulness has been associated with enhanced attention regulation, emotional stability, stress management, and adaptive coping, all of which contribute indirectly and directly to academic motivation and learning engagement (Jahantigh et al., 2023; Smith & Jones, 2023). The growing body of research suggests that mindfulness training programs can cultivate psychological resources that support students' sustained academic motivation, particularly during periods of academic stress and transition (Nighnam Khadijeh & Zangeneh Motlaq, 2024; Sadighi et al., 2024).

Empirical investigations across diverse educational settings consistently demonstrate the beneficial impact of mindfulness-based interventions on academic motivation. Studies have shown that mindfulness training enhances academic motivation by reducing emotional distress, improving self-regulation, and strengthening students' sense of control over learning processes (Heydarian & Salimi, 2021; Tavakoli & Ebrahimi, 2020). Similar findings have been reported among secondary school students, university students, and special populations, indicating the broad applicability of mindfulness-based approaches in educational environments (Jahantigh et al., 2023; Joudaki & Dibazar, 2021; Salmani et al., 2023). Furthermore, mindfulness has been shown to predict academic affect, cognition, and behavior beyond traditional motivational variables, underscoring its unique contribution to academic functioning (Kuroda et al., 2022).

Self-efficacy-focused interventions have likewise demonstrated strong potential for enhancing academic motivation. Educational programs designed to strengthen students' self-efficacy beliefs through mastery experiences, modeling, goal setting, and cognitive restructuring have consistently resulted in significant improvements in

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academic motivation and performance (Akbari & Rezaei, 2022; Kokabi Rahman et al., 2023). For example, Akbari and Rezaei reported that self-efficacy training significantly increased both self-efficacy and academic motivation among students, confirming the central role of efficacy beliefs in motivational development (Akbari & Rezaei, 2022). Similarly, Kokabi Rahman and colleagues demonstrated that teaching cognitive and metacognitive strategies improved academic motivation and engagement among students with learning difficulties (Kokabi Rahman et al., 2023). These findings reinforce the theoretical proposition that strengthening students' beliefs in their own capabilities serves as a powerful lever for motivational change.

Recent studies further illustrate the complex interplay between self-efficacy, mindfulness, and academic motivation. For instance, Shengyao and colleagues found that self-efficacy and motivation jointly mediated the relationship between parenting style and academic resilience, emphasizing the interconnectedness of motivational and self-regulatory processes (Shengyao et al., 2024). Carranza Esteban and colleagues reported that academic self-efficacy, together with emotional exhaustion, significantly predicted research motivation among university students, highlighting the protective role of self-efficacy against motivational decline (Carranza Esteban et al., 2024). In parallel, mindfulness has been shown to foster academic resilience and motivation by strengthening attentional control and emotional balance (Nighnam Khadijeh & Zangeneh Motlaq, 2024; Smith & Jones, 2023). These converging findings suggest that both self-efficacy and mindfulness operate through complementary psychological mechanisms that support sustained academic motivation.

Despite the extensive evidence supporting the effectiveness of both self-efficacy training and mindfulness interventions, relatively few studies have directly compared their impact on academic motivation within a unified experimental framework, particularly among adolescent populations. Most existing research has examined these approaches independently, leaving important questions regarding their relative effectiveness and differential mechanisms of action (Nighnam Khadijeh & Zangeneh Motlaq, 2024; Rezaie et al., 2024). For example, Rezaie and colleagues compared mindfulness-based therapy with time perspective therapy and reported significant improvements in academic motivation for both approaches, yet did not include self-efficacy training as a comparison condition (Rezaie et al., 2024). Similarly, Nighnam Khadijeh and colleagues compared mindfulness-based stress reduction with time management skills training and found both interventions effective for improving academic motivation and emotions, but again lacked a self-efficacy-focused comparison group (Nighnam Khadijeh & Zangeneh Motlaq, 2024). Consequently, the relative strength of self-efficacy training versus mindfulness training in enhancing academic motivation remains insufficiently explored.

This gap in the literature is particularly salient in the context of female secondary school students, who often experience heightened academic pressure, performance anxiety, and motivational fluctuations during adolescence. Research suggests that adolescent girls may be especially sensitive to academic stressors and self-evaluative concerns, making the identification of effective motivational interventions especially urgent (Sadighi et al., 2024; Salmani et al., 2023). Moreover, educational systems in many regions continue to prioritize academic performance outcomes while underemphasizing the psychological processes that sustain motivation and learning engagement. Integrating evidence-based psychological interventions such as self-efficacy training and mindfulness training into school curricula may therefore represent a powerful strategy for promoting both academic success and student well-being (Heydarian & Salimi, 2021; Jahantigh et al., 2023).

In addition, contemporary motivational models increasingly emphasize the importance of internal psychological resources, including self-efficacy, emotional regulation, and mindful awareness, in sustaining academic engagement under challenging conditions (khawwaf et al., 2024; Rezvani & Abdi, 2024). Students who possess stronger self-regulatory capacities are better equipped to manage academic demands, persist in the face of obstacles, and maintain high levels of academic motivation over time (Lahrab Galle et al., 2024; Namani et al., 2024). Both self-efficacy and mindfulness appear to play central roles in this self-regulatory process, suggesting that interventions targeting these constructs may yield particularly robust motivational outcomes.

Furthermore, recent cross-cultural studies underscore the universal relevance of these psychological constructs. Investigations conducted in diverse cultural contexts—including Asia, the Middle East, and Europe—consistently confirm the positive associations among self-efficacy, mindfulness, academic motivation, and academic achievement (Aziz et al., 2024; Liu-jian & Caiga, 2024; Ulivia et al., 2022). These findings suggest that the motivational benefits of self-efficacy and mindfulness

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training are not limited to specific educational systems but reflect fundamental psychological processes that operate across cultures and learning environments.

Taken together, the existing body of research provides compelling evidence that both self-efficacy training and mindfulness training are effective approaches for enhancing academic motivation. However, the absence of direct comparative studies—particularly among female secondary school students—represents a significant gap in the literature. Addressing this gap is essential for informing educational policy, optimizing school-based intervention programs, and advancing theoretical understanding of motivational development during adolescence.

Therefore, the aim of the present study was to compare the effectiveness of self-efficacy training and mindfulness training on the academic motivation of female secondary school students.

2. Methods and Materials

2.1. Study Design and Participants

The present study was applied in purpose and employed a quasi-experimental design using a pretest–posttest format with one control group and two experimental groups. Prior to the intervention, pretests were administered to all participants in both the experimental and control groups, and following completion of the interventions, posttests were conducted to examine the effects of the two educational programs. The statistical population consisted of female students enrolled in the second level of secondary education in District 13 of Tehran during the 2024 academic year who exhibited low academic motivation and low self-efficacy based on questionnaire cutoff scores. Convenience sampling was used to recruit participants. From among students who met the inclusion criteria and expressed willingness to participate, 60 individuals were selected and randomly assigned to three groups of 20 participants each, including two experimental groups and one control group. The first experimental group received self-efficacy training, the second experimental group received mindfulness training, and the control group received no intervention. Inclusion criteria consisted of absence of concurrent use of psychotropic medication, no history of hospitalization or long-term pharmacological treatment for chronic psychological disorders, no simultaneous participation in other psychological interventions, adequate physical health, and full informed consent with continuous participation until the end of the study. Exclusion criteria included withdrawal of consent, absence from training sessions, unwillingness to cooperate, and concurrent engagement in other psychological treatments.

2.2. Measures

Academic motivation was assessed using the Harter Academic Motivation Scale, a standardized instrument consisting of 33 items designed to measure academic motivation among students. This questionnaire is a revised version of the original scale developed by Harter in 1980 and 1981 and evaluates academic motivation along intrinsic and extrinsic dimensions using bipolar statements. Responses are recorded on a five-point Likert scale ranging from never (1) to almost always (5). Total scores range from 33 to 165, with scores between 33 and 66 indicating low academic motivation, 66 to 99 indicating moderate motivation, and scores above 99 indicating high academic motivation. The internal consistency reliability of the Persian version of this scale was reported by Zahiri and Rajabi (2009) with a Cronbach's alpha coefficient of .92, indicating excellent reliability for research purposes.

2.3. Interventions

The self-efficacy training intervention was delivered in nine 90-minute group sessions grounded in Bandura's Self-Efficacy Theory (Bandura, 1997). The program began with orientation, administration of the pretest, clarification of therapeutic goals, and establishment of a supportive group climate to reduce anxiety and enhance readiness for change. Subsequent sessions focused on conceptual understanding of self-efficacy, identification of characteristics of highly self-efficacious individuals, and differentiation of personal efficacy beliefs. Participants were guided to recognize their personal strengths and competencies, cultivate positive self-awareness, and develop a growth-oriented perspective toward their abilities. Structured instruction on goal setting was provided, emphasizing SMART principles to promote academic motivation and clarify personal objectives. Behavioral modeling was introduced through the presentation of successful role models to strengthen vicarious learning and reinforce the belief "I can also succeed." Later sessions addressed academic stress and its impact on performance, incorporating coping strategies, relaxation techniques, and emotion regulation skills. Mental imagery and self-soothing techniques were taught to enhance concentration, self-regulation, and adaptive responses to academic challenges. Cognitive restructuring

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methods were employed to identify and modify negative automatic thoughts, depressive affect, and maladaptive beliefs. The final session emphasized the relationship between physical and psychological health, introduced healthy nutritional planning as a component of self-care, facilitated development of individualized action plans, and concluded with posttest administration to evaluate intervention effectiveness.

The mindfulness training intervention consisted of eight 90-minute sessions based on the mindfulness-based cognitive therapy model originally developed by Segal, Williams, and Teasdale (2002). The program commenced with participant introductions, clarification of objectives, expectation management, and foundational instruction in mindfulness principles, including the role of present-moment awareness in reducing anxiety and enhancing motivation and self-efficacy. Early sessions incorporated guided practices such as the three-minute breathing space and moment-to-moment awareness of thoughts, emotions, and bodily sensations. Participants engaged in regular home practice and group reflection, followed by structured mindfulness exercises including body scan meditation, gentle mindful yoga, and prolonged sitting meditation to deepen attentional stability and distress tolerance. Progressive sessions emphasized mindful observation of thoughts and emotions without judgment, sensory awareness practices, and cultivation of cognitive flexibility to reduce rumination and emotional reactivity. Participants were trained to relate adaptively to both unpleasant and pleasant experiences, exploring the interaction between cognitive processes, emotional states, and bodily responses. Walking meditation and mountain meditation were introduced to foster mental stability, acceptance, and inner resilience. The intervention concluded with comprehensive program review, reinforcement of long-term practice commitment, consolidation of therapeutic learning, and administration of the posttest to assess psychological and motivational change.

2.4. Data Analysis

Data were analyzed using descriptive statistics to summarize participant characteristics and study variables, followed by inferential statistical procedures. Analysis of covariance was conducted to compare posttest academic motivation scores among the three groups while controlling for pretest scores. Assumptions of normality, homogeneity of variances, linearity, homogeneity of regression slopes, and independence of observations were examined and met prior to conducting the main analyses. Statistical significance was evaluated at the .05 level.

3. Findings and Results

As shown in Table 1, all three groups demonstrated comparable levels of intrinsic motivation, extrinsic motivation, and total academic motivation at pretest, indicating baseline equivalence prior to the intervention. Following the intervention, substantial increases were observed in both experimental groups across all motivation dimensions, whereas the control group exhibited minimal change. Specifically, the self-efficacy group's total academic motivation increased from a mean of 82.55 to 145.15, and the mindfulness group's mean increased from 82.55 to 147.50. In contrast, the control group showed a negligible decrease from 82.25 to 81.75. Similar patterns were evident for both intrinsic and extrinsic motivation. These descriptive results indicate that both interventions were associated with marked improvements in students' academic motivation, with the mindfulness group demonstrating the highest posttest gains.

Table 1

Means and Standard Deviations of Academic Motivation Scores Across Groups and Measurement Phases

Variable	Phase	Self-Efficacy Group Mean	SD	Mindfulness Group Mean	SD	Control Group Mean	SD
Intrinsic Motivation	Pretest	43.10	2.71	43.30	1.62	41.90	2.95
	Posttest	76.45	2.72	76.10	2.46	41.60	2.54
Extrinsic Motivation	Pretest	39.85	1.42	39.25	2.04	40.35	2.05
	Posttest	69.60	2.79	69.00	5.01	41.60	2.54
Total Academic Motivation	Pretest	82.55	3.25	82.55	2.41	82.25	3.71
	Posttest	145.15	5.10	147.50	3.30	81.75	3.76

Prior to conducting the main inferential analyses, the assumptions underlying analysis of covariance were carefully examined. The normality of score distributions for all study variables was evaluated using the Kolmogorov–Smirnov test and inspection of skewness and kurtosis indices, all of which fell within acceptable ranges, indicating

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approximate normal distribution of the data. Homogeneity of variances across groups was confirmed through Levene's test, which was nonsignificant for all dependent variables, supporting the assumption of equal variances. The assumption of linearity between covariates and dependent variables was verified through visual inspection of scatterplots, demonstrating linear relationships in all cases. Homogeneity of regression slopes was also tested by examining the interaction between the covariate and group membership, and no statistically significant interactions were observed, confirming that the relationship between pretest and posttest scores was consistent across groups. Finally, independence of observations was ensured through the study design and random assignment of participants to groups, thereby satisfying the fundamental requirements for valid application of analysis of covariance.

Table 2

Results of Analysis of Covariance Comparing Posttest Academic Motivation Between Experimental Groups

Variable	Experimental Group	Sum of Squares	df	Mean Square	F	p	Effect Size (η^2)
Intrinsic Motivation	Self-Efficacy	100.13	1	100.13	26.08	< .001	0.42
	Mindfulness	113.91	1	56.95	16.44	< .001	0.47
Error	Self-Efficacy	138.18	36	3.83	—	—	—
	Mindfulness	124.68	36	3.46	—	—	—
Extrinsic Motivation	Self-Efficacy	26.21	1	26.21	6.38	.01	0.15
	Mindfulness	223.97	1	111.98	12.71	< .001	0.41
Error	Self-Efficacy	147.85	36	4.10	—	—	—
	Mindfulness	316.97	36	8.80	—	—	—

Table 2 presents the results of the analysis of covariance examining posttest differences in academic motivation between the self-efficacy and mindfulness groups while controlling for pretest scores. For intrinsic motivation, both the self-efficacy intervention ($F = 26.08$, $p < .001$, $\eta^2 = 0.42$) and the mindfulness intervention ($F = 16.44$, $p < .001$, $\eta^2 = 0.47$) produced statistically significant improvements, with large effect sizes, indicating strong practical significance. For extrinsic motivation, significant effects were likewise observed for both interventions, although the effect of mindfulness ($F = 12.71$, $p < .001$, $\eta^2 = 0.41$) was notably larger than that of self-efficacy ($F = 6.38$, $p = .01$, $\eta^2 = 0.15$). These findings demonstrate that while both interventions effectively enhanced academic motivation, mindfulness training exerted a more powerful influence on both intrinsic and extrinsic motivational components.

4. Discussion and Conclusion

The present study aimed to compare the effectiveness of self-efficacy training and mindfulness training on the academic motivation of female secondary school students. The results demonstrated that both interventions significantly enhanced students' academic motivation, including intrinsic motivation, extrinsic motivation, and overall academic motivation, compared with the control group. Moreover, mindfulness training produced stronger effects than self-efficacy training across motivational dimensions. These findings provide important empirical support for the role of psychological skill–based interventions in strengthening academic motivation during a critical stage of educational development.

The observed improvement in academic motivation among students who received self-efficacy training is consistent with extensive research indicating that students' beliefs about their own competence play a central role in shaping motivational processes. Self-efficacy functions as a key cognitive mechanism that influences goal commitment, persistence, emotional regulation, and academic engagement (Akbari & Rezaei, 2022; Marhadi et al., 2025). When students perceive themselves as capable of mastering academic tasks, they are more likely to invest effort, persist when encountering difficulties, and experience greater satisfaction in learning activities. The significant increase in intrinsic and extrinsic motivation following self-efficacy training in the present study confirms these theoretical propositions and aligns with previous findings demonstrating the effectiveness of self-efficacy–based interventions in enhancing academic motivation (Akbari & Rezaei, 2022; Kokabi Rahman et al., 2023).

Specifically, the results are congruent with the findings of Akbari and Rezaei, who reported that self-efficacy training led to substantial gains in academic motivation among students (Akbari & Rezaei, 2022). Similar outcomes have been documented in diverse educational contexts, where self-efficacy enhancement programs significantly improved

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students' motivation, engagement, and academic performance (Aziz et al., 2024; Marhadi et al., 2025). These findings reinforce the notion that self-efficacy serves as a motivational engine that drives academic behavior by strengthening students' confidence in their ability to succeed.

In addition, the observed motivational gains following self-efficacy training are supported by recent research demonstrating the mediating role of academic motivation between self-efficacy and key educational outcomes. For instance, Rezvani and Abdi found that academic motivation mediated the relationship between self-efficacy and academic achievement among students with learning disabilities (Rezvani & Abdi, 2024). Similarly, Lahrab Galle and colleagues reported that academic motivation served as a mediating mechanism linking self-efficacy and academic enthusiasm in secondary school students (Lahrab Galle et al., 2024). These studies suggest that strengthening self-efficacy initiates a motivational cascade that ultimately enhances learning engagement and academic success.

Beyond self-efficacy, the present study revealed that mindfulness training produced even greater improvements in academic motivation. This finding highlights the powerful role of mindfulness in shaping students' motivational and emotional functioning. Mindfulness training cultivates present-moment awareness, emotional acceptance, and cognitive flexibility, which collectively reduce psychological distress and enhance students' capacity to engage meaningfully with learning tasks (Kuroda et al., 2022; Smith & Jones, 2023). By helping students regulate attention and manage academic stress more effectively, mindfulness creates optimal internal conditions for sustained academic motivation.

The superior effectiveness of mindfulness training observed in this study aligns with a growing body of empirical evidence demonstrating the broad benefits of mindfulness-based interventions in educational settings. Prior studies have consistently reported that mindfulness training enhances academic motivation, reduces anxiety and emotional exhaustion, and promotes academic resilience among students (Jahantigh et al., 2023; Sadighi et al., 2024; Salmani et al., 2023). For example, Sadighi and colleagues found that mindfulness training significantly improved both psychological well-being and academic motivation among students with low academic achievement (Sadighi et al., 2024). Similarly, Jahantigh and colleagues demonstrated that mindfulness-based cognitive therapy effectively enhanced academic motivation in students (Jahantigh et al., 2023). These findings closely mirror the outcomes of the present study and provide strong convergent validity for the observed effects.

Furthermore, the present results are consistent with the findings of Nighnam Khadijeh and colleagues, who reported that mindfulness-based interventions were highly effective in improving academic emotions and academic motivation among students (Nighnam Khadijeh & Zangeneh Motlaq, 2024). Rezaie and colleagues also documented significant improvements in academic motivation following mindfulness-based interventions among secondary school students exposed to traumatic experiences (Rezaie et al., 2024). Together, these studies confirm that mindfulness training constitutes a robust and versatile approach for strengthening academic motivation across diverse student populations and educational contexts.

The greater impact of mindfulness training relative to self-efficacy training observed in this study may be explained by the broader scope of psychological processes targeted by mindfulness. While self-efficacy training primarily focuses on cognitive appraisals of competence, mindfulness simultaneously addresses attention regulation, emotional processing, stress management, and self-awareness. This multifaceted influence may produce more comprehensive improvements in students' internal learning environment, thereby amplifying motivational gains (Kuroda et al., 2022; Smith & Jones, 2023). Additionally, mindfulness promotes nonjudgmental acceptance of academic challenges, which may reduce performance anxiety and rumination—factors known to undermine academic motivation (Carranza Esteban et al., 2024; Sadighi et al., 2024).

Another important implication of the present findings is the central role of internal psychological resources in sustaining academic motivation. Contemporary motivational models emphasize that students' motivation is deeply intertwined with self-regulatory capacities, emotional resilience, and adaptive cognitive patterns (khawwaf et al., 2024; Shengyao et al., 2024). Mindfulness training directly enhances these resources by strengthening students' ability to remain engaged in the present moment, tolerate academic discomfort, and respond flexibly to stressors. This may explain why mindfulness training yielded stronger motivational effects than self-efficacy training in the present study.

The results also align with cross-cultural research demonstrating the universal relevance of mindfulness and self-efficacy for academic functioning. Studies conducted in

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diverse cultural settings have consistently reported positive associations among mindfulness, self-efficacy, academic motivation, and academic achievement (Aziz et al., 2024; Liu-jian & Caiga, 2024; Ulivia et al., 2022). This suggests that the motivational benefits of these interventions are not culturally bounded but reflect fundamental psychological processes that support learning across educational systems.

In sum, the present findings provide compelling evidence that both self-efficacy training and mindfulness training constitute effective approaches for enhancing academic motivation among female secondary school students, with mindfulness training demonstrating superior effectiveness. These results extend existing research by directly comparing the two interventions within a controlled experimental design and offer valuable insights for educational psychology, school-based intervention development, and motivational theory.

Despite its contributions, the present study has several limitations. The sample was restricted to female secondary school students from a single educational district, which may limit the generalizability of the findings to other age groups, genders, and cultural contexts. The study relied on self-report measures of academic motivation, which may be subject to response biases and social desirability effects. Additionally, the absence of long-term follow-up assessments limits conclusions regarding the durability of the observed motivational gains over time.

Future studies should replicate the present findings using larger and more diverse samples, including male students and learners from different educational levels and regions. Longitudinal research designs are recommended to examine the stability of motivational improvements and the long-term impact of mindfulness and self-efficacy interventions. Further investigations may also explore potential mediating and moderating mechanisms, such as emotional regulation, academic resilience, and cognitive flexibility, to clarify the pathways through which these interventions exert their effects.

Educational practitioners and school counselors are encouraged to integrate structured mindfulness and self-efficacy training programs into school curricula and student support services. Providing teachers with professional development opportunities in these approaches may enhance the sustainability and effectiveness of school-based interventions. Moreover, combining mindfulness and self-efficacy components within comprehensive educational programs may offer synergistic benefits for strengthening students' academic motivation and overall psychological well-being.

Authors' Contributions

All authors significantly contributed to this study.

Declaration

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

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

In this study, to observe ethical considerations, participants were informed about the goals and importance of the research before the start of the interview and participated in the research with informed consent. This study was conducted after approval by the Research Ethics Committee of Islamic Azad University, North Tehran Branch, and the issuance of the ethics code IR.IAU.TNB.REC.1404.036.

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