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The Effect of Mindfulness Training on Distress Tolerance in Art Students at Islamic Azad University, Central Tehran Branch

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ABSTRACT

Purpose: The present study aimed to investigate the effectiveness of mindfulness training on distress tolerance among art students at Islamic Azad University, Central Tehran Branch.

Methods and Materials: The present study employed a quasi-experimental design with a pretest–posttest structure and a control group. The statistical population consisted of all art students at Islamic Azad University, Central Tehran Branch, during the 2026 academic year. The research sample included 30 students selected through purposive sampling and randomly assigned into an experimental group ($n = 15$) and a control group ($n = 15$). Data were collected using the Distress Tolerance Scale developed by Simmons and Gaher (2005), which measures tolerance, absorption, appraisal, and regulation components of distress tolerance. The experimental group participated in a 10-session mindfulness training program, while the control group received no intervention. Data were analyzed using multivariate analysis of covariance (MANCOVA) with IBM SPSS software.

Findings: The results of the multivariate analysis of covariance demonstrated that mindfulness training significantly improved distress tolerance and its components among students in the experimental group compared with the control group. Significant differences were observed between the two groups in tolerance ($F = 6.348, p < .01$), absorption ($F = 5.995, p < .01$), appraisal ($F = 4.275, p < .01$), regulation ($F = 3.430, p < .01$), and total distress tolerance ($F = 2.540, p < .01$). The overall group effect was also statistically significant ($F = 6.578, p < .01$), indicating that mindfulness training effectively enhanced students' capacity to tolerate and regulate emotional distress.

Conclusion: The findings suggest that mindfulness training plays a significant role in improving distress tolerance among university students by enhancing emotional awareness, cognitive appraisal, emotional regulation, and adaptive coping abilities. Therefore, mindfulness-based interventions may serve as effective psychological approaches for promoting emotional resilience and psychological well-being among art students and other student populations experiencing emotional and academic stress.

Keywords: Mindfulness, distress tolerance, students, art.

1. Introduction

University students represent one of the most psychologically vulnerable populations in contemporary society due to the simultaneous exposure to academic pressures, interpersonal challenges, emotional instability, identity formation processes, and concerns regarding future occupational and social roles. Students in artistic disciplines may be particularly susceptible to emotional disturbances because artistic activities are closely associated with emotional sensitivity, self-expression, perfectionism, and heightened cognitive-emotional processing. Emotional instability, difficulties in coping with distressing experiences, and maladaptive emotional responses can negatively influence academic functioning, psychological adjustment, interpersonal relationships, and overall well-being among students. In recent years, psychological researchers have increasingly focused on the concept of distress tolerance as a key factor underlying emotional adaptation and psychological resilience (Akbari & Khalatbari, 2025; Javanmardi et al., 2024; Li et al., 2024).

Distress tolerance refers to an individual's perceived or actual capacity to withstand negative emotional states, psychological discomfort, and stressful internal experiences without resorting to maladaptive coping behaviors. Individuals with low distress tolerance tend to perceive distressing emotional states as unbearable, threatening, and uncontrollable, which subsequently increases vulnerability to anxiety, depression, impulsive behaviors, emotional dysregulation, and interpersonal conflicts (Bergen-Cico & Cheon, 2020; Besharat & Shahidi, 2021; Bidari & Haj Alizadeh, 2019). Distress tolerance is considered a multidimensional construct that encompasses the ability to tolerate emotional discomfort, cognitive appraisal of distress, attentional absorption by negative emotions, and regulation efforts aimed at reducing emotional suffering (Aghili et al., 2024; Li et al., 2024). Studies have shown that individuals with higher distress tolerance demonstrate greater psychological flexibility, emotional resilience, and adaptive functioning under stressful circumstances (Nouri Ghaleh Alikhani et al., 2025; Zhong et al., 2025).

The transition to university life is often associated with multiple stressors that challenge students' psychological resources. Academic competition, financial concerns, social adjustment, emotional relationships, identity confusion, and future uncertainty can create persistent psychological strain. Previous investigations have demonstrated high levels of psychological distress, sleep disturbances, anxiety, and

emotional problems among university students (Bamber & Morpeth, 2019; Nekouei & Torkan, 2024). Students in artistic fields may experience additional pressures related to creativity demands, performance anxiety, emotional immersion, and sensitivity to criticism. Consequently, difficulties in distress tolerance may significantly impair their emotional functioning and academic performance.

Low distress tolerance has been associated with numerous maladaptive psychological outcomes. Research findings suggest that individuals with insufficient distress tolerance are more likely to engage in rumination, emotional avoidance, impulsive reactions, and dysfunctional coping mechanisms (Karami et al., 2019; Kavandi et al., 2022). Moreover, low distress tolerance is linked with alexithymia, interpersonal difficulties, emotional instability, and various psychopathological symptoms (Besharat & Shahidi, 2021; Chalah & Ayache, 2017). Brownstein argued that emotional failures and unresolved emotional experiences can intensify emotional distress and impair adaptive coping capacities, particularly among women and young adults (Brownstein, 2022). Similarly, Aghajani et al. demonstrated that emotional distress associated with romantic breakups significantly affects cognitive emotion regulation and psychological adjustment among university students (Aghajani et al., 2018).

Given the growing prevalence of psychological distress among students, researchers have increasingly emphasized the importance of preventive and therapeutic psychological interventions that can strengthen emotional regulation capacities and improve distress tolerance. Among the contemporary psychological approaches, mindfulness-based interventions have received substantial empirical attention due to their effectiveness in promoting emotional awareness, self-regulation, and psychological flexibility (Valizadeh Pourkani & Saeedmanesh, 2020; Walsh & Shapiro, 2022). Mindfulness is generally defined as purposeful, nonjudgmental attention to present-moment experiences, including thoughts, emotions, bodily sensations, and environmental stimuli (Walsh & Shapiro, 2022). Through mindfulness practices, individuals learn to observe internal experiences without avoidance, suppression, or excessive emotional reactivity.

Mindfulness-based interventions are rooted in meditative traditions and have gradually become integrated into modern clinical psychology and psychotherapy. Walsh and Shapiro described mindfulness as a bridge between contemplative disciplines and Western psychology that facilitates emotional balance, cognitive clarity, and adaptive coping

(Walsh & Shapiro, 2022). Mindfulness interventions aim to cultivate conscious awareness, acceptance, and compassionate engagement with internal experiences rather than maladaptive attempts to control or avoid them. This psychological orientation can substantially improve emotional resilience and distress tolerance by reducing cognitive fusion, emotional reactivity, and experiential avoidance (Bergen-Cico & Cheon, 2020; Li et al., 2024).

Empirical evidence strongly supports the effectiveness of mindfulness-based approaches in improving psychological functioning across diverse populations. Bamber and Morpeth conducted a meta-analysis demonstrating that mindfulness meditation significantly reduces anxiety symptoms among college students (Bamber & Morpeth, 2019). Similarly, Bergen-Cico and Cheon found that mindfulness and self-compassion mediate improvements in emotional regulation and distress tolerance among university students (Bergen-Cico & Cheon, 2020). Li et al. further demonstrated that distress tolerance acts as a mediating mechanism through which mindfulness-based interventions reduce anxiety and depression symptoms (Li et al., 2024). These findings suggest that mindfulness not only alleviates psychological symptoms directly but also enhances individuals' capacity to endure emotional distress effectively.

In Iranian psychological research, mindfulness-based interventions have similarly demonstrated positive outcomes across various psychological domains. Afshari and Amin reported that mindfulness interventions improved resilience and reduced alexithymia among women with special conditions (Afshari & Amin, 2018). Aghajani et al. found that mindfulness-based stress reduction training enhanced mother-child interactions among mothers of children with intellectual disabilities (Aghajani et al., 2015). Eftekhari Afzali and Izadi observed that mindfulness-based cognitive therapy significantly improved self-compassion and reduced cognitive distortions and alexithymia among students with love trauma symptoms (Eftekhari Afzali & Izadi, 2021). These studies collectively indicate that mindfulness-based approaches can effectively improve emotional awareness, emotional regulation, and adaptive coping capacities.

Recent studies have increasingly examined the relationship between mindfulness and distress tolerance specifically. Akbari and Khalatbari found that mindfulness and perceived social support mediate the relationship between psychological hardness and distress tolerance among students (Akbari & Khalatbari, 2025). Javanmardi et al. reported that mindfulness plays a mediating role in the

prediction of distress tolerance based on perceived support, experiential avoidance, and spiritual intelligence among older adults (Javanmardi et al., 2024). Similarly, Zhong et al. demonstrated that mindfulness positively predicts distress tolerance among athletes through cognitive reappraisal and mental toughness mechanisms (Zhong et al., 2025). These findings highlight mindfulness as a central psychological resource for improving tolerance toward stressful emotional experiences.

Mindfulness-based interventions have also been effective among clinical and vulnerable populations experiencing severe emotional distress. Aghili et al. demonstrated that mindfulness-based cognitive therapy significantly improved distress tolerance and reduced dysfunctional attitudes and post-traumatic stress symptoms among mothers of children with cancer (Aghili et al., 2024). Timajchi et al. similarly reported that mindfulness-based stress reduction training enhanced psychological distress tolerance and psychosocial functioning among diabetic patients (Timajchi et al., 2025). Furthermore, Nouri Ghaleh Alikhani et al. found that mindfulness significantly predicts distress tolerance among mothers of children with physical-motor disabilities (Nouri Ghaleh Alikhani et al., 2025). These findings suggest that mindfulness interventions may have broad applicability across both clinical and nonclinical populations.

The effectiveness of mindfulness-based interventions may partly stem from their influence on emotional regulation processes. Emotional regulation refers to the ability to monitor, evaluate, and modify emotional responses in adaptive ways. Difficulties in emotional regulation are strongly associated with low distress tolerance, impulsivity, anxiety, and interpersonal dysfunction (Bergen-Cico & Cheon, 2020; Karami et al., 2019). Mindfulness practices facilitate adaptive emotional regulation by encouraging acceptance, nonjudgmental awareness, attentional flexibility, and cognitive reappraisal (Li et al., 2024). Zarei et al. demonstrated that mindfulness-based cognitive therapy improved both emotional regulation and distress tolerance among women with obsessive-compulsive symptoms (Zareei et al., 2024; Zarei et al., 2023). Likewise, Roodmajani et al. reported that mindfulness-based cognitive therapy significantly improved emotional regulation and distress tolerance in comparison with integrated transdiagnostic psychotherapy (Roodmajani et al., 2024).

Another important mechanism associated with mindfulness is self-compassion. Mindfulness practices often encourage individuals to approach their suffering with kindness, acceptance, and understanding rather than self-

criticism or avoidance. Self-compassion has been associated with greater emotional resilience, improved coping abilities, and increased distress tolerance (Keshavarz Mohammadi & Khalatbari, 2018; Nouri Ghaleh Alikhani et al., 2025). Psychological interventions that strengthen self-compassion and emotional awareness may therefore contribute to more adaptive emotional functioning among students who face persistent academic and interpersonal stressors.

Contemporary psychotherapy approaches increasingly emphasize acceptance-based and experiential techniques for managing emotional distress. Approaches such as dialectical behavior therapy, schema therapy, mindfulness-based cognitive therapy, and emotion-focused interventions have demonstrated significant effectiveness in improving emotional regulation and distress tolerance (Bidari & Haj Alizadeh, 2019; Bruno et al., 2023; Kavandi et al., 2022). Bruno et al., in a systematic review, reported that dialectical behavior therapy-based interventions improve alexithymia and emotional awareness through acceptance-oriented emotional processing (Bruno et al., 2023). Similarly, schema therapy and rational emotive therapy have been shown to improve distress tolerance and emotional flexibility among emotionally distressed individuals (Bidari & Haj Alizadeh, 2019; Kavandi et al., 2022). These findings reinforce the importance of interventions that target emotional processing and psychological flexibility.

Mindfulness may also facilitate healthier interpersonal functioning and social adjustment. Emerging adulthood is characterized by developmental tasks involving identity formation, intimacy, emotional independence, and social adaptation (Beyers & Seiffge-Krenke, 2020). Difficulties in emotional awareness and distress tolerance can interfere with successful navigation of these developmental tasks. Wubbolding emphasized the importance of psychological responsibility and adaptive behavioral choices in promoting psychological well-being and interpersonal functioning (Wubbolding, 2019). Furthermore, emotional distress and ineffective coping may impair social functioning, increase avoidance behaviors, and reduce academic engagement among students (Vespa et al., 2022; Zayman & Simsek, 2023).

Despite the growing body of literature on mindfulness and distress tolerance, relatively limited research has specifically investigated the effectiveness of mindfulness training on distress tolerance among university art students in the Iranian cultural context. Considering the emotional sensitivity and unique psychological challenges associated with artistic education, investigating interventions that can

improve emotional resilience and adaptive coping in this population appears particularly important. Additionally, although previous studies have explored mindfulness in clinical populations, fewer studies have examined its impact on distress tolerance components, including tolerance, absorption, appraisal, and regulation, among nonclinical student populations.

Therefore, the present study aimed to determine the effectiveness of mindfulness training on distress tolerance among art students at Islamic Azad University, Central Tehran Branch.

2. Methods and Materials

2.1. Study Design and Participants

The present study employed a quasi-experimental design using a pretest–posttest format with an experimental group and a control group. The statistical population consisted of all art students studying at the Islamic Azad University, Central Tehran Branch, during the 2026 academic year. The research sample included 30 participants, of whom 15 students were assigned to the experimental group and 15 students were assigned to the control group. Participants were selected through purposive sampling based on the eligibility conditions of the study and their willingness to participate in the intervention sessions. After selection, participants in both groups completed the pretest assessment. The experimental group then received mindfulness training, whereas the control group did not receive any psychological intervention during the study period. At the end of the intervention sessions, the posttest was administered to both groups in order to evaluate the effectiveness of mindfulness training on distress tolerance among students.

2.2. Measures

Distress tolerance was assessed using the Distress Tolerance Scale developed by Simmons and Gaher in 2005. The Distress Tolerance Scale is a self-report instrument designed to evaluate individuals' perceived ability to tolerate emotional distress, subjective appraisal of distress, attention to negative emotional states, and regulatory efforts aimed at reducing distress. The questionnaire consists of 15 items and includes four subscales: tolerance of emotional distress, absorption by negative emotions, subjective appraisal of distress, and regulation efforts directed toward distress reduction. Items are scored using a five-point Likert scale,

and higher scores indicate greater distress tolerance. Previous psychometric evaluations have demonstrated acceptable reliability and validity for the instrument. Cronbach's alpha coefficients for the subscales have been reported as .72, .82, .78, and .70, respectively, while the reliability coefficient for the total scale has been reported as .82. In addition, Azizi, Mirzaei, and Shams (2020) reported a Cronbach's alpha coefficient of .67 and a test-retest reliability coefficient of .79 for the Persian version of the questionnaire. Furthermore, Alavi (2021) administered the instrument among 48 university students from Ferdowsi University of Mashhad and Mashhad University of Medical Sciences and reported satisfactory internal consistency for the total scale (.71) and moderate reliability coefficients for the subscales, including tolerance (.54), absorption (.42), appraisal (.56), and regulation (.58).

2.3. Intervention

The mindfulness intervention program was implemented across 10 sessions based on the protocol developed by Tabatabaei Nejad et al. (2018). The first session focused on group introduction, familiarization with treatment rules and procedures, understanding depression and its symptoms, and introducing positive mindfulness therapy and its role in overcoming destructive and negative emotions. The second session included mindfulness meditation techniques, particularly the raisin meditation exercise, with an emphasis on strengthening self-worth and self-satisfaction in the context of hope and optimism. During the third session, participants were trained to identify positive and negative emotions, inhibit emotional impulsivity, and practice mindful breathing exercises centered on wisdom and insight. The fourth session emphasized nonjudgmental acceptance, mindful awareness of thoughts, emotions, and feelings, emotion management and regulation through loving-kindness meditation, enhancement of positive emotions through savoring exercises, and focusing on the present moment rather than the past or future. In the fifth session, mindfulness-based self-awareness was taught through recognition of personal strengths, weaknesses, abilities, beliefs, thoughts, and values, accompanied by positive self-suggestion and reinforcement of positive aspects of life. The sixth session involved body scan meditation and seated meditation exercises, alongside cognitive goal-setting

focused on strengths, interests, emotions, and positive values such as courage, kindness, hopefulness, and respect for others. The seventh session focused on positive thinking and attitude change through identification of maladaptive thought patterns, mindful attention to thoughts, self-questioning, replacing negative thoughts with positive alternatives, engaging consciously in pleasurable activities, and enhancing self-confidence and self-belief. The eighth session introduced internal values related to humanity, including love, kindness, and social intelligence, and highlighted the role of positive emotions and thoughts in success, well-being, and prevention of depression. The ninth session included mindful walking exercises, nonjudgmental acceptance, mindful attention, conscious living, continuation of goal-setting activities, and emphasis on personal strengths to reduce behavioral, cognitive, and emotional difficulties. Finally, the tenth session focused on establishing positive interpersonal relationships, assertiveness training, effective communication skills, mindful expression of emotions, positive alternatives to maladaptive communication habits, problem-solving strategies, and the role of humor and humor-based techniques in interpersonal relationships, psychological well-being, and resilience against everyday anxiety. Following completion of the intervention sessions, the posttest assessment was administered to both groups.

2.4. Data Analysis

The collected data were analyzed using descriptive and inferential statistical methods. Descriptive statistics included the calculation of means and standard deviations for the study variables. Inferential analyses were conducted using multivariate analysis of covariance (MANCOVA) in order to examine the effectiveness of mindfulness training on the dimensions of distress tolerance while controlling for pretest scores. All statistical analyses were performed using IBM SPSS statistical software, and the significance level for hypothesis testing was set at $p < .01$.

3. Findings and Results

Table 1 presents the descriptive statistics, including the means and standard deviations of distress tolerance and its components in the experimental and control groups at the pretest and posttest stages.

Table 1*Descriptive Statistics of Distress Tolerance Variables by Experimental and Control Groups*

Variables	Group	Pretest Mean	Pretest SD	Posttest Mean	Posttest SD
Tolerance	Experimental	9.78	7.32	14.20	4.21
	Control	9.43	2.23	8.15	2.87
Absorption	Experimental	8.23	1.46	14.27	1.43
	Control	5.87	1.81	4.33	1.67
Appraisal	Experimental	9.76	2.45	11.45	1.30
	Control	7.56	2.90	7.45	1.34
Regulation	Experimental	11.73	3.90	14.56	3.12
	Control	11.13	7.90	12.26	7.81
Total Distress Tolerance	Experimental	62.76	5.32	64.96	2.12
	Control	51.15	8.89	51.65	7.12

As shown in Table 1, the mean scores of distress tolerance and its components, including tolerance, absorption, appraisal, and regulation, increased from pretest to posttest in the experimental group following the mindfulness training intervention. In contrast, the control group demonstrated either slight decreases or minimal changes in the mean scores of the study variables across the two assessment stages. The most notable increase in the experimental group was observed in the absorption component, where the mean score increased from 8.23 in the pretest to 14.27 in the posttest. Similarly, the total distress tolerance score in the experimental group increased from 62.76 to 64.96, whereas the control group showed only a negligible increase from 51.15 to 51.65. These descriptive findings preliminarily

suggest that mindfulness training contributed to improvements in distress tolerance among art students.

Before conducting the multivariate analysis of covariance, the assumptions underlying the statistical analysis were examined. The results of Levene's test indicated that the assumption of homogeneity of variances was satisfied for all study variables at both the pretest and posttest stages because the significance levels were greater than .05. Furthermore, the assumption of homogeneity of regression slopes was also confirmed, as the interaction effects between the intervention and pretest scores were not statistically significant across all variables ($p > .05$). Therefore, the assumptions required for conducting multivariate analysis of covariance were adequately met.

Table 2*Results of Multivariate Analysis of Covariance for the Effect of Mindfulness Training on Distress Tolerance*

Variables	Wilks' Lambda	F	Hypothesis df	Error df	p	Effect Size	Statistical Power
Tolerance	0.251	6.348	8	17	.001	0.749	0.994
Absorption	0.262	5.995	8	17	.001	0.738	0.991
Appraisal	0.332	4.275	8	17	.006	0.668	0.946
Regulation	0.231	3.430	8	17	.002	0.231	0.287
Total Distress Tolerance	0.412	2.540	8	17	.001	0.376	0.176
Group Effect	0.244	6.578	8	17	.001	0.756	0.996

The results presented in Table 2 indicate that mindfulness training had a statistically significant effect on distress tolerance and its components among students. After controlling for pretest scores, significant differences were observed between the experimental and control groups at the posttest stage in tolerance ($F = 6.348$, $p = .001$), absorption ($F = 5.995$, $p = .001$), appraisal ($F = 4.275$, $p = .006$), regulation ($F = 3.430$, $p = .002$), and total distress tolerance ($F = 2.540$, $p = .001$). In addition, the overall group effect was statistically significant ($F = 6.578$, $p = .001$), indicating that the mindfulness intervention was effective in improving

distress tolerance among art students. The reported effect sizes demonstrated moderate to large intervention effects, and the statistical power coefficients indicated adequate power for detecting significant differences between the groups.

4. Discussion and Conclusion

The present study aimed to investigate the effectiveness of mindfulness training on distress tolerance among art students at Islamic Azad University, Central Tehran Branch. The findings demonstrated that mindfulness training



significantly improved distress tolerance and its components, including tolerance, absorption, appraisal, and regulation, among students in the experimental group compared with the control group. The results of the multivariate analysis of covariance indicated that after controlling for pretest scores, students who participated in the mindfulness intervention showed significantly higher levels of distress tolerance at the posttest stage. Therefore, the findings support the effectiveness of mindfulness-based interventions in enhancing students' ability to tolerate and regulate distressing emotional experiences.

One of the major findings of the present study was the significant improvement in the tolerance component among participants who received mindfulness training. This result suggests that mindfulness practices can increase individuals' ability to endure unpleasant emotional states without becoming overwhelmed or engaging in maladaptive coping strategies. Mindfulness training encourages individuals to observe emotions without judgment, suppression, or avoidance and to remain psychologically present during stressful experiences. Through repeated mindfulness exercises such as breathing awareness, body scanning, and present-moment attention, students gradually develop a greater capacity to tolerate emotional discomfort. This finding is consistent with previous studies demonstrating that mindfulness enhances psychological resilience and distress tolerance (Akbari & Khalatbari, 2025; Li et al., 2024; Zhong et al., 2025). Li et al. concluded that distress tolerance acts as a mediating mechanism through which mindfulness-based interventions reduce symptoms of anxiety and depression (Li et al., 2024). Similarly, Zhong et al. found that mindfulness significantly predicts distress tolerance through cognitive reappraisal and mental toughness among athletes (Zhong et al., 2025). The present findings further extend this evidence to university art students.

Another important finding of the study was the significant improvement in the absorption component of distress tolerance following mindfulness training. Absorption refers to the extent to which individuals become cognitively and emotionally consumed by negative emotional experiences. Students with low distress tolerance often become excessively focused on distressing thoughts and emotions, which intensifies emotional suffering and interferes with adaptive functioning. Mindfulness training may reduce emotional absorption by helping individuals develop attentional flexibility and nonreactive awareness toward internal experiences. Instead of becoming immersed in

distressing emotions, individuals learn to observe their thoughts and feelings as temporary mental events. This interpretation is consistent with theoretical perspectives emphasizing mindfulness as a process of decentering and cognitive defusion (Valizadeh Pourkani & Saeedmanesh, 2020; Walsh & Shapiro, 2022). Bergen-Cico and Cheon similarly reported that mindfulness improves emotional regulation and distress tolerance by reducing emotional reactivity and strengthening self-compassion (Bergen-Cico & Cheon, 2020). In the present study, students who participated in mindfulness exercises appeared to gain greater control over attentional engagement with negative emotional experiences, thereby reducing emotional absorption.

The findings also revealed a significant improvement in the appraisal component of distress tolerance. This result indicates that mindfulness training altered students' cognitive evaluations of distressing situations and emotional experiences. Individuals with poor distress tolerance often interpret negative emotions as unbearable, dangerous, or uncontrollable. Such maladaptive cognitive appraisals intensify emotional distress and contribute to avoidance behaviors, rumination, and psychological dysfunction. Mindfulness-based interventions teach individuals to approach emotional experiences with acceptance, openness, and curiosity rather than catastrophic interpretation. This process may reduce cognitive distortions and facilitate more adaptive appraisals of emotional distress. The present finding aligns with previous studies showing that mindfulness interventions improve cognitive flexibility, emotional awareness, and adaptive cognitive processing (Eftekhari Afzali & Izadi, 2021; Roodmajani et al., 2024; Zareei et al., 2024). Eftekhari Afzali and Izadi found that mindfulness-based cognitive therapy reduced cognitive distortions and alexithymia among students experiencing love trauma symptoms (Eftekhari Afzali & Izadi, 2021). Likewise, Zareei et al. demonstrated that mindfulness-based cognitive therapy significantly improved emotion regulation and distress tolerance among women with obsessive-compulsive symptoms (Zareei et al., 2024). These studies support the argument that mindfulness modifies maladaptive cognitive appraisals and facilitates healthier emotional processing.

The regulation component of distress tolerance also improved significantly after the mindfulness intervention. Emotional regulation involves the ability to manage emotional responses in adaptive ways while maintaining psychological balance. Difficulties in emotional regulation

are closely associated with impulsivity, anxiety, rumination, and interpersonal problems (Besharat & Shahidi, 2021; Karami et al., 2019). Mindfulness training may improve emotional regulation by increasing awareness of emotional states, reducing impulsive reactions, and strengthening self-control processes. Through mindful attention and nonjudgmental acceptance, individuals become less likely to react automatically to distressing emotions and more capable of responding thoughtfully and adaptively. The present finding is supported by previous investigations demonstrating the effectiveness of mindfulness-based interventions in improving emotional regulation capacities (Bergen-Cico & Cheon, 2020; Roodmajani et al., 2024; Valizadeh Pourkani & Saeedmanesh, 2020). Karami et al. reported that emotion regulation training significantly reduced rumination and social anxiety among female students (Karami et al., 2019). Likewise, mindfulness-based interventions have consistently been associated with greater emotional flexibility and adaptive coping across diverse populations.

The improvement in total distress tolerance observed in the present study can also be interpreted within the framework of experiential acceptance. One of the central principles of mindfulness is the acceptance of internal experiences rather than avoidance or suppression. Individuals with low distress tolerance often attempt to escape unpleasant emotions through avoidance, denial, or impulsive behaviors, which paradoxically intensify psychological suffering over time. Mindfulness training helps individuals confront emotional experiences directly and tolerate them without excessive reactivity. This process strengthens psychological flexibility and resilience in stressful situations. The findings of the present study are therefore consistent with acceptance-based psychological models emphasizing the importance of experiential acceptance in emotional adaptation (Li et al., 2024; Walsh & Shapiro, 2022).

Another possible explanation for the effectiveness of mindfulness training involves its impact on self-compassion and self-awareness. Mindfulness exercises encourage individuals to treat themselves with kindness and understanding during moments of emotional pain rather than engaging in self-criticism or emotional avoidance. Increased self-compassion may reduce emotional vulnerability and improve individuals' capacity to cope with distress. Previous studies have shown that self-compassion interventions significantly improve distress tolerance and emotional regulation (Keshavarz Mohammadi & Khalatbari, 2018;

Nouri Ghaleh Alikhani et al., 2025). In the context of university students, increased self-compassion may also contribute to improved self-esteem, emotional stability, and interpersonal functioning.

The findings of the present study are additionally compatible with research conducted among clinical and vulnerable populations. Aghili et al. demonstrated that mindfulness-based cognitive therapy significantly improved distress tolerance among mothers of children with cancer (Aghili et al., 2024). Timajchi et al. similarly found that mindfulness-based stress reduction improved distress tolerance and psychosocial functioning among diabetic patients (Timajchi et al., 2025). Although the populations investigated in these studies differ from university students, the consistency of findings across diverse groups suggests that mindfulness interventions may operate through universal psychological mechanisms involving attentional control, emotional awareness, cognitive flexibility, and experiential acceptance.

The effectiveness of mindfulness training in the present study may also be understood in relation to developmental and interpersonal factors associated with emerging adulthood. University students are often confronted with emotional uncertainty, identity exploration, interpersonal conflicts, and concerns about future roles and achievements. These developmental challenges may intensify emotional vulnerability and reduce coping capacity. Beyers and Seiffge-Krenke emphasized that emerging adulthood is characterized by significant developmental transitions involving intimacy, identity, and emotional independence (Beyers & Seiffge-Krenke, 2020). Students who lack adequate emotional regulation and distress tolerance may therefore experience heightened psychological difficulties during this developmental period. Mindfulness training may provide students with practical emotional coping skills that facilitate psychological adaptation and resilience.

The present findings are also consistent with broader evidence regarding the effectiveness of psychological interventions aimed at improving distress tolerance and emotional functioning. Schema therapy, dialectical behavior therapy, rational emotive therapy, and emotion-focused interventions have all demonstrated beneficial effects on emotional regulation and distress tolerance (Bidari & Haj Alizadeh, 2019; Bruno et al., 2023; Kavandi et al., 2022). Bruno et al., in their systematic review, highlighted the role of acceptance-oriented interventions in improving emotional awareness and reducing alexithymia (Bruno et al., 2023). These findings collectively support the view that

interventions targeting emotional awareness, acceptance, and cognitive flexibility can effectively enhance distress tolerance.

The present study contributes to the growing literature on mindfulness and distress tolerance by focusing specifically on art students, a population that may experience unique emotional sensitivities and psychological pressures. Artistic students frequently engage in emotionally expressive and evaluative environments that may intensify emotional vulnerability and sensitivity to criticism. Consequently, interventions that improve emotional resilience and distress tolerance may be particularly valuable for this population. The findings suggest that mindfulness-based programs can serve as effective preventive and supportive psychological interventions within university settings.

One of the limitations of the present study was the relatively small sample size and the use of convenience sampling, which may limit the generalizability of the findings to broader student populations. Additionally, the study relied exclusively on self-report questionnaires, which may be influenced by response biases and participants' subjective interpretations. Another limitation was the absence of a long-term follow-up assessment to determine the stability and durability of the intervention effects over time. Furthermore, the participants were limited to art students from a single university branch, and therefore caution should be exercised when generalizing the findings to students from other academic disciplines or cultural contexts.

Future research is recommended to examine the long-term effectiveness of mindfulness training through follow-up assessments conducted several months after intervention completion. Researchers may also compare mindfulness-based interventions with other psychological approaches, such as acceptance and commitment therapy, dialectical behavior therapy, or emotion-focused interventions, in order to identify the most effective methods for improving distress tolerance among students. In addition, future studies should employ larger and more diverse samples across different universities and academic disciplines. Investigating mediating variables such as self-compassion, cognitive flexibility, emotional awareness, and psychological resilience may also contribute to a deeper understanding of the mechanisms underlying the effectiveness of mindfulness interventions.

From a practical perspective, the findings of the present study suggest that mindfulness-based training programs can be incorporated into university counseling and mental health

services in order to strengthen students' emotional coping capacities and psychological resilience. Educational workshops focusing on mindfulness skills, emotional regulation, and stress management may help students cope more effectively with academic and interpersonal stressors. University counselors and mental health professionals may also integrate mindfulness techniques into preventive and therapeutic interventions designed for students experiencing emotional difficulties. Additionally, implementing mindfulness-based educational programs within academic environments may contribute to improved psychological well-being, emotional balance, and academic functioning among university students.

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 study and participated in the research with informed consent.

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