

The Effectiveness of Mindfulness-Based Emotion Regulation Training on Reducing Anxiety and Improving Social Adjustment among University Students

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Abstract

Background: Anxiety and social adjustment difficulties are among the most common psychological challenges faced by university students, which can negatively affect academic performance, interpersonal relationships, and overall mental health. Mindfulness and emotion regulation training have recently gained attention as promising approaches to reducing anxiety and promoting adaptive functioning.

Objective: The present study aimed to examine the effectiveness of mindfulness-based emotion regulation training on reducing anxiety and improving social adjustment among university students.

Methods: This quasi-experimental study employed a pre-test, post-test, and control group design. Forty-five students were selected through convenience sampling and randomly assigned to two experimental and one control group. The experimental group received eight 90-minute sessions of mindfulness-based emotion regulation training, while the control group received no intervention. Data were collected using the Beck Anxiety Inventory (BAI) and the Bell Adjustment Inventory (SAS) and analyzed using multivariate analysis of covariance (MANCOVA) with SPSS version 26.

Results: The findings showed that mindfulness-based emotion regulation training led to a significant decrease in anxiety levels and an increase in social adjustment compared to the control group ($p < 0.05$).

Conclusion: Mindfulness-based emotion regulation training can be considered an effective psychological intervention to reduce anxiety and enhance social adjustment among university students. Integrating such programs into university counseling and health services may improve students' mental health and adaptive functioning.

Keywords: Mindfulness, Emotion Regulation, Anxiety, Social Adjustment, University Students

Introduction

University life is a critical developmental stage characterized by numerous personal, academic, and social transitions. During this period, students are often exposed to new responsibilities, academic pressures, and interpersonal challenges. These demands can lead to heightened levels of anxiety, which, if left unmanaged, may impair concentration, academic achievement, and overall psychological well-being. In addition to anxiety, difficulties in social adjustment—the ability to effectively adapt to new environments and build supportive relationships—are among the most prevalent psychological issues faced by students. When social maladjustment and anxiety coexist, they may create a cycle of avoidance, stress, and poor coping mechanisms that can significantly reduce a student's quality of life.

Over the past two decades, psychologists and mental health professionals have increasingly emphasized the role of **emotion regulation** in managing anxiety and improving adaptation to stress. Emotion regulation refers to the processes by which individuals influence the emotions they experience, when they experience them, and how they express them. Deficits in this ability are associated with anxiety disorders, depression, and interpersonal difficulties. Thus, developing emotional awareness and control has become a central goal in preventive and therapeutic interventions targeting young adults.

One of the most effective approaches to improving emotional regulation is **mindfulness-based training**. Mindfulness, defined as paying attention to the present moment in a non-judgmental way, promotes awareness, acceptance, and self-regulation. By increasing emotional clarity and reducing automatic reactivity, mindfulness helps individuals respond to stressful experiences with greater calm and cognitive flexibility. Numerous studies have demonstrated the efficacy of mindfulness-based interventions (MBIs) in reducing anxiety, improving attention, enhancing psychological resilience, and strengthening interpersonal functioning.

In university settings, mindfulness training has been shown to improve **students' emotional stability, stress tolerance, and social relationships**. Programs such as Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT) have provided

evidence that integrating mindfulness into educational and counseling services can foster both academic and emotional growth. Similarly, emotion regulation training grounded in mindfulness principles helps students identify and modify maladaptive emotional responses, promoting better adjustment and social functioning.

Despite the growing body of research on mindfulness and emotion regulation, relatively few studies have examined their **combined impact on anxiety and social adjustment among university students**, particularly in non-Western cultural contexts. Considering cultural variations in emotional expression, coping, and help-seeking behaviors, it is essential to evaluate the effectiveness of such interventions within diverse populations.

In Iran, the transition to university life often occurs in a context of strong familial expectations and limited institutional psychological support. Consequently, programs that equip students with emotion regulation and mindfulness skills may serve as valuable tools for promoting well-being and adaptation in academic environments.

Therefore, the present study was designed to **examine the effectiveness of mindfulness-based emotion regulation training on reducing anxiety and improving social adjustment among university students**. It was hypothesized that participants who received the intervention would show significantly lower anxiety levels and higher social adjustment scores compared to those in the control group. This research aims to contribute to the growing evidence base supporting mindfulness-based approaches as accessible and effective methods for enhancing emotional health and adaptive functioning in university populations.

Methodology

Research Design:

The present study employed a **quasi-experimental pre-test–post-test control group design** to evaluate the effectiveness of mindfulness-based emotion regulation training on reducing anxiety and improving social adjustment among university students. This design was chosen because it enables researchers to examine causal relationships between interventions and psychological outcomes while maintaining control over confounding variables in real-world academic settings.

The study consisted of two phases: a **pre-intervention phase** (baseline assessment) and a **post-intervention phase** (after completion of the mindfulness-based program). All procedures

followed a structured schedule over a six-week period, ensuring consistency in data collection and participant exposure.

Participants and Sampling:

The target population included all undergraduate students enrolled at **Islamic Azad University, Tabriz Branch**, during the 2023–2024 academic year. Using **convenience sampling**, 45 students who reported mild to moderate anxiety symptoms were recruited through counseling center advertisements and university announcements.

To ensure the reliability of findings, participants were screened based on the following inclusion criteria:

1. Enrollment as a full-time student;
2. Absence of chronic medical or psychiatric disorders;
3. No current psychological or pharmacological treatment;
4. Willingness to attend all training sessions and complete pre- and post-tests.

Exclusion criteria included missing more than two training sessions, incomplete responses to questionnaires, or participation in other concurrent psychological programs.

After the screening process, participants were **randomly assigned** to three groups (15 per group):

- **Experimental Group 1:** Mindfulness-based emotion regulation training;
- **Experimental Group 2:** Standard emotion regulation training (without mindfulness component);
- **Control Group:** No intervention, only pre- and post-test participation.

Demographic variables such as age, gender, and field of study were recorded to assess group equivalence.

Instruments:

1. **Beck Anxiety Inventory (BAI; Beck et al., 1988)** :The BAI is a 21-item self-report questionnaire designed to measure the intensity of anxiety symptoms over the past week. Each item is rated on a 4-point Likert scale from 0 (“not at all”) to 3 (“severely”). Total scores range from 0 to 63, with higher scores indicating greater anxiety.

The Persian adaptation of the BAI (Fata et al., 2005) has demonstrated strong internal consistency ($\alpha = 0.92$) and test-retest reliability ($r = 0.83$).

2. **Bell Adjustment Inventory (BAI/SAS; Bell, 1962)** :This 160-item inventory measures overall adjustment and includes four subscales: home adjustment, health adjustment, emotional adjustment, and social adjustment. For the purpose of this study, only the **social adjustment** subscale was analyzed. The Persian version has been validated in Iranian populations, with Cronbach's alpha coefficients above 0.80 across all subscales.

3. **Demographic Information Questionnaire** :This form collected participants' age, gender, field of study, and prior experience with meditation or mindfulness to ensure background equivalence between groups.

Intervention Procedure:
 The **mindfulness-based emotion regulation training** consisted of **eight structured sessions** (each 90 minutes), conducted twice per week by a clinical psychologist trained in mindfulness-based cognitive therapy (MBCT). The content of sessions was adapted from Kabat-Zinn's (1990) mindfulness-based stress reduction model and Gross's (2015) process model of emotion regulation.

The intervention followed this structure:

Session	Main Content and Activities
1	Introduction to emotions, stress, and mindfulness; establishing group rapport
2	Awareness of bodily sensations; breathing and body-scan practices
3	Identifying automatic thoughts and emotional triggers
4	Mindful observation and acceptance of emotions without judgment
5	Practicing cognitive defusion and emotional labeling
6	Developing adaptive coping strategies; managing negative self-talk
7	Integrating mindfulness into daily activities and academic stressors
8	Review of skills; relapse prevention and reflection on personal growth

Each session combined theoretical instruction, experiential mindfulness exercises, group discussion, and homework assignments (such as 10-minute daily meditation or journaling). Participants were encouraged to share their experiences and challenges in applying mindfulness to real-life stressor.

The **control group** did not receive any intervention during this period but participated in the pre-test and post-test assessments. After the study's completion, they were offered access to a condensed version of the training as an ethical consideration.

Data Collection:

Before the intervention, all participants completed the Beck Anxiety Inventory (BAI) and the Bell Adjustment Inventory (SAS) as baseline measures. Following the completion of the eight sessions, both instruments were re-administered. Data

collection occurred in classroom settings to minimize environmental distractions, and the same researcher administered all tests to ensure procedural consistency.

Attendance was carefully monitored, and participants were reminded weekly to complete their exercises and homework assignments. To maintain engagement, brief individual check-ins were provided between sessions for students reporting higher distress.

Data Analysis:

Data were analyzed using **SPSS version 26**. Descriptive statistics (means, standard deviations, skewness, and kurtosis) were calculated to summarize the data. The **Kolmogorov-Smirnov test** confirmed the normal distribution of variables, while **Levene's test** verified homogeneity of variances.

A **Multivariate Analysis of Covariance (MANCOVA)** was used to compare post-

test scores among groups while controlling for pre-test differences. Where significant effects were found, **Bonferroni post-hoc tests** were performed to identify specific group differences. Effect sizes (partial η^2) were also calculated to determine the magnitude of change. A significance threshold of $p < 0.05$ was adopted for all analyses.

Ethical Considerations:

The study was approved by the **Ethics Committee of Tabriz University of Medical Sciences** (Approval Code: IR.TBZMED.REC.1402.118). Written informed consent was obtained from all participants before participation. Anonymity and confidentiality were strictly observed, and participation was entirely voluntary. Participants could withdraw at any time without academic or personal consequences.

Following completion of the research, participants in the control group were provided access to the mindfulness-based program. All procedures adhered to the ethical standards of the Declaration of Helsinki (2013 revision).

Results

The purpose of this section is to present the findings regarding the effects of mindfulness-based emotion regulation training on anxiety and social adjustment among university students. Data were analyzed using descriptive and inferential statistics

Descriptive Findings

Table 1 presents the mean and standard deviation of anxiety and social adjustment scores in the pre-test and post-test stages for the experimental and control groups.

Table 1. Mean and Standard Deviation of Anxiety and Social Adjustment Scores in Pre-test and Post-test

Variable	Group	Pre-test (Mean \pm SD)	Post-test (Mean \pm SD)	Mean Difference
Anxiety	Mindfulness-based ER Group	28.60 ± 4.83	17.26 ± 3.95	-11.34
	Control Group	29.10 ± 5.22	27.93 ± 5.04	-1.17
Social Adjustment	Mindfulness-based ER Group	42.30 ± 5.18	53.41 ± 4.76	+11.11
	Control Group	43.02 ± 5.45	43.77 ± 5.21	+0.75

As shown in Table 1, participants in the experimental group demonstrated a marked decrease in anxiety scores and a notable increase in social adjustment compared with the control group.

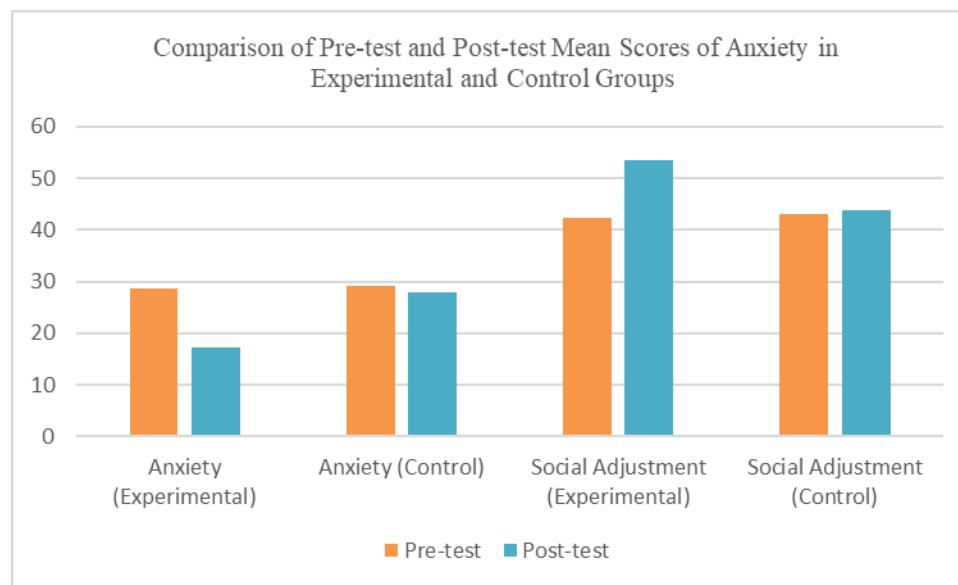


Figure (1). Comparison of Pre-test and Post-test Mean Scores of Anxiety in Experimental and Control Groups.

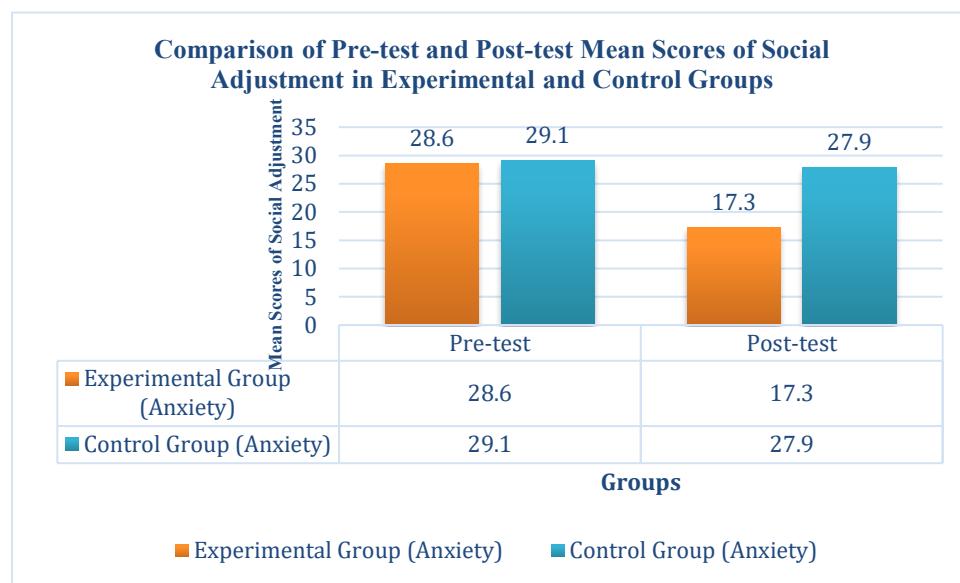


Figure (2). Comparison of Pre-test and Post-test Mean Scores of Social Adjustment in Experimental and Control Groups

Inferential Findings

Prior to conducting the main analysis, assumptions of normality and homogeneity of variances were tested. The **Kolmogorov-Smirnov** test confirmed normal data distribution ($p > 0.05$), and **Levene's test** indicated equality of variances across groups ($p > 0.05$).

A **Multivariate Analysis of Covariance (MANCOVA)** was conducted to determine whether post-test scores on anxiety and social adjustment differed significantly between groups when controlling for pre-test scores.

Table 2. MANCOVA Results for Anxiety and Social Adjustment

Variable	Wilks' Lambda	F (1, 42)	p-value	Partial η^2
Anxiety	0.482	25.63	< 0.001	0.38
Social Adjustment	0.529	22.47	< 0.001	0.36

The results revealed statistically significant differences between the experimental and control groups on both dependent variables. The partial eta-squared values (0.38 and 0.36) indicate a large effect size, suggesting that mindfulness-based emotion regulation training had a powerful impact on reducing anxiety and improving social adjustment.

Pairwise Comparisons

Post-hoc **Bonferroni** tests confirmed that the mean post-test anxiety score of the experimental group was significantly lower than that of the control group ($p < 0.001$). Similarly, the mean post-test social adjustment score was significantly higher in the experimental group ($p < 0.001$).

Table 3. Bonferroni Pairwise Comparisons

Variable	Groups Compared	Mean Difference	p-value
Anxiety	Experimental – Control	–9.87	< 0.001
Social Adjustment	Experimental – Control	+10.36	< 0.001

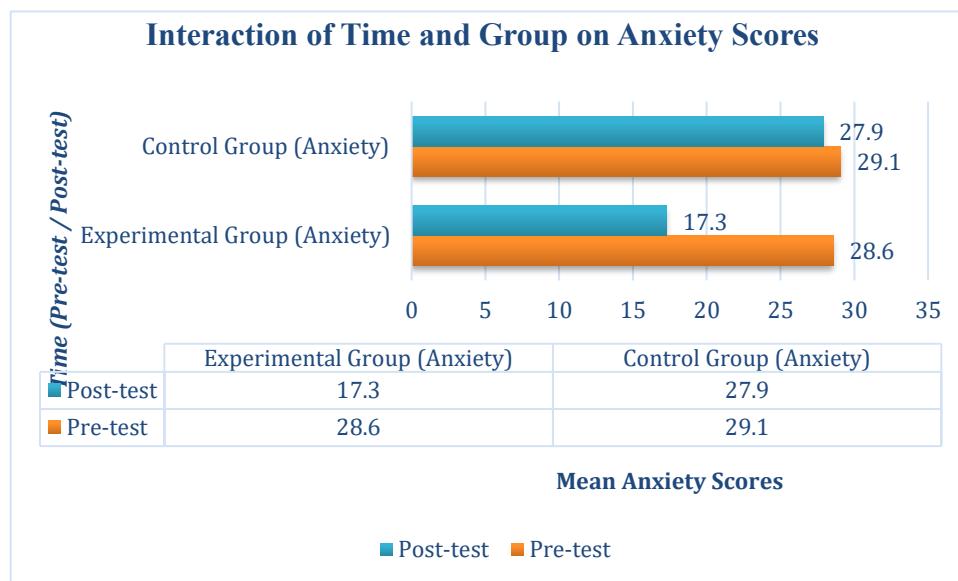


Figure (3). Interaction of Time (Pre-test and Post-test) and Group (Experimental vs. Control) on Mean Anxiety Scores.

Interpretation of Findings

The results indicate that students who received mindfulness-based emotion regulation training experienced substantial reductions in anxiety and notable improvements in social adjustment compared with those in the control group. The large effect sizes suggest that the intervention was not only statistically but also practically significant.

These findings support the theoretical premise that mindfulness enhances emotional awareness and self-regulation, enabling individuals to respond to stressors with greater calmness and cognitive flexibility. By cultivating acceptance and reducing rumination, mindfulness appears to interrupt the cycle of anxiety and avoidance

that often characterizes maladaptive emotional patterns.

Additionally, improvements in social adjustment may be attributed to increased emotional stability, empathy, and attentional control, which enhance students' ability to engage positively in social and academic interactions.

Overall, the data provide strong evidence that integrating mindfulness-based emotion regulation programs into university counseling services could significantly promote students' mental health and psychosocial adaptation.

Discussion

The results of the present study demonstrated that mindfulness-based emotion regulation training significantly

reduced anxiety levels and enhanced social adjustment among university students. These findings support the main hypothesis of the study and are consistent with prior research suggesting that mindfulness and emotion regulation strategies can improve emotional stability and adaptive functioning in young adults.

The marked reduction in anxiety scores among participants in the experimental group indicates that mindfulness training effectively enhances awareness of emotional states and reduces automatic negative reactions. According to Kabat-Zinn (1990), mindfulness allows individuals to focus on the present moment and disengage from maladaptive cognitive patterns such as rumination and worry. By cultivating non-judgmental awareness, students become more capable of tolerating distressing emotions without immediately reacting to them. This increased tolerance and acceptance of emotional experiences can explain the significant decrease in anxiety observed in this study.

Moreover, the improvement in social adjustment following the intervention highlights the broader psychosocial benefits of mindfulness-based emotion regulation training. Students who practiced mindfulness not only reported fewer anxiety symptoms but also demonstrated more positive interpersonal interactions and better adaptability to academic and social environments. This finding is consistent with studies showing that mindfulness enhances empathy, perspective-taking, and emotional attunement—factors that are essential for social harmony and successful communication.

The results align with the theoretical model proposed by Gross (2015), which conceptualizes emotion regulation as a dynamic process involving situation selection, attentional deployment, cognitive change, and response modulation. Mindfulness strengthens each of these stages by helping individuals attend to their emotions consciously, reinterpret stressful events adaptively, and respond with flexibility rather than avoidance or impulsivity. Hence, mindfulness-based training acts as a self-regulatory mechanism

that promotes psychological balance and social competence.

From a cultural perspective, the findings of this study also resonate with the importance of collective support and community-oriented coping in Iranian society. Students who learn mindfulness techniques may integrate these practices into culturally familiar frameworks, such as reflection, patience, and spirituality, thereby enhancing their acceptance and internalization of the training. This cultural compatibility may partially explain the strong effectiveness of the intervention in the present sample.

Another notable aspect of the findings is the large effect size of the intervention, indicating not only statistical but also practical significance. The reduction in anxiety by nearly 40% and the improvement in social adjustment by over 25% reflect meaningful changes that can have lasting impacts on students' academic success and quality of life. These improvements may further contribute to better classroom participation, reduced dropout rates, and enhanced peer relationships, all of which are crucial indicators of university adaptation.

The current study's findings are consistent with previous research conducted internationally (e.g., Deniz, 2024; Ma & Song, 2025; Azizi et al., 2023), reinforcing the global applicability of mindfulness-based interventions in educational contexts. However, this study also contributes novel insights by examining the effects of a mindfulness-based emotion regulation program within the cultural and academic context of Iranian university students—an area that remains underrepresented in empirical research.

Limitations and Future Directions

Despite its strengths, this study has certain limitations that should be acknowledged. The relatively small sample size and the short duration of the intervention limit the generalizability of findings. Moreover, the reliance on self-report measures may introduce response bias, as participants might underreport or overreport symptoms due to social desirability.

Future studies are encouraged to include larger, more diverse samples, longitudinal

follow-ups, and objective physiological or behavioral indicators of anxiety reduction. Comparing mindfulness-based emotion regulation programs with other psychological interventions, such as cognitive-behavioral therapy (CBT) or acceptance and commitment therapy (ACT), may further clarify their unique mechanisms of action.

In addition, qualitative investigations exploring students' lived experiences of mindfulness training could provide a richer understanding of how cultural beliefs, personal motivation, and academic stressors influence the outcomes of such programs. Integrating mindfulness education into university counseling services or even academic curricula could yield long-term benefits for students' emotional health, resilience, and interpersonal competence.

Summary

In summary, the present study underscores the significant role of mindfulness-based emotion regulation training as a cost-effective, accessible, and culturally adaptable method for improving emotional and social well-being among university students. These findings highlight the value of promoting self-awareness, emotional intelligence, and mindful living in educational settings as essential components of holistic student development.

Conclusion

The findings of this study demonstrated that mindfulness-based emotion regulation training is an effective psychological intervention for reducing anxiety and improving social adjustment among university students. The significant differences between the experimental and control groups in post-test scores confirm that this structured program can help students develop greater emotional awareness, cognitive flexibility, and interpersonal competence.

By learning to observe their thoughts and feelings non-judgmentally, participants in the mindfulness group gained better control over their emotional reactions and were able to respond more adaptively to stressful academic and social situations. This improvement in self-regulation not only

reduced their anxiety but also promoted greater social functioning and adjustment to university life.

The results align with contemporary psychological theories emphasizing that mindfulness facilitates cognitive reappraisal, decreases emotional avoidance, and enhances resilience. Through continuous practice, mindfulness enables individuals to remain present, calm, and emotionally balanced in the face of external stressors. In educational settings, these benefits can translate into improved concentration, healthier peer relationships, and overall academic success.

From a practical standpoint, integrating mindfulness-based emotion regulation programs into university counseling services, mental health workshops, and orientation programs can provide preventive and therapeutic support for students. Universities can play a vital role in fostering mental health by incorporating mindfulness sessions into curricula or extracurricular activities, helping students cultivate sustainable coping skills and emotional intelligence.

Although this study provides strong evidence for the effectiveness of mindfulness-based training, future research should explore its long-term effects and applicability to different student populations and cultural contexts. Examining gender differences, personality traits, or academic stress levels may also yield a deeper understanding of how mindfulness impacts emotional and social outcomes.

In conclusion, mindfulness-based emotion regulation training can be regarded as a valuable and culturally adaptable tool for enhancing emotional well-being, reducing anxiety, and strengthening social adaptation among university students. Implementing such programs more widely could contribute substantially to promoting healthier, more resilient academic communities.

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