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MBSR-Based Instruction for Enhancing Psychological Well-Being and Academic Buoyancy among Generation Z EFL Learners in Iran

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ABSTRACT

Objective: This study examined whether Mindfulness-Based Stress Reduction (MBSR) techniques could improve psychological well-being and academic buoyancy among Generation Z EFL learners in Iran.

Methods and Materials: A quasi-experimental non-equivalent control group design was used. Fifty-four intermediate EFL learners, selected from an initial sample of 60 students at a private language institute in Kerman, Iran, participated in the study. The learners were assigned to two intact classes: an experimental group and a control group. The experimental group received eight weeks of English instruction integrated with MBSR-based activities, while the control group received regular instruction. Data were collected using the Academic Buoyancy Scale (ABS) and the Psychological Well-Being Scale (PWB). ANCOVA was conducted to compare post-test scores while controlling for pre-test differences.

Findings: The results showed that the experimental group outperformed the control group in both academic buoyancy and psychological well-being after the intervention. ANCOVA indicated significant group differences in academic buoyancy, $F(1, 51) = 166.69$, $p < .001$, partial $\eta^2 = .77$, and psychological well-being, $F(1, 51) = 124.02$, $p < .001$, partial $\eta^2 = .71$. These findings suggest that MBSR-based instruction was associated with substantial gains in both constructs.

Conclusion: Integrating MBSR techniques into EFL instruction may provide a practical way to support learners' emotional well-being and academic resilience. However, due to the quasi-experimental design, small sample size, and single-institute context, the findings should be interpreted with caution.

Keywords: Mindfulness-based stress reduction, psychological well-being, academic buoyancy, Generation Z, EFL learners.

Introduction

Students' psychological health and overall well-being have emerged as key priorities across educational disciplines, including EFL instruction. Increasing levels of psychological distress and burnout in contemporary education have highlighted the need for approaches that support students' emotional balance build resilience. Generation Z, referring to individuals born roughly between 1995 and 2012, make up the majority of students today. This generation is known for their strong digital skills and deep concern for authenticity and mental well-being (Buttazzoni, 2022; Llistosella et al., 2023; Seemiller et al., 2019). However, it seems that in most educational contexts, many Generation Z learners report higher levels of academic pressure and stress, though these patterns vary across contexts (Chardonnens, 2025; Seemiller et al., 2019). Therefore, it seems logical to support students' psychological well-being and their academic buoyancy, capacity to deal successfully with the daily difficulties of studying (Martin & Marsh, 2008; Putwain et al., 2023). EFL learners confront linguistic and emotional demands that can lead to anxiety and lower their persistence. Success in language learning is highly dependent on not just linguistic proficiency but also on emotional regulation. This aligns with the positive psychology movement in applied linguistics, which highlights well-being and resilience as core components of successful language learning. That fits within the positive psychology movement in applied linguistics, emphasizing enhanced well-being and resilience as integral to effective learning.

Mindfulness has been regarded as an effective strategy for addressing these affective needs. In this respect, one promising approach could be to practice mindfulness by means of some widely recognized research-supported program like MBSR, which has aimed at increasing present-moment awareness and decreasing psychological distress (Kriakous et al., 2021; Querstret et al., 2020). Above all, MBSR has been widely validated in psychology and health sciences to facilitate emotional regulation and attentional control (Fazia et al., 2023; Xue & Abdullah, 2025).

Similarly, interventions based on mindfulness were proven effective in educational contexts with respect to anxiety reduction and improvement of focus (Chauhan & Saxena, 2024) (Dawood Nawaz et al., 2021; Kathayat, 2024). However, mindfulness remains relatively unexplored within language education, in particular for Generation Z EFL learners experiencing high levels of academic pressure and cognitive overload. However promising these findings may be, MBSR programs have remained relatively underexplored within EFL classrooms, especially within Asian contexts where Generation Z learners usually face intense academic workload pressure coupled with digital overload.

Mindfulness has been studied and incorporated in general education and health. However, its application in EFL contexts is limited. Few studies have addressed mindfulness as a structured pedagogical intervention in language learning (Moghadam et al., 2020). Most research focused on Western or general student populations (Carsley et al., 2018; Fayerberger, 2023; Zeynep & Asuman, 2021), and have rarely addressed the specific cognitive and emotional demands experienced by EFL learners in Asian educational settings.

Mindfulness has been related to lower anxiety and higher performance (Morgan & Katz, 2021; Wang & Liu, 2016; Wu & Zhao, 2023; Zeilhofer, 2020). However, its impact on Generation Z learners in Asian EFL contexts such as Iran remains underexplored. Only a small number of empirical studies have examined whether mindfulness-based programs can simultaneously support learners' psychological well-being and their ability to manage everyday academic challenges. These learners who are often described as digitally fluent and emotionally fragile experience growing academic pressure (Chardonnens, 2025; Seemiller et al., 2019). Although they value mental health awareness, many still struggle to balance academic demands with personal well-being (American College Health Association, 2022).

Moreover, while academic buoyancy, or the capacity to deal with everyday academic upsets (Martin & Marsh, 2008), is conceptually related to resilience, it has received scant attention in EFL research (Gao, 2025; Namaziandost et al., 2023; Zhang, 2021). Given the fact that Generation Z is frequently exposed to evaluation pressure and digital distraction, mindfulness might work as an effective strategy for recovery from academic stress. Moreover, examining academic buoyancy and psychological well-being together can offer a more holistic understanding of learners' emotional and academic functioning, yet previous EFL studies have typically investigated these constructs separately.

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In light of these gaps, the present study examines whether MBSR-based activities are associated with differences in academic buoyancy and psychological well-being among Generation Z EFL learners in Iran.

The study addresses the following research questions:

RQ1. Are there statistically significant differences in academic buoyancy between the experimental and control groups after the MBSR intervention?

RQ2. Are there statistically significant differences in psychological well-being between the experimental and control groups after the MBSR intervention?

This study adds to the existing literature by considering a structured MBSR course in an Iranian EFL classroom, an underrepresented context within mindfulness-based educational research. Its originality lies in studying academic buoyancy and psychological well-being together for a better understanding of the emotional and academic resilience of Generation Z learners.

Literature Review

Mindfulness in Education: Theoretical Foundations

This study's theoretical base comes largely from Buddhist psychology, Cognitive-Behavioral Theory, and the Positive Psychology movement. According to Kabat-Zinn (2013), MBSR programs are secular in nature and involve meditation and mindful breathing in developing a moment-to-moment awareness. From an educational psychology perspective, it fits into the self-regulation theory wherein attentional control and metacognitive awareness are paramount. Mindfulness helps learners observe internal experiences non-judgmentally, which helps reduce reactivity to stressors and improve cognitive flexibility. Recently, there have also been appeals to Fredrickson's Broaden-and-Build Theory of Positive Emotions (2001), wherein positive affect widens the learners' thought-action repertoires and ultimately generates psychological growth and resilience. These perspectives frame mindfulness as a pedagogical tool that supports emotional balance and sustained engagement in language learning (MacIntyre et al., 2016; Rahimi & Bigdeli, 2014).

Mindfulness-Based Stress Reduction (MBSR)

MBSR constitutes an organized eight-week training program which was initially targeted at clinical populations (Kabat-Zinn, 1990). Unlike generic mindfulness practices, MBSR follows Kabat-Zinn's structured eight-week curriculum, emphasizing mindful movement and sustained attention training. It generally consists of guided meditation and mindful movements. Adaptations for educational settings emphasize the use of shorter and age-appropriate sessions that fit within classroom schedules (Phan et al., 2022; Schonert-Reichl & Lawlor, 2010). Many meta-analyses have also confirmed MBSR's positive effect on the reduction of anxiety (Fisher et al., 2023; Khoury et al., 2015; Tian et al., 2022). Within higher education, mindfulness programs have been demonstrated to enhance concentration and self-efficacy (Dawson et al., 2020). For instance, Flook et al. (2024) showed that regular weekly sessions of mindfulness significantly enhanced students' social-emotional skills. Similarly, MBSR has been linked to increased emotional stability and life satisfaction (Wasson et al., 2020; Wu et al., 2025). Despite these promising findings, most research has focused on general university students or groups of health-science students rather than EFL learners. The present study adopts Kabat-Zinn's MBSR framework in an adapted classroom format suitable for EFL learners.

Mindfulness and Psychological Well-being

The psychological well-being in Ryff's multidimensional framework has typically been conceptualized to include personal growth, autonomy, environmental mastery, purpose in life, and self-acceptance (1989, 2014). Within educational contexts, PWB has identified important precursors of persistence and motivation (Fan & Cui, 2024). Anxiety and self-criticism are commonly entailed in language learning; therefore, it may be an area where mindfulness will probably be effective. In EFL contexts, improved emotional balance may lead to greater persistence and willingness to communicate. Wang and Liu (2016) showed that a four-week mindfulness intervention reduced anxiety in foreign language contexts and led to greater pleasure in the learning process in Chinese EFL university learners. According to Sanger et al. (2018), mindfulness instruction in adolescents can heighten sensitivity to emotionally and socially meaningful cues, regardless of whether they are positive or negative, and thereby help lessen susceptibility to depression. This is supported by neuroscientific studies, which also found that mindfulness induces changes in neural activity in both attentional areas, such as the anterior cingulate cortex, and emotion regulation areas, such as the prefrontal cortex (Tang et al., 2015). These changes

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correspond to lower cortisol levels and increased cognitive control, physiological hallmarks of well-being.

Mindfulness and Academic Buoyancy

The notion of academic buoyancy pertains to how students recover from routine academic adversity, such as poor grades or negative feedback, without showing a drop in motivation (Martin & Marsh, 2008). In contrast with resilience, which concerns significant adversity, buoyancy deals with everyday coping in learning contexts. It has been considered to be an important constituent of student success and persistence (Gao, 2015). Mindfulness can apparently enhance buoyancy through enhanced self-regulation and emotional/cognitive flexibility (Fan & Cui, 2024; Zenner et al., 2014). As the learners develop awareness of negative thoughts without over-identification with them, they are in a better position to reframe setbacks constructively. This mechanism aligns with theoretical claims that buoyancy reflects everyday adaptive functioning, which can be strengthened through mindfulness-induced improvements in self-regulation. Studies by Soleimani Rad et al. (2023) and Zhou et al. (2025) have considered that mindfulness interventions enhance ways of coping with academic problems and reducing procrastination. Furthermore, Lehloka (2025) demonstrated that university students who were practicing mindfulness showed higher states of mental health and stress alleviation. In EFL, this topic remains under-investigated. Only a few studies (e.g., Ghanizadeh et al., 2025; Moghadam et al., 2022) have incorporated short mindfulness modules into language classrooms. They reported modest gains in learners' self-confidence, adaptive coping, positive orientation, and language achievement.

Generation Z Learners in EFL Contexts

Generation Z, which includes individuals born roughly between 1995 and 2012, represents the earliest generation to be raised within the digital era These learners displays distinctive cognitive, social, and emotional characteristics. They value immediacy and integration of technology. At the same time, paradoxically, they reveal increased levels of anxiety and loneliness (Seemiller et al., 2019; Seemiller & Grace, 2019). Research in education indicates that Generation Z students are experiencing problems concerning sustained attention and emotional self-regulation as a result of their continuous engagement with digital technologies. In the EFL domain, Generation Z learners demonstrate a strong preference for interactive learning using multimedia and game-based platforms (Fitri Qatrunnada et al., 2025; Hammad, 2025; Rahman & Zafar, 2022). While their competence in the use of digital devices may support language exposure, it also risks increasing cognitive overload and performance pressure. These challenges highlight the need for interventions that enhance attention stability and emotional regulation, core skills nurtured through MBSR. Moreover, perfectionism and comparisons via social media threaten self-esteem and can further endanger well-being.

Mindfulness-based approaches could help these learners overcome such tendencies in the development of stability of attention and emotional awareness. For instance, Chiodelli et al. (2018) conducted research in Brazilian universities and showed that Generation Z students who participated in brief mindfulness micro-sessions demonstrated better emotional regulation and task persistence. However, such interventions have hardly been contextualized within EFL instruction. Due to the interplay between affect and linguistic performance, the introduction of MBSR among Generation Z language learners may result in a very desirable duality. It can improve their mental health on one hand, and strengthen adaptive academic behaviors on the other. However, research applying structured MBSR protocols specifically to Generation Z EFL learners remains extremely limited.

Mindfulness, Language Learning, and Affective Factors

In SLA, factors related to emotions, such as motivation and anxiety, are highly influential. Positive emotional states can lead to the emergence of risk-taking and communicative engagement, as noted by MacIntyre and Vincze (2017) and Derakhshan (2022). Mindfulness supports these processes by adopting non-judgmental awareness, thereby reducing anxiety and improving task-focused engagement. This is considered to make learners more capable of attending to linguistic input, managing frustration when going through error correction, and sustaining their motivation during setbacks (Babanoğlu & Atalmış, 2025).

Empirical Studies

Studies located within positive psychology points to the importance of affective and non-cognitive factors,

including mindfulness and academic buoyancy, in EFL learning. These studies reveal that resilience and psychological well-being together contribute to sustained language learning performance (Fathi et al., 2025; Namaziandost et al., 2023; Wang et al., 2025). Mindfulness has been identified to be a strong psychological construct that ensures emotional regulation and cognitive balance for better functioning within educational settings. For instance, Tajoldini et al. (2018) reported that MBSR training have significantly enhanced high school students' mindfulness and improved their academic buoyancy and self-regulation. Roziqin et al. (2024) reported positive results concerning school-based mindfulness programs in reducing academic stress and anxiety with the development of emotional resiliency. These studies are relevant to Generation Z learners since they often face continuous digital stimulation and heightened levels of stress.

Regarding teachers, Shakib Kotamjani et al. (2025) conducted a short mindfulness-based intervention on EFL teachers in Iran and found that perceived stress was reduced at a significant level. Qualitative reflections showed progressive growth in awareness and classroom composure. The study points to the fact that even brief involvement in mindfulness practice may lead to long-term professional and personal development. Evidence of this kind strengthens the notion of employing mindfulness not only in teachers' development but also in the process of students' learning in EFL classrooms because the quality of teaching depends on the well-being of the teacher.

Academic buoyancy is acknowledged as a mediating mechanism which links mindfulness and academic success. Mohammad Hosseini et al. (2024) investigated the relationships among mindfulness, grit, and L2 boredom and found that mindfulness indirectly alleviated boredom through grit and buoyancy. Similarly, Fathi et al. (2025) found that academic buoyancy was a mediating factor between the ideal L2 self and foreign language improvement, which suggests that mindful students are able to translate their motivational tendencies into actual language learning progress. Such findings indicate that MBSR-based activities may support learners' ability to manage challenges they face.

Wang et al. (2025) employed positive psychology theory to examine positive classroom management techniques' effects on learners' engagement, well-being, and achievement and found the relationships significant. The findings confirm that emotionally supportive environments have added value from a pedagogical point of view since they improve cognitive investment and continuous effort. Namaziandost et al. (2025) expanded the latter investigation into online settings via SHAD platform and reported that academic resilience and buoyancy correlated positively with self-efficacy, enjoyment, and academic well-being. From a psychological perspective, the mentioned findings indicate that mindfulness-based pedagogies can help learners maintain focus and emotional stability, even while working amidst technological distraction which is an issue particularly noticeable in Generation Z students.

Namaziandost et al. (2023) examined the relationships among teacher immunity, emotion regulation, grit, buoyancy, and mindfulness in teaching and found that teachers who manifest greater mindfulness and grit exercise positive influences on learning climates. This underlines the idea that teacher mindfulness and learner mindfulness interactively support one another in maintaining emotional balance and classroom harmony, conditions which will favor academic buoyancy and well-being. These studies collectively provide a sound empirical base confirming that mindfulness and academic buoyancy are interdependent pillars of emotional and academic growth in language education.

Despite the studies discussed above, a number of gaps are noticeable. Most of the available studies on mindfulness have been conducted either in a Western context or in medical schools, with limited attention to Asian EFL contexts and/or relatively younger Generation Z learners. While previous studies often explore well-being or buoyancy separately, few studies have combined both within one MBSR-based classroom intervention. Moreover, to our knowledge, no quasi-experimental study has applied an adapted MBSR program to Generation Z EFL learners in Iran while jointly assessing psychological well-being and academic buoyancy. The differences in generations, especially in terms of the unique cognitive and emotional profiles that Generation Z learners acquire through their immersion in the digitized ecosystem, remain poorly investigated. Finally, few quasi-experimental studies have systematically tested the causal effects of organized

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MBSR techniques for EFL populations. Accordingly, the current study investigates how MBSR activities can enhance Iranian Generation Z learners' buoyancy and psychological well-being.

Methods and Materials

Study Design

This research employed a quantitative non-equivalent control group quasi-experimental design to examine differences in academic buoyancy and psychological well-being between groups exposed to MBSR-based instruction and those receiving standard instruction. Such a design was used because it allows examination of associations between instructional interventions and learner outcomes in natural classroom settings where random assignment is problematic (Creswell & Creswell, 2017). The institute assigned these classes to different time slots, and for logistical reasons one intact class was designated as the experimental group and the other as the control group. The experimental group was subjected to an 8-week MBSR-integrated English instruction program while another one remained as the control group following the regular EFL instruction without mindfulness training. Neither the teacher nor the students could be blinded to group assignment due to the nature of the intervention. Outcome scoring was also not blinded, which is acknowledged as a limitation of this design. This quasi-experimental arrangement would keep the ecological validity in maintaining the authenticity of the instructional environment while providing controlled conditions for assessing the effects of MBSR techniques on Generation Z EFL learners' wellbeing and academic buoyancy.

Participants

The target population for this study was initially composed of 60 Generation Z EFL learners who were studying at Iran Language Institute, Kerman, Iran. All learners fell in the age bracket of 18 to 24 years, which is indicative of typical members of the Generation Z cohort. The sample consisted of 32 females and 22 males (M_age = 20.7, SD = 1.9). All participants were Persian-speaking EFL learners enrolled in general English courses. Before the intervention, all participants first took the Oxford Placement Test to guarantee that the participants were homogeneous. The test results determined that 54 learners were at an intermediate level, matching Level B1 of the CEFR. Inclusion criteria required learners to be native speakers of Persian and have no prior experience with mindfulness training. Six learners were excluded for failing the proficiency criterion. Eventually, 54 intermediate EFL learners were assigned to two intact classes: an experimental group comprising 27 learners and a control group comprising 27 learners. Independent-samples t-tests showed no significant differences between the groups in pre-test ABS or PWB scores ($p > .05$), confirming initial comparability. The two groups were instructed by the same teacher to eliminate the variables that might stem from teaching style or classroom management. The learners attended two sessions of 90 minutes per week. All ethical issues were observed. As mentioned before, the sample was restricted to intermediate learners from a single private institute in one Iranian city. Therefore, generalizations to broader Generation Z EFL populations should be made cautiously.

Instruments

Academic Buoyancy Scale (ABS)

İpek-Öner and Erden's (2024) Academic Buoyancy Scale measured learners' academic buoyancy. This instrument's reliability was assessed as ranging from .71 to .90 for the subscales using Cronbach's alpha. Items on this scale range from 1 = Strongly Disagree to 5 = Strongly Agree. Since ABS showed strong validity and reliability, it was considered an appropriate instrument for quantifying the academic buoyancy of Generation Z EFL learners in this quasi-experimental investigation. In the present study, Cronbach's α for the ABS was .84, indicating high internal consistency.

Psychological Well-Being Scale (PWB)

Psychological Well-Being Scale (PWB) is an 18-item standardized questionnaire first developed by Ryff and Keyes (1995) and later revised by Ryff et al. (2010). This instrument includes six interrelated components which are self-acceptance, purpose in life, positive relations with others, personal growth, environmental mastery, and autonomy and uses a 7-point Likert-type scale ranging from 1 (Strongly Agree) to 7 (Strongly Disagree). Higher scores indicate lower psychological well-being; therefore, the negatively worded items were reverse-coded before analysis to ensure that higher composite scores represented greater well-being. Previous research reported acceptable reliability, with subscale

alphas between .78 and .89 (Ryff et al., 2010). Cronbach's α for the PWB scale in this study was .91, with subscales ranging from .74 to .88.

Data Collection and Analysis Procedures

This study was conducted in eight weeks during the spring 2025 at Iran Language Institute, Kerman, Iran. Permission and consent were obtained before this study began. All learners had been thoroughly aware of the purpose, procedure, and measures taken to guarantee confidentiality in the research, participation being strictly voluntary. For both the experimental and control classes to have comparability in their learning conditions, they were taught by the same teacher, who had been trained in applying mindfulness-based activities based on Kabat-Zinn's (1990) MBSR framework. The teacher completed a 10-hour workshop delivered by an MBSR trainer, covering session delivery and mindful communication. Fidelity was monitored using a checklist completed weekly. Participants completed two standardized pre-test instruments; İpek-Öner and Erden's (2024) ABS and Ryff et al. (2010) PWB Scale. The scores obtained in this stage were compared with post-intervention ones.

In the experimental class, MBSR techniques were used for 15 minutes in each 90-minute session. The activities include breathing awareness exercises, body scanning, guided meditation, mindful listening, and reflective journaling. Over the eight weeks, sessions took a progressive course: Weeks 1–2 focused on awareness of breathing, Weeks 3–4 on body scanning, Weeks 5–6 on guided meditation and mindful listening, and Weeks 7–8 on reflective journaling and integrated mindfulness tasks. While the control group received a similar syllabus and materials, they did not include mindfulness-based content. The researcher tried to isolate the possible intervention effects of MBSR on learners' psychological and academic outcomes. Finally, both groups completed the post-tests using the same instruments, ABS and PWB, under identical conditions after the intervention to measure changes resulting from the MBSR. All 54 learners completed the full 8-week program and no dropouts occurred.

Data analysis was conducted using SPSS (Version 26), with normality and variance homogeneity examined via the Shapiro–Wilk and Levene's tests. Since both assumptions were met for dependent variables, parametric analyses were considered appropriate. The assumption of homogeneity of regression slopes was explored by including the interaction between group and pre-test scores. For both ABS and PWB, the group × pre-test interaction was non-significant ($p > .05$), indicating that the assumption was met. To evaluate post-intervention group differences, controlling for pre-test scores, Normality of residuals, linearity, and homoscedasticity were further checked through Q–Q plots, scatterplots, and residuals-versus-fitted graphs. Since two primary ANCOVAs were conducted (ABS and PWB), the risk of Type I error was acknowledged, and results were checked against a Bonferroni-adjusted alpha level ($\alpha = .025$). All significant findings remained robust under this correction. ANCOVA was conducted. Partial eta squared (η^2) was used to interpret effect sizes and indicate the strength of the observed effects. These effect sizes might be somewhat inflated given the relatively small sample and two-group design. Therefore, interpretations must be drawn with caution. While the homogeneity of regression slopes assumption was met, previous drafts did not report this test. This omission is recognized as a methodological limitation.

Findings and Results

RQ1. ***Are there statistically significant differences in academic buoyancy between the experimental and control groups after the MBSR intervention?***

The first research question assessed the impact of MBSR on Generation Z EFL Learners' Academic Buoyancy. Before conducting inferential analyses, assumption tests were carried out to ensure the suitability of parametric procedures. Tests of normality using the Shapiro–Wilk statistic indicated that ABS pre-test and post-test scores did not significantly deviate from normal distribution for either the experimental group ($p = .152, .173$) or the control group ($p = .270, .167$). This finding confirmed that the data met the assumption of normality required for ANCOVA.

Table 1

Tests of Normality for Academic Buoyancy Scores (Pre- and Post-Test)

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	GroupNum	Statistic	df	Sig.	Statistic	df	Sig.
ABS_Pre	Experimental	.114	27	.200*	.944	27	.152
	Control	.106	27	.200*	.954	27	.270
ABS_Post	Experimental	.093	27	.200*	.946	27	.173
	Control	.114	27	.200*	.946	27	.167

**. This is a lower bound of the true significance.*
a. Lilliefors Significance Correction

After confirming normality, the homogeneity of variances assumption was tested under ANCOVA using Levene's Test of Equality of Error Variances. As shown in Table 2, the test was not significant, $F(1, 52) = 1.22$, $p = .28$, which means residual variances were equal for the groups. Thus, the homogeneity assumption was met, and it was appropriate to proceed with ANCOVA to investigate group differences regarding academic buoyancy.

Table 2

Levene's Test of Equality of Error Variances for Academic Buoyancy (Post-Test)

Dependent Variable: ABS_Post			
F	df1	df2	Sig.
1.219	1	52	.275

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.
a. Design: Intercept + ABS_Pre + GroupNum

To provide a more specific view of students' performances before and after the intervention, descriptive statistics were calculated across groups. As can be seen in Table 3, both groups revealed similar mean scores in the pre-test stage, experimental ($M = 85.39$, $SD = 5.58$), control ($M = 85.28$, $SD = 6.15$). This shows comparability at the initial stage. However, after the MBSR intervention, the experimental group's mean significantly increased to 92.87 ($SD = 5.57$), while the control group's mean slightly increased to 86.21 ($SD = 6.05$). Thus, learners in the MBSR group showed significantly greater development in academic buoyancy compared with those receiving standard instruction.

Table 3

Descriptive Statistics for Academic Buoyancy Scores of Experimental and Control Groups (Pre- and Post-Test)

Measure	Group	M	SD	95% CI for Mean	Range
ABS_Pre	Experimental	85.39	5.58	[83.18, 87.60]	77.57–100.32
	Control	85.28	6.15	[82.85, 87.72]	69.28–94.39
ABS_Post	Experimental	92.87	5.57	[90.67, 95.07]	84.71–108.35
	Control	86.21	6.05	[83.82, 88.61]	69.44–95.24

To investigate further the impact of MBSR intervention on students' academic buoyancy, controlling for pretest differences, an ANCOVA was conducted. According to Table 4, the results showed a statistically significant main effect of group, $F(1, 51) = 166.69$, $p < .001$, partial $\eta^2 = .77$, reflecting a large effect size. The covariate, ABS_Pre, significantly influenced post-test scores, $F(1, 51) = 454.24$, $p < .001$, which means that learners' previous buoyancy level contributed meaningfully to post-intervention performance. The overall model explained 92.5% of the variance in academic buoyancy ($R^2 = .925$), demonstrating the strong predictive power of the model. These findings confirm that MBSR-based instruction significantly

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enhanced the academic buoyancy of Generation Z EFL learners compared to traditional teaching. The large partial η^2 value (.77) suggests that the MBSR-integrated instruction had a substantial educational influence, with students showing meaningfully higher post-test buoyancy levels than those in the control group.

Table 4

ANCOVA Results for the Effect of MBSR on Academic Buoyancy

Dependent Variable: ABS_Post						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	2179.442[a]	2	1089.721	312.976	.000	.925
Intercept	21.656	1	21.656	6.220	.016	.109
ABS_Pre	1581.573	1	1581.573	454.240	.000	.899
GroupNum	580.388	1	580.388	166.692	.000	.766
Error	177.572	51	3.482			
Total	435307.985	54				
Corrected Total	2357.014	53				

a. R Squared = .925 (Adjusted R Squared = .922)

RQ2. Are there statistically significant differences in psychological well-being between the experimental and control groups after the MBSR intervention?

Before conducting inferential analyses for the second research question, the assumption of normality was tested for PWB scores. As presented in Table 5, the Shapiro–Wilk test indicated that both the experimental and control groups' pre-test and post-test distributions did not significantly deviate from normality (all $p > .05$). Therefore, the assumption of normality was met for the data, and therefore, ANCOVA can be conducted to examine group differences.

Table 5

Tests of Normality for Psychological Well-Being Scores (Pre- and Post-Test)

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	GroupNum	Statistic	df	Sig.	Statistic	df	Sig.
PWB_Pre	Experimental	.091	27	.200*	.971	27	.628
	Control	.087	27	.200*	.973	27	.694
PWB_Post	Experimental	.148	27	.133	.967	27	.534
	Control	.111	27	.200*	.951	27	.224

**. This is a lower bound of the true significance.*

a. Lilliefors Significance Correction

Following the confirmation of normality, the assumption of homogeneity of variances was addressed using Levene's Test of Equality of Error Variances. Table 6 shows the non-significant result, $F(1, 52) = 0.06$, $p = .81$, which means that the error variances were equal for the experimental and control groups. The homogeneity assumption is therefore met and it is appropriate to conduct ANCOVA on group differences in psychological well-being.

Table 6

Levene's Test of Equality of Error Variances for Psychological Well-Being (Post-Test)

Dependent Variable: PWB_Post			
F	df1	df2	Sig.
.060	1	52	.807

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + PWB_Pre + GroupNum

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Subsequently, descriptive statistics for scores on PWB for the pre- and post-testing stages were computed. Table 7 shows that the experimental and control groups have comparable mean scores at pre-test, 78.87 and 79.05, respectively. This suggests similar levels at pre-test. At post-test, the experimental group demonstrated a significant increase in its mean score, 84.92 (SD = 5.22), whereas the control group showed slight improvement, with a mean of 79.58 (SD = 4.92). Accordingly, students in the MBSR group showed significantly greater improvements in psychological well-being than those in the control group.

Table 7

Descriptive Statistics for Psychological Well-Being Scores of Experimental and Control Groups (Pre- and Post-Test)

Measure	Group	M	SD	95% CI for Mean	Range
PWB_Pre	Experimental	78.87	5.36	[76.75, 80.99]	69.41–91.32
	Control	79.05	4.70	[77.19, 80.91]	70.43–87.90
PWB_Post	Experimental	84.92	5.22	[82.86, 86.99]	74.76–97.77
	Control	79.58	4.92	[77.64, 81.53]	72.72–90.44

An ANCOVA was conducted in order to examine the effect of MBSR on learners' psychological well-being after controlling for pre-test differences. Table 8 shows a statistically significant main effect of group, $F(1, 51) = 124.02$, $p < .001$, partial $\eta^2 = .71$, showing a large effect size. The covariate (PWB_Pre) was also significant, $F(1, 51) = 353.97$, $p < .001$, which suggests that initial well-being levels strongly influenced post-test outcomes. The model explained 90.2% of the variance in post-test psychological well-being ($R^2 = .902$), and shows that MBSR-based instruction enhanced participants' emotional balance and overall well-being significantly compared to traditional teaching. The large partial η^2 value (.71) indicates that the MBSR condition was associated with significant developments in psychological well-being, suggesting meaningful educational relevance.

Table 8

ANCOVA Results for the Effect of MBSR on Psychological Well-Being

Dependent Variable: PWB_Post						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1555.266[a]	2	777.633	235.146	.000	.902
Intercept	13.311	1	13.311	4.025	.050	.073
PWB_Pre	1170.572	1	1170.572	353.966	.000	.874
GroupNum	410.132	1	410.132	124.019	.000	.709
Error	168.658	51	3.307			
Total	367071.844	54				
Corrected Total	1723.924	53				

a. R Squared = .902 (Adjusted R Squared = .898)

Discussion and Conclusion

The Effect of MBSR on Academic Buoyancy

The first research question examined MBSR techniques' impacts on academic buoyancy of Generation Z EFL learners. The post-test scores in academic buoyancy were significantly greater than those observed in the control class. Thus, it was confirmed that MBSR practices reinforced learners' capacity to cope with academic pressure. These findings support the growing body of evidence suggesting that mindfulness stimulates resilience and adaptability. The results are in line with Tajoldini et al. (2018), where mindfulness-based interventions were reported to enhance students' self-regulation and buoyancy. Daily mindfulness practices may help learners develop cognitive clarity and emotional balance. These skills support sustained effort when facing frustration.

The improvement in buoyancy is also in line with the study of Mohammad Hosseini et al. (2024), which showed that mindfulness indirectly decreases L2

boredom due to grit and buoyancy's mediating influence. That is, mindfulness may facilitate persistence not only by enabling concentration but also by reframing setbacks as opportunities for learning rather than as threats. The study results also support Fathi et al. (2025), who found that academic buoyancy mediates the relationship between motivational constructs, such as ideal L2 self, and language achievement. It follows that MBSR techniques help learners to transform internal motivation into tenacious action. Taken together, these findings can be understood using an integrated theoretical approach. According to self-determination theory, MBSR practices may enhnace autonomy and competence by developing awareness of internal states, which, in turn, could decrease anxiety and increase intrinsic motivation. At the same time, the broaden-and-build theory is supported because the positive emotional states developed during mindfulness broaden the cognitive resources of learners, who in turn can build more resilient academic responses over time. This integrated framework may account for the patterns observed in both buoyancy and psychological well-being. It also helps students to continue their academic effort even when experiencing stress.

Although the experimental group showed greater developments in academic buoyancy, several alternative explanations cannot be fully ruled out. For instance, the teacher's enthusiasm for the intervention and the novelty of practicing mindfulness within an EFL classroom may have enhanced higher engagement, similar to Hawthorne-type effects. Also, intact classes may vary in unmeasured ways on dimensions such as class cohesion or participants' pre-test motivation. These could be partial causes of the improvement observed, and future studies with random assignment or blinded testing procedures can clarify these influences.

The observed increase among Generation Z learners may be related to characteristics identified in prior literature; however, these generational traits (e.g., digital overload, multitasking tendencies) were not directly measured in this sample. Therefore, interpretations should be considered tentative. With the features of fast exposure to information and multitasking, Generation Z people are prone to distraction and performance fatigue. Mindfulness training tries directly to counteract such vulnerabilities by developing emotional self-regulation. The structured MBSR sessions provided the learners with practical means to pause and reappraise stressful moments which improve both persistence and emotional resilience accordingly. In that sense, MBSR might act as a psychological buffer against the overstimulation and anxiety often associated with digital learning environments.

The positive trends observed in the experimental group may reflect mechanisms emphasized in positive psychology frameworks; however, these interpretations should be viewed as tentative given the study's quasi-experimental design and contextual constraints. Mindfulness-based practices have a positive effect, and allow learners to develop their cognitive and emotional repertoire, which in turn leads to adaptive coping strategies, cumulatively developing resilience over time (Wang et al., 2025). To this regard, mindfulness may be both a preventive and developmental mechanism. In other words, it would prevent burnout and disengagement while at the same time develop a more confident and self-regulated learner identity.

The Effect of MBSR on Psychological Well-being

The second research question explored whether MBSR techniques enhanced Iranian Generation Z learners' PWB. The results suggested that students in the MBSR group demonstrated significant enhancements in well-being compared to the control class. Thus, the findings suggest that students exposed to MBSR showed greater improvements in psychological well-being compared to those in the control group.

These results are consistent with those of Roziqin et al. (2024), who reported that school-based mindfulness programs lowered students' stress and improved their well-being, and also align with Shakib Kotamjani et al. (2025), whose intervention of teacher-focused mindfulness significantly decreased perceived stress levels over time. Convergence of evidence across both learner and teacher population suggests that mindfulness creates emotional stability and stress resilience that leads to higher subjective well-being and satisfaction in academic contexts.

At the same time, the observed developments in psychological well-being may also have been influenced by non-intervention factors. Increased teacher attention and positive expectations associated with participation in a novel program may have contributed to improved affective outcomes independent of MBSR activities. As students and teachers were not blinded to group

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assignment, expectancy and motivational effects cannot be discounted.

The Generation Z learners in the experimental group in this study demonstrated significant gains in self-reported calm and emotional control, which are considered core indicators of psychological well-being. These improvements may be understood through self-determination theory and broaden-and-build theory. Both frameworks explain how emotional regulation supports greater well-being. MBSR supports autonomy and competence in the encouragement of learners to focus on current experiences with a nonjudgmental awareness and thus decrease anxiety. In becoming more self-aware of their internal states, learners can become less reactive to stressors and build a sense of personal agency that contributes to intrinsic motivation and long-term well-being. This can also be explained within the broaden-and-build framework, in that the state of positive emotions produced through mindfulness broadens cognitive resources such that learners can build stable psychological resilience.

These findings are important, as they reveal a duality that underlies the benefits of MBSR. It affects both the cognitive and the affective domains. In addition to lowering anxiety, mindfulness practices seem to substantially improve mental clarity, focus as well as emotional regulation, all of which are necessary for language learning. In details, mindfulness practices lead to greater persistence in completing language tasks, a greater willingness to participate in communicative activities, and an improved tolerance for ambiguity.

These findings should be interpreted cautiously due to methodological constraints. The use of intact classes limits internal validity and introduces the possibility of pre-existing group differences not fully captured by pre-test scores. Furthermore, the relatively small sample size and single-institution context can restrict the generalizability of results. Future studies using larger samples and multi-site designs could provide clearer evidence regarding the scope of MBSR effects in EFL populations.

The great increase in psychological well-being also complements the enhanced academic buoyancy that was observed in research question one. The two constructs are in many ways interrelated. Well-being provides an emotional foundation from which buoyancy can be developed. For learners experiencing a reduction in stress and higher emotional stability, difficulties are more likely to be perceived as transient and can be managed. This reciprocal connection of well-being and buoyancy reinforces the integration of theory proposed by the models of positive psychology, in which mindfulness operates as one of the core drivers of holistic learner development.

Conclusion, Implications and Recommendations

This study examined the impacts of MBSR techniques on enhancing Generation Z EFL learners' academic buoyancy and psychological well-being in Iran. This study provides initial evidence that integrating MBSR techniques into English instruction may support improvements in academic buoyancy and psychological well-being among intermediate Generation Z EFL learners in one Iranian institute. While the experimental group showed greater post-test developments than the control group, these findings should be interpreted cautiously due to the study's quasi-experimental design and single-site context.

Mindfulness, operationalized through the MBSR framework, emphasizes awareness, attention, and acceptance of the present moment. These mental skills help learners handle academic stress and maintain focus. Moreover, mindful learners approach learning with clarity and balance. Students who experienced the mindfulness-based instructional approach seemed to show an increase in persistence and poise. The increased academic buoyancy may mean that the learners with more mindfulness could recover faster from falling behind, and greater psychological well-being means that they develop better self-regulation and a more positive view, which are both important for language learning.

Pedagogically, the findings have revealed that mindfulness practices could be inducted into regular EFL classroom routines without compromising linguistic aims. Brief mindfulness activities related to breathing awareness and reflection were embedded within standard English lesson routines and showed considerable positive impact on the affective and behavioral results after eight weeks. Importantly, the short duration of these practices (approximately 10–15 minutes) suggests that similar activities could be feasibly incorporated into regular Iranian EFL classes, even in exam-focused environments where instructional time is limited. These findings may be particularly relevant for Generation Z learners, who are described in the

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literature as experiencing elevated digital stress and emotional fatigue, although such traits were not directly measured in the present sample.

In the Iranian EFL context, where instruction often prioritizes exam performance and linguistic accuracy, integrating mindfulness marks an important pedagogical shift toward a more holistic and learner-centered approach. It bridges the cognitive and emotional dimensions of learning and leads to not only better performance but also improved mental health. This study therefore adds to the expanding body of research on positive psychology in applied linguistics and affirms that self-awareness and emotional regulation are vital for deep and sustainable learning.

These findings have practical implications for curriculum designers, institute administrators, teacher educators and teachers. Rather than proposing large-scale curriculum reform, the results suggest that small and structured mindfulness segments, such as two 10–15-minute MBSR activities per week could be integrated into existing B1-level instruction without disrupting linguistic goals. Teacher training programs may also consider offering short workshops on basic mindfulness facilitation, as teachers' emotional regulation can influence classroom climate.

Several limitations should be acknowledged. First, the sample was relatively small (n = 54) and drawn from a single private institute in one Iranian city, limiting generalizability. Second, the use of intact classes and non-random assignment reduces internal validity and leaves the possibility of pre-existing group differences open. Third, the study relied on self-report measures (ABS and PWB), which can be subject to social desirability bias. Fourth, the intervention lasted only eight weeks, and no follow-up data were collected to examine the durability of effects. Finally, neither teachers nor learners could be blinded to group assignment, creating the potential for expectancy or novelty effects. These limitations should be considered when interpreting the findings.

Future research could build on these initial findings by conducting multi-site randomized or cluster-randomized controlled trials to strengthen causal inference. Longitudinal studies incorporating follow-up assessments would help determine whether improvements in well-being and buoyancy persist over time. Qualitative methods such as interviews or classroom observations could explore how students internalize mindfulness practices. Additionally, examining the effects of MBSR across different proficiency levels and age groups would contribute to a broader understanding of how mindfulness interacts with EFL learning processes.

Overall, the current study offers preliminary support for the role of structured mindfulness practices in promoting both emotional and academic resilience among intermediate EFL learners, while highlighting the need for further rigorous research in diverse educational settings.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. Ethical considerations in this study were that participation was entirely optional.

Transparency of Data

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

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Authors' Contributions

All authors equally contribute to this study.

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