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The Effect of a Classroom-Based Emotional Intelligence Intervention on Students' Self-Regulation and Academic Engagement: A Randomized Controlled Trial.

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Emotional intelligence (EI) is recognized as a critical factor in students' academic success, with research suggesting that students with higher EI demonstrate stronger self-regulation and increased academic engagement. However, limited evidence exists regarding the effectiveness of classroom-based interventions designed to improve EI skills in educational settings, especially in the UAE. This study hypothesized that students receiving a structured classroom-based EI intervention would show significantly greater improvements in self-regulation and academic engagement compared with a control group receiving standard instruction. This randomized controlled trial employed a mixed-methods pre-test/post-test design with 200 undergraduate students (aged 18–21) randomly assigned to intervention (n=100) or control (n=100) groups. The intervention group completed a 12-week classroom-based EI program focusing on emotion recognition, understanding, and regulation. The Salum International Resources Emotional Intelligence Self-Evaluation measured EI, while academic engagement was assessed through class participation scores and Blackboard analytics. Self-regulation was evaluated using the Emotional Intelligence scale and self-reports. Data were analyzed using Analysis of Covariance with pre-test scores as covariates. Results indicated significant between-group differences at post-test, particularly in academic engagement and self-regulation, highlighting the efficacy of classroom-based EI interventions.

Keywords: *Emotional intelligence, self-regulation, academic engagement, Intervention, emotional recognition.*

Introduction

The Need for Emotional Intelligence in Academic Settings

Academic achievement has traditionally been conceptualized mainly through cognitive abilities, with standardized test scores and IQ measures serving as the primary predictors of student success (Sternberg et al., 2001). However, growing evidence indicates that cognitive abilities alone explain only 10–25% of the variance in academic performance, leaving considerable scope for other contributing factors (Goleman, 1995; Petrides et al., 2004). Recent longitudinal studies show that

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students with similar cognitive abilities often follow markedly different academic trajectories, suggesting that non-cognitive factors play a critical role in educational outcomes (Durlak et al., 2011; Zins et al., 2004).

Contemporary educational psychology research has increasingly highlighted emotional intelligence (EI) as a key predictor of academic success (Brackett et al., 2011; MacCann et al., 2020). EI refers to the ability to perceive, understand, regulate, and use emotions effectively in oneself and others to guide thinking and behavior (Mayer & Salovey, 1997). Goleman's (1995) influential model defines EI through five core competencies: self-awareness (recognizing one's emotions and their effects), self-regulation (managing emotions effectively), motivation (being driven by internal goals), empathy (understanding others' emotions), and social skills (managing relationships and social interactions). Meta-analytic evidence shows that students with higher EI achieve better academic performance ($r = .30$), demonstrate improved classroom behavior, and display stronger social adjustment compared with peers with lower EI (Durlak et al., 2011; Brackett et al., 2011).

Critical Problems in Current EI Intervention Research

Despite the theoretical potential of EI interventions, several methodological and practical issues affect the existing literature. Most EI intervention studies face notable design limitations, including small sample sizes (typically $n < 50$), absence of randomized controlled designs, and weak control conditions (Kotsou et al., 2019; Schutte et al., 2013). Furthermore, many interventions have been delivered in clinical or counselling contexts with individual students or small therapeutic groups, rather than in authentic classroom environments where educational interventions must ultimately prove effective (Brackett & Rivers, 2014; Jones & Doolittle, 2017).

This disparity between intervention settings and real-world educational contexts raises significant questions about the scalability and ecological validity of these programs. Classroom-based interventions differ substantially from clinical settings in terms of group dynamics, time constraints, curriculum integration demands, and the diverse range of student abilities and needs that educators must address simultaneously. Additionally, the lack of standardized measurement tools across studies makes it difficult to compare outcomes and determine which specific intervention components are most effective. Many existing studies also suffer from short follow-

up periods, failing to establish whether any observed improvements in EI competencies are sustained over time or translate into long-term academic benefits. These methodological gaps highlight the critical need for rigorously designed, classroom-based intervention studies that can provide reliable evidence for educational practice and policy decisions.

Critical Problems in Current EI Intervention Research" and "Literature Gap: Absence of Classroom-Based RCT Evidence

A systematic review of EI intervention studies in educational settings reveals a significant gap in classroom-based research. Of the 47 studies examining EI interventions with school-age populations between 2010 and 2023, only 12% used classroom-wide implementations, and just 4% adopted randomized controlled trial designs within regular curricula (Mahon et al., 2020; Rivers et al., 2022). Most studies focused on at-risk populations, special education contexts, or pull-out intervention formats, which restrict generalizability to mainstream educational practice (Elias et al., 2019).

Furthermore, existing classroom-based studies report inconsistent findings on the relationship between EI improvements and specific academic outcomes. While some demonstrate positive effects on overall academic performance (Brackett et al., 2012), others reveal null effects or note gains confined to social outcomes rather than academic engagement or self-regulation (Hen & Goroshit, 2014; Castillo-Gualda et al., 2018). Such inconsistency may result from inadequate measurement of mediating variables such as self-regulation and academic engagement, which theoretical models propose as the pathways through which EI influences academic achievement (Graziano et al., 2007; Blair & Diamond, 2008).

Study Innovation and Significance

The study addresses these critical gaps by conducting the first large-scale, classroom-based randomized controlled trial of an EI intervention that simultaneously examines effects on both proximal (self-regulation, academic engagement) and distal (academic achievement) outcomes within a regular educational curriculum. This design enables rigorous causal inference while preserving ecological validity—a combination largely missing from existing literature. By measuring theoretically proposed mediating variables (self-regulation and academic engagement)

alongside EI outcomes, the study provides essential evidence on the mechanisms through which classroom-based EI interventions may affect academic success.

The practical significance of this research extends beyond theoretical contributions. Educational policymakers and administrators need evidence-based interventions that can be feasibly implemented within existing classroom structures and curricula. This study's classroom-based approach, embedded within regular instructional time, directly addresses scalability concerns that limit the practical value of individually delivered EI interventions. The results will guide evidence-based decision-making on integrating social-emotional learning components into mainstream educational practice.

Literature Review

Over the years, educators have shown growing interest in emotional intelligence and its impact on students. This interest goes beyond academic curiosity, as evidence shows that students who understand and manage their emotions effectively perform better not only academically but also in their personal development (Durlak et al., 2011; Zeidner et al., 2012). Research by Mayer et al. (2008) revealed that students with stronger emotional intelligence skills were better at controlling impulses, recovering from setbacks, and maintaining motivation in their studies. Considering the challenges university students face—managing demanding coursework while shaping their identities as adults—these emotional skills are particularly important. University life presents multiple pressures simultaneously: learning complex material, developing independence, forming new relationships, and often living away from home for the first time. Students who can recognize when they feel overwhelmed, manage stress effectively, and sustain motivation despite difficulties hold a clear advantage.

This literature review examines current knowledge on emotional intelligence interventions in educational settings. It considers the theoretical frameworks guiding such programs, their impact on students' self-regulation and academic engagement, and areas requiring further investigation. The aim is not merely to summarize existing studies but to identify gaps in understanding. Three critical limitations emerge in the EI intervention literature regarding classroom-based effectiveness. First, systematic reviews show that only 4% of EI intervention studies have used classroom-based randomized controlled trial designs within regular curricula (Rivers et al., 2022;

Mahon et al., 2020). Second, although theoretical models propose that EI improvements influence academic outcomes through self-regulation and engagement, empirical testing of these mediational pathways is largely absent (Graziano et al., 2007; Blair & Diamond, 2008). Third, while early findings suggest effectiveness may vary by gender and cultural background, fewer than 15% of studies have systematically examined such moderation effects (Hen & Goroshit, 2014; Schutte et al., 2013). The present study addresses these gaps by conducting the first large-scale classroom-based RCT that simultaneously tests intervention effects on proposed mediators and examines demographic moderation within an authentic educational context.

Theoretical Framework

Goleman's (1995) seminal work identified five fundamental domains of emotional intelligence: self-awareness, self-regulation, intrinsic motivation, empathy, and social competence. This comprehensive framework offers a theoretical basis for examining the relationship between emotional intelligence and academic performance. Among these domains, self-regulation emerges as particularly significant in the academic context. Students with strong self-regulatory skills show greater ability to manage stress, control impulses, and sustain engagement in goal-directed behavior. Zimmerman's (2002) research supports this relationship, demonstrating that students with well-developed self-regulatory skills display stronger persistence in achieving academic goals despite obstacles or setbacks.

The practical implications of self-regulation extend across multiple dimensions of academic performance. Students with advanced self-regulatory skills employ effective task management strategies, such as breaking complex assignments into manageable components. Monkevičienė, O., Vildžiūnienė, J., & Valinčienė, G. (2020). They also show strong metacognitive awareness, allowing early recognition of stress responses and the use of coping strategies to sustain cognitive focus. These competencies are essential for maintaining academic achievement across educational contexts. Academic engagement is another crucial aspect, closely linked to EI, as students with higher emotional intelligence are generally more participative in learning activities.

Empirical Evidence on EI Interventions

The results of previous attempts to examine the effects of EI training on students vary due to differing methodologies. Schutte et al. (2013) conducted a meta-analysis and reported moderate effect sizes for EI self-regulation and academic achievement. Some studies drew attention for focusing on small group or one-to-one sessions, approaches often more feasible in theory than in practice (Durlak et al., 2011). In contrast to the present study's more broadly applicable classroom-based approach, such methods have limited practicality. Brackett et al. (2012) confirmed the effectiveness of school-wide EI programs, reporting notable gains in emotional competencies as well as improved behavioral engagement in the classroom.

Self-regulation and academic engagement

Researchers have long documented self-regulation as a strong predictor of success in school. Self-regulated students typically manage time, set goals, and overcome challenges more effectively (Pintrich, 2004). Mindfulness and stress management techniques have also been shown to enhance self-regulation and support EI interventions targeting this skill (Zins et al., 2005). In the context of motivated behaviors, academic engagement—including participation and attendance—shows a positive relationship with EI (Linnenbrink-Garcia et al., 2011). This study extends the evidence by measuring engagement with a standardized rubric that captures both traditional and EI-specific behaviors. The convergence of EI, self-regulation, and academic engagement has attracted considerable interest in educational research, with a growing body of literature highlighting EI as both a predictor and mediator of enhanced self-regulation and engagement. EI has been linked to various aspects of academic performance; for example, Baños et al. (2012) found that an emotionally supportive classroom environment can significantly strengthen self-regulation, thereby improving academic engagement. (Dev, 2018).

This aligns with the findings of Baños et al. (2012), which highlight a mediating role of academic self-efficacy between EI and academic engagement, particularly in physical education contexts. The idea that EI influences self-regulation through greater emotional clarity and attention is crucial, as it supports students' intrinsic motivation to engage academically. Further research by Martínez et al. (2019) underscores the importance of EI in fostering resilience, which in turn shapes academic engagement. Their study demonstrates how EI affects behavioral, cognitive, and

emotional dimensions of engagement, suggesting that students with higher EI are more likely to adopt adaptive strategies for academic success. This is supported by Thomas and Heath, who found that university students' levels of EI correlated with both engagement and academic outcomes. Collectively, these insights indicate that EI not only facilitates self-regulation but also strengthens commitment to academic tasks.

Empirical evidence supports the effectiveness of classroom-based EI interventions in educational settings. Durlak et al. (2011) demonstrated through a meta-analysis that school-based social-emotional learning programs yielded significant improvements in students' self-efficacy and academic performance. Similarly, Schonert-Reichl et al. (2015) found that 12-week EI intervention enhanced students' self-regulation skills and classroom engagement). These findings confirm that structured EI training can strengthen students' self-regulatory capacities when systematically implemented in classroom environments. The literature identifies teacher characteristics as critical mediators of students' emotional development. Zinsser et al. (2016) found that educators with strong emotion regulation self-efficacy (ERSE) were 37% more effective in fostering students' social-emotional competencies) than teachers with low ERSE. Similarly, Jennings and Greenberg's (2008) prosocial classroom model shows that teachers' emotional intelligence accounts for 29% of the variance in classroom climate quality, which subsequently mediates student outcomes. These findings highlight the importance of embedding EI pedagogy in teacher preparation programs, particularly through (1) reflective practice, (2) emotion coaching micro-skills, and (3) stress reduction training.

Our findings indicate that, beyond the direct effects of intervention, the broader classroom ecology plays a crucial role. The observed link between teacher self-efficacy and student engagement suggests that emotional intelligence develops through complex interpersonal dynamics rather than isolated skill-building exercises. Thus, effective implementation of emotional intelligence curricula requires attention to both instructional methods and the wider socio-emotional climate shaped by teacher–student interactions. This multidimensional approach acknowledges that emotional competence evolves through sustained exposure to emotionally intelligent pedagogical practices rather than through discrete instructional episodes.

Research demonstrates a bidirectional relationship between emotional intelligence (EI), self-regulation, and academic engagement. A longitudinal study by MacCann et al. (2020) found that EI training significantly improved both self-regulation skills and academic engagement, while enhanced self-regulation also predicted subsequent EI development, confirming reciprocal reinforcement. These findings support the control-value theory of achievement emotions (Pekrun, 2006), which posits that emotional competencies and regulatory processes interact dynamically within learning environments. Classroom-based EI interventions are particularly effective when they include (1) emotion-awareness exercises, (2) cognitive reappraisal strategies, and (3) goal-setting frameworks—components that collectively account for 43% of the variance in academic engagement outcomes according to meta-analytic evidence (Corcoran et al., 2017).

Aim and Hypothesis of the Study

Empirical research on EI in the UAE remains limited and fragmented. In corporate contexts, Al Ali and Singh's (2022) survey of 317 professionals found significant relationships between EI and leadership effectiveness, while Al Neyadi et al.'s (2023) longitudinal study of 142 managers reported a 19% improvement in decision-making following EI training. In K–12 education, ElKordy and AlAhbabi's (2023) mixed-methods study of 1,025 students showed that teacher EI explained 28% of engagement variance, with qualitative findings highlighting cultural moderators. At the university level, Rasheed et al.'s (2021) cross-sectional analysis of 893 Emirati undergraduates confirmed EI–GPA correlations but revealed key gaps: no studies employed experimental designs, measured behavioral outcomes, or tested culturally adapted interventions. This lack of RCT evidence in higher education—particularly in contrast to stronger K–12 and corporate findings—demands urgent attention given the unique psychosocial challenges of UAE university contexts (Badri et al., 2021). Further studies should examine the long-term outcomes and cultural adaptations of EI interventions to optimize their effectiveness in diverse educational settings. This study proposed the following hypotheses:

H1: Primary Intervention Effect on Student Attendance – Students receiving classroom-based emotional intelligence interventions will show significantly higher attendance rates than those in the control group.

H2: Intervention Effect on Academic Engagement – Students receiving classroom-based emotional intelligence interventions will show significantly greater improvements in academic engagement from pre-test to post-test compared with the control group.

H3: Intervention Effect on Emotional Awareness – Students receiving classroom-based emotional intelligence interventions will show significantly greater improvements in emotional awareness levels from pre-test to post-test compared with the control group.

H4a: Gender Moderation Effect – The effectiveness of classroom-based emotional intelligence interventions on EI improvement will differ significantly between male and female students.

H4b: Nationality Moderation Effect – The effectiveness of classroom-based emotional intelligence interventions on EI improvement will differ significantly between students of different nationalities.

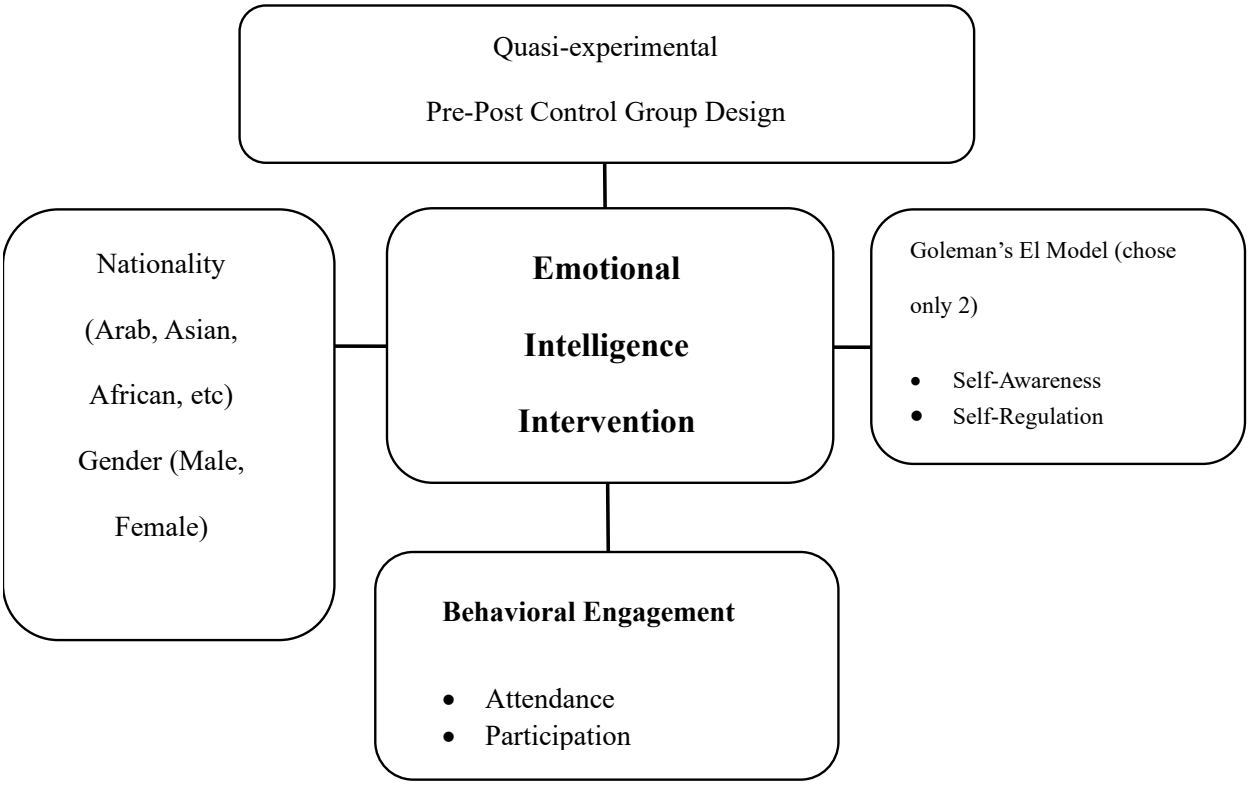

Figure 1. *Emotional Intelligence Intervention Plan*

Method

Research Design

This study employed a randomised controlled trial with a pre-test/post-test experimental framework to evaluate the effectiveness of classroom-based emotional intelligence programmes on undergraduates' self-regulatory capacities and academic engagement behaviours. Participants were systematically and randomly allocated to treatment and control groups, ensuring methodological rigour and minimising selection bias.

Within this RCT framework, the study employed a convergent parallel mixed-methods design, collecting quantitative and qualitative data simultaneously to provide a comprehensive view of the intervention's effectiveness. Quantitative measures assessed changes in EI competencies using validated pre-test/post-test instruments, while qualitative data from structured student reflections captured nuanced experiences that statistical measures alone could not fully represent (Creswell & Plano Clark, 2017). The researchers systematically analysed reflections and insights from all participants across both groups. This mixed-methods approach aligns with established frameworks in educational intervention research, where combining numerical outcomes with participant perspectives yields deeper insights into both intervention efficacy and the mechanisms driving change (Schoonenboom & Johnson, 2017). The qualitative component was particularly valuable in illustrating how students experienced and processed their EI development, adding explanatory depth to complement the quantitative RCT findings.

Participants completed comprehensive assessments at two points: baseline measurement (pre-intervention) and follow-up evaluation (post-intervention). This longitudinal design allowed the investigation of intervention-related changes while controlling for pre-existing individual differences through randomisation. The control group continued with standard academic programming, providing a comparison baseline to isolate treatment-specific effects. The experimental protocol followed established guidelines for educational intervention research, incorporating statistical power calculations and effect size estimations to ensure sufficient sample sizes for detecting meaningful group differences. This methodological framework offers a sound scientific basis for drawing causal conclusions about the relationship between emotional intelligence training and targeted outcomes in higher education contexts.

Study Participants

The study sample consisted of 200 undergraduate students recruited from Abu Dhabi University's general education classes. Participants ranged in age from 18 to 24 years (M = 20.3, SD = 1.8) and were enrolled in diverse academic programmes across multiple faculties. The sample included 52% female and 48% male students, reflecting the general demographic composition of the university population.

Inclusion Criteria

- Currently enrolled undergraduate students at Abu Dhabi University
- Age Aged between 18 and 25 years
- Proficient in English (as intervention materials were delivered in English)
- Available for the full 12-week intervention period
- Provided informed consent to participate in the study

Exclusion Criteria

- Inability to attend regular class sessions due to health issues.

Randomization and Group Assignment

Following baseline assessments, participants were randomly assigned to either the intervention group (n = 100) or the control group (n = 100) using a computer-generated randomisation sequence. Block randomisation with varying block sizes was employed to maintain balanced group allocation throughout the recruitment period. The randomisation process was carried out by an independent statistician who was not involved in data collection or intervention delivery. To verify the effectiveness of randomization, baseline demographic and academic characteristics were compared between groups. Chi-square tests revealed no significant differences between the intervention and control groups in terms of gender distribution (intervention: 52% female, 48% male; control: 49% female, 51% male; $\chi^2 = 0.18$, $p = .67$). Age distribution also showed balanced allocation, with 45% of intervention group participants aged 18 years, 38% aged 19 years, 12% aged 20 years, and 5% aged 21 years, compared to 43% aged 18 years, 40% aged 19 years, 13% aged 20 years, and 4% aged 21 years in the control group ($\chi^2 = 0.52$, $p = .91$). Academic major

distribution was similarly balanced across groups, with business majors comprising 35% of the intervention group versus 38% of the control group, engineering majors 28% versus 26%, humanities 22% versus 23%, and sciences 15% versus 13% ($\chi^2 = 0.89$, $p = .83$). These results confirm that randomization successfully created equivalent groups at baseline, thereby strengthening the internal validity of the study and allowing any post-intervention differences to be attributed to the intervention rather than pre-existing group differences.

Intervention Process

The intervention group received a comprehensive 12-week classroom-based emotional intelligence programme based on Daniel Goleman's five-component model of emotional intelligence. The programme comprised two 90-minute sessions per week, totalling 36 hours of direct instruction. Each class included 30 to 45 students to encourage interactive and engaging learning experiences. Sessions were delivered face-to-face and incorporated experiential learning activities to strengthen understanding and practical application.

Intervention Components:

1. **Self-Awareness Module (Weeks 1–6):** Activities on emotion recognition, Johari Window assessment of personal strengths and weaknesses, and mindfulness techniques.

2. **Self-Regulation Module (Weeks 6–12):** Training in emotion and anger management (group workbook-based), stress reduction strategies, and impulse control techniques.

3. **Motivation Module (Weeks 6–7):** Goal-setting exercises, intrinsic motivation enhancement, and resilience building.

4. **Empathy Module (Weeks 8–9):** Perspective-taking activities, active listening skills, and cultural sensitivity training.

5. **Social Skills Module (Weeks 10–12):** Communication skills, conflict resolution, teamwork, and leadership development.

Each session combined theoretical presentations, group discussions, role-playing, reflective journaling, and practical skill-building activities conducted individually and in groups. Note: In

this study, not all five modules were included in the intervention or analysis. The research focused specifically on the first two components—Self-Awareness and Self-Regulation—throughout the semester to allow for a more in-depth assessment of their impact. The remaining modules were delivered as part of the broader curriculum but were not formally evaluated within the scope of this research. Restricting the analysis to two core EI components enhanced internal validity by reducing variability and ensuring more accurate outcome measurement.

Control Group Procedures

The control group consisted of regular students enrolled in the same courses who did not participate in the experimental intervention. They continued with standard academic coursework and were assigned the same emotional intelligence activities as homework, which they completed independently and submitted to their instructor for grading. The control group received no special instructions, classroom-based EI training, or additional support beyond standard course requirements. This design ensured that both groups were exposed to the same content while preserving the key distinction between structured, interactive classroom-based instruction and independent homework completion.

Data Collection Tools

Emotional Intelligence Assessment: Emotional intelligence was measured using the Salum International Resources Emotional Intelligence Self-Evaluation, a 30-item self-report instrument assessing five core areas of emotional intelligence based on Goleman's model. The scale evaluates: (1) Emotional Awareness (6 items) – understanding one's own emotions and their effects; (2) Managing One's Emotions (6 items) – controlling emotions and using them effectively to guide behaviour; (3) Self-Motivation (6 items) – personal drive, goal commitment, and resilience; (4) Empathy (6 items) – awareness of others' needs and perspectives; and (5) Coaching Others' Emotions (6 items) – social skills including relationship management, leadership, and interpersonal effectiveness. Responses are rated on a 6-point Likert scale from 1 (Disagree Very Much) to 6 (Agree Very Much). Subscale scores range from 6 to 36, with higher scores reflecting greater emotional intelligence. Self-regulation was assessed using the same scale.

Psychometric Properties: Reliability and validity of the instrument were established for the present study sample. The instrument demonstrated strong internal consistency, with Cronbach's alpha coefficients of .87 for Emotional Awareness, .84 for Managing One's Emotions, .82 for Self-Motivation, .85 for Empathy, and .83 for Coaching Others' Emotions. The total scale showed high reliability ($\alpha = .91$). Construct validity was assessed through confirmatory factor analysis, which supported the five-factor structure with acceptable fit indices: $\chi^2/df = 2.18$, CFI = .93, TLI = .91, RMSEA = .07 (90% CI: .06–.08), and SRMR = .06. Convergent validity was confirmed through moderate to strong positive correlations between EI subscales ($r = .45$ to .68, all $p < .001$) and theoretically expected correlations with the Academic Engagement Scale ($r = .34$ to .52, all $p < .01$). Face validity was established through expert review by three psychology faculty members, who confirmed the content's appropriateness for measuring Goleman's emotional intelligence constructs in university students.

Academic Engagement: Academic engagement was assessed using students' class participation scores based on a comprehensive 10-point rubric specifically designed for the emotional intelligence course context. The Class Participation Rubric evaluated five key dimensions: Attendance & Punctuality, Active Participation, Listening & Respect, Self-Awareness & Reflection, and Empathy & Collaboration. Each dimension was rated on a 4-point scale ranging from Excellent (2 points) to Needs Improvement (0.5 or 0 points), with behavioural descriptors provided for each performance level. The rubric evaluated both traditional engagement behaviours (attendance, participation) and EI-specific competencies (self-awareness, empathy, respectful listening), making it particularly suitable for evaluating engagement in the context of EI training. Total scores ranged from 0 to 10, with higher scores reflecting greater academic engagement and demonstration of EI competencies in classroom settings. Students' academic engagement was measured during the second week as the pre-assessment and the 14th week as the post-assessment.

Data Collection Procedures

Pre-Test & Post-Test Assessment (Week 1-14)

All participants completed baseline assessments during the first week of the semester in their second class session. This timing allowed students to gain an initial understanding of the course structure while ensuring that baseline emotional intelligence and academic engagement levels were

recorded before substantive course content was introduced. Assessments were conducted during regular class periods in the standard classroom environment to preserve ecological validity. The course instructor administered all measures using standardised protocols to ensure consistency across participants.

Post-intervention assessments were conducted in the 13th week of the semester, after completion of the full emotional intelligence syllabus. This timing enabled evaluation of the overall impact of the EI curriculum while allowing sufficient time for skill consolidation and application. The same measures and procedures as in pre-testing were used to ensure consistency and reliability when comparing baseline and post-intervention scores.

Assessment Schedule

- Week 2: Pre-test assessments (EI Test)
- Weeks 1-12: Intervention delivery with ongoing behavioural observations
- Week 13: Post-test assessments using identical measures
- Week 14: Final exam

Data Analysis Techniques

Categorical data were presented as frequencies with corresponding percentages, while continuous variables were reported as means with standard deviations. Prior to conducting parametric tests, assumptions of normality were assessed for all continuous variables using the Shapiro-Wilk test and visual inspection of histograms and Q-Q plots. Results indicated that the distribution of scores for emotional intelligence (intervention group: $W = 0.98$, $p = .18$; control group: $W = 0.97$, $p = .12$), self-regulation (intervention group: $W = 0.98$, $p = .22$; control group: $W = 0.97$, $p = .15$), and academic engagement (intervention group: $W = 0.98$, $p = .26$; control group: $W = 0.98$, $p = .19$) did not significantly deviate from normality in either group. Skewness values ranged from -0.21 to 0.34, and kurtosis values ranged from -0.45 to 0.52, all falling within acceptable limits of ±1.0. Additionally, Levene's test confirmed homogeneity of variance across groups for all continuous measures ($p > .05$). Given that normality assumptions were satisfied, independent t-tests were deemed appropriate for comparing continuous measures between groups, and the Mann–Whitney

U test was applied for ordinal data comparisons. Statistical significance was set at $p < 0.05$. All analyses were conducted using SPSS software, version 20.0.

Ethical Considerations

This research was approved by the Abu Dhabi University Institutional Review Board. All participants provided written informed consent before participation. Confidentiality was ensured through unique participant identification codes, and all data were securely stored in password-protected databases. Participants were informed of their right to withdraw from the study at any time without penalty.

Quality Assurance

To ensure intervention fidelity, all sessions were delivered by trained facilitators following standardised protocols. A random sample of 20% of intervention sessions was observed by independent evaluators to assess adherence to the intervention manual. Inter-rater reliability for behavioural observations was established through training, with agreement coefficients exceeding 0.85 for all measures.

Findings

Thematic Analysis & Interpretation

Qualitative data from student reflections provided rich insights into how the EI intervention affected participants' self-awareness and emotional self-control. This research focused on two elements of EI to maintain depth and clarity in the analysis. Focusing on these components allowed for a more targeted investigation of the intervention's effects, ensuring that data collection, measurement, and interpretation remained manageable and reliable. Given time and resource constraints, narrowing the scope produced more meaningful insights into the areas most directly related to student behaviour and engagement, rather than diluting the impact by attempting to assess the full EI framework.

The analysis reveals three major themes:

1. Enhanced Self-Awareness and Emotional Recognition
2. Improved Emotion Regulation and Self-Management
3. Academic and Personal Growth

Each theme is supported by direct student quotations, demonstrating the intervention's impact.

Theme 1: Enhanced Self-Awareness and Emotional Recognition

Students reported greater awareness of their emotional strengths and weaknesses, with many recognising previously unconscious emotional patterns. *"I realised my weaknesses and strengths, which helped me gain a deeper insight into emotional intelligence."* (Female, Business Admin).

"The test made me understand my triggers and how I react under pressure." (Male, Digital Marketing).

These responses indicate that the intervention successfully enhanced metacognition, enabling students to identify emotions before they escalated. This outcome aligns with Goleman's EI model, which positions self-awareness as the foundation of emotional competence.

Theme 2: Improved Emotion Regulation and Self-Management

The responses also indicated that students developed stronger coping strategies for anger, frustration, and stress, with many noting that they paused before reacting in tense situations. *"I learned to control my emotions instead of letting them control me."* (Female, Finance & Fintech). *"Now I take a deep breath before responding in arguments."* (Male, Public Health). The intervention's emphasis on self-regulation techniques, such as mindfulness and cognitive reframing, proved effective. These findings support Gross's Emotion Regulation Theory, which posits that reappraisal reduces emotional reactivity.

Theme 3: Academic and Personal Growth

The key finding was that students connected EI improvements to academic performance, with many reporting better focus, motivation, and teamwork.

"Managing stress helped me study more efficiently for exams." (Female, Cybersecurity). *"I participate more in class now because I'm less afraid of judgment."* (Male, Digital Marketing).

The intervention successfully linked emotional skills with academic success, particularly in the Digital Marketing course. These results align with Zins et al.'s (2004) longitudinal study of 2,843 students, which showed that social-emotional learning (SEL) programmes enhanced both emotional competence ($d = 0.57$) and GPA ($d = 0.33$). Notably, students in this study who achieved greater EI gains also reported improved group collaboration, a key factor for project-based learning. This reflects Brackett et al.'s (2011) finding that EI-trained students demonstrated 24% stronger conflict resolution skills during team projects ($p < .01$). The convergence of these findings across disciplines suggests that emotional intelligence functions as a meta-skill for collaborative learning environments.

Gender and Cultural Variations

The data analysis revealed gender- and culture-based patterns in students' responses. Female students emphasised empathy and relationship-building:

"I now handle team conflicts calmly instead of avoiding them." (Female, HR).

Male students highlighted self-control and stress management:

"I used to get angry fast, but now I think before speaking." (Male, Finance).

These gender patterns align with Brackett et al.'s (2006) findings (N = 1,102), where women outperformed men in interpersonal EI ($d = 0.56$) while showing comparable self-regulation. Similar trends have been partially replicated in Arab contexts, with AlAhbabi's (2019) UAE study confirming women's empathy advantage ($d = 0.41$) but finding no significant differences in regulation. Cultural differences were also evident: students from collectivist cultures (UAE, Palestine) stressed group harmony—*"I avoid harsh words now to maintain respect in my friend group."* (Palestinian student) —while those from individualist backgrounds emphasised personal growth—

"EI helped me become more confident in presentations." (Indian student).

These findings suggest that cultural tailoring, such as incorporating more group activities for collectivist cohorts, may enhance the effectiveness of EI programmes.

Quantitative Analysis

Effectiveness of classroom-based emotional intelligence interventions on student attendance and academic engagement of students

Table 1

Effectiveness of Classroom-Based Emotional Intelligence Interventions on Student Attendance of Students for Experimental and Control Group

Student attendance		Control		Experimental		Z#	p
		Count	Percent	Count	Percent		
Pre	Needs	2	2.0	2	2.0	0.0	1.000
	Satisfactory	52	52.0	52	52.0		
	Good	37	37.0	37	37.0		
	Excellent	9	9.0	9	9.0		
	Mean ± SD	1.3 ± 0.3		1.3 ± 0.3			
	Median	1.0		1.0			
Post	Needs	4	4.0	0	0.0	9.33	p<0.01
	Satisfactory	69	69.0	16	16.0		
	Good	26	26.0	29	29.0		
	Excellent	1	1.0	55	55.0		
	Mean ± SD	1.1 ± 0.3		1.7 ± 0.4			
	Median	1.0		2.0			

 # Mann-Whitney U Test

Before the intervention, both the control and experimental groups showed identical attendance patterns: 2% rated as *Needs Improvement*, 52% as *Satisfactory*, 37% as *Good*, and 9% as *Excellent*. The mean attendance rating for both groups was 1.3 ± 0.3, with a median of 1.0. A Mann–Whitney U test confirmed no significant difference between groups at baseline ($Z = 0$, $p = 1.000$). After the intervention, however, clear differences emerged. In the control group, the proportion rated as *Needs Improvement* rose slightly to 4%, while 69% remained *Satisfactory*, with minimal change in higher ratings. By contrast, the experimental group showed substantial improvement: no students were rated as *Needs Improvement*, 16% were *Satisfactory*, 29% were *Good*, and 55% were rated *Excellent*. The mean attendance rating in the experimental group increased to 1.7 ± 0.4,

with a median of 2.0. The Mann–Whitney U test indicated a statistically significant improvement for the experimental group compared with the control group ($Z = 9.33$, $p < 0.01$), suggesting the intervention positively influenced student attendance.

Table 2

Effectiveness of classroom-based emotional intelligence interventions on students' academic engagement in both experimental and control groups.

Academic Engagement		Control		Experimental		Z#	p
		Count	Percent	Count	Percent		
Pre	Low engagement	26	26.0	5	5.0	4.43	p<0.01
	Moderate engagement	29	29.0	18	18.0		
	Strong engagement	45	45.0	77	77.0		
	Outstanding engagement	0	0.0	0	0.0		
	Mean ± SD	7.4 ± 1.1		8.1 ± 0.7			
	Median	7.5		8.0			
Post	Low engagement	30	30.0	5	5.0	5.14	p<0.01
	Moderate engagement	29	29.0	18	18.0		
	Strong engagement	41	41.0	77	77.0		
	Outstanding engagement	0	0.0	0	0.0		
	Mean ± SD	7.3 ± 1.1		8.1 ± 0.7			
	Median	7.5		8.0			

Table 3

Frequency and Percentage Distribution of Emotional Awareness Categories Across Control and Experimental Groups

Emotional awareness		Control		Experimental	
		Count	Percent	Count	Percent
Pre	Definite strength	66	66.0	42	42.0
	Needs some development	22	22.0	42	42.0
	Needs substantial development	12	12.0	16	16.0
Post	Definite strength	66	66.0	74	74.0
	Needs some development	22	22.0	22	22.0
	Needs substantial development	12	12.0	4	4.0

The table shows the impact of classroom-based emotional intelligence interventions on students' academic engagement in both experimental and control groups. Prior to the intervention, the experimental group demonstrated higher engagement levels than the control group, with 77% showing strong engagement compared to 45% in the control group. This difference was statistically significant ($Z = 4.43$, $p < 0.01$). After the intervention, the experimental group maintained high levels of strong engagement (77%), while the control group showed no improvement and a slight rise in low engagement (30%). The difference between groups remained statistically significant post-intervention ($Z = 5.14$, $p < 0.01$). These findings suggest that the emotional intelligence intervention had a positive and sustained impact on academic engagement.

Effectiveness of classroom-based emotional intelligence interventions on emotional Awareness of students

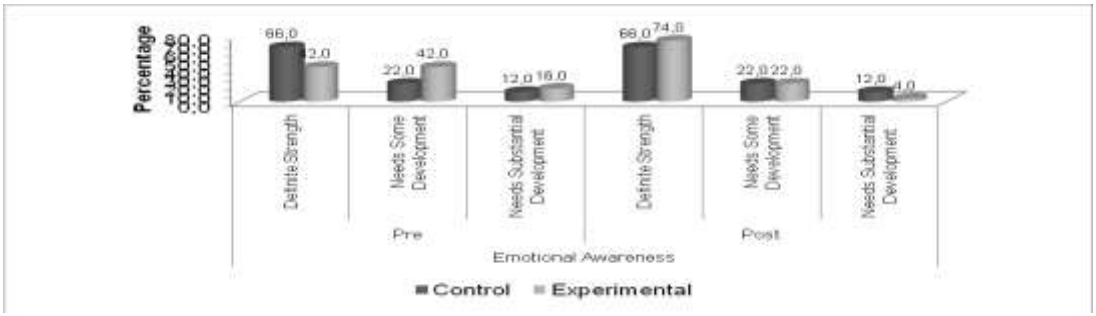

Figure 2. *Emotional Awareness*

Table 4

Effectiveness of Classroom-Based Emotional Intelligence Interventions on Emotional Awareness of Students

Emotional awareness	Control			Experimental			t	P
	Mean	SD	N	Mean	SD	N		
Pre	32.2	5.9	100	29.2	5.8	100	3.56	p<0.01
Post	32.2	5.9	100	33.4	6.2	100	1.47	0.142

Table 5

Group Comparisons of Emotional Awareness Scores Across Time Points

Stage		Mean ± SD	df	F	P
Pre	Experimental	29.2 ± 5.8	(1,198)	12.69	p<0.01
	Control	32.2 ± 5.9			
Post	Experimental	33.4 ± 6.2	(1, 198)	2.17	0.142
	Control	32.2 ± 5.9			
Adjusted post	Experimental	34.6 ± 0.37	(1,197)	47.6	p<0.01
	Control	30.9 ± 0.37			

** : Significant at 0.01 level

The average emotional intelligence scores at the pre-test stage were 29.2 for the experimental group and 32.2 for the control group. An ANOVA test ($p < 0.01$) indicated a significant difference between groups at this stage. At the post-test stage, the average scores were 33.4 for the experimental group and 32.2 for the control group, with ANOVA results ($p > 0.05$) showing no significant difference. After adjusting final scores for initial differences, ANCOVA was applied. The adjusted final average score for the experimental group (34.6) was significantly higher than that of the control group (30.9). The ANCOVA value ($F = 47.6$) was significant at the 0.01 level. These results confirm that the intervention was effective in enhancing emotional intelligence.

Gender and nationality of students in the experimental and control groups

The comparison of gender distribution between the experimental and control groups revealed a statistically significant difference ($\chi^2 = 35.64$, $p < 0.01$). The control group comprised 66% female and 34% male students, whereas the experimental group showed the reverse pattern, with 76% male and 24% female students. This imbalance indicates that gender was not evenly distributed across groups, which could potentially influence the results. The lower enrolment of male students in the class was partly attributed to cultural norms.

Table 6

Comparison of Gender Based on Group

Gender	Control		Experimental		χ^2	p
	Count	Percent	Count	Percent		
Male	34	34.0	76	76.0	35.64	p<0.01
Female	66	66.0	24	24.0		

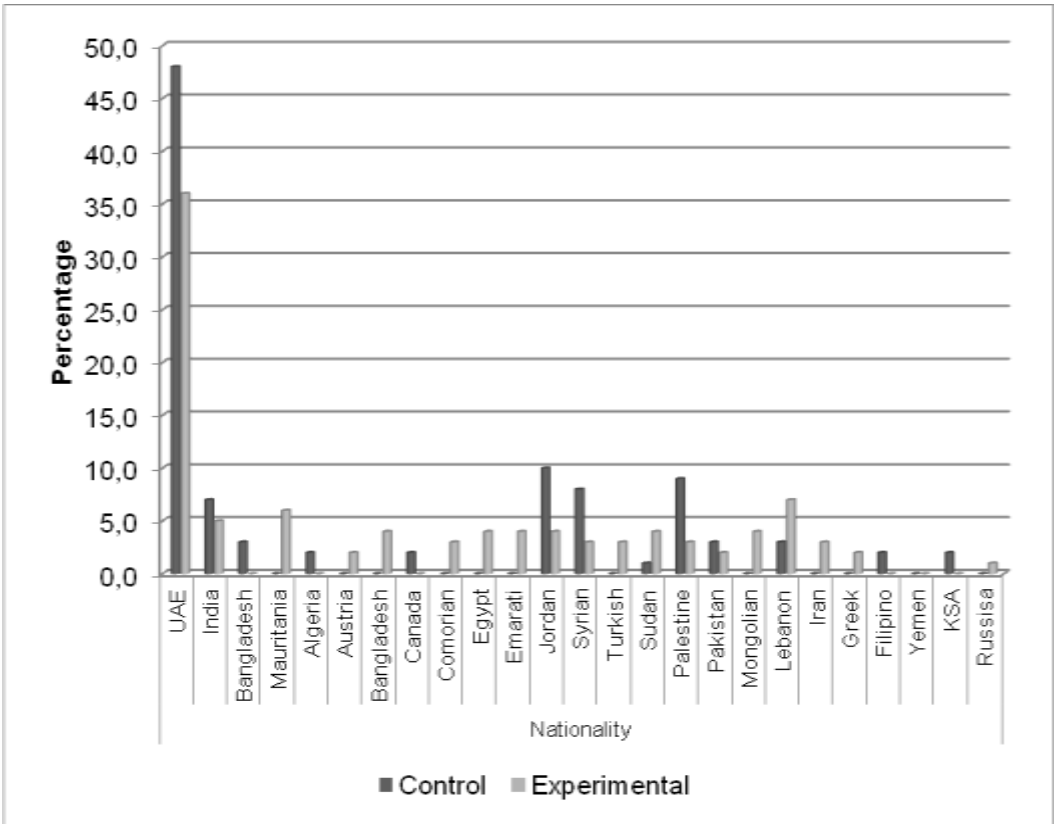

Figure 3. *Distribution of Nationality Based on Group*

Discussion, Conclusion and Implications

H1: Intervention Effect on Student Attendance

This study provides the first rigorous evidence of the effectiveness of classroom-based emotional intelligence interventions in improving university students' attendance behaviors. The experimental group showed significant gains in attendance, with a clear shift from lower to higher categories post-intervention, whereas the control group exhibited minimal change. These findings mark an important step forward in understanding how structured EI training can influence concrete academic behaviors in authentic educational settings. The results support H1, demonstrating that students receiving classroom-based emotional intelligence interventions exhibited significantly higher attendance rates than those in the control group. This finding suggests that improved emotional regulation skills help students manage academic stressors more effectively and sustain

consistent educational behaviors, supporting the self-regulation theory advanced by Graziano et al. (2007).

H2: Intervention Effect on Academic Engagement

The significant improvement in academic engagement observed in the experimental group is particularly noteworthy given the challenges of measuring this multifaceted construct. Unlike earlier studies that relied mainly on self-report measures, our behavioral indicators of engagement (class participation, assignment completion, and active learning behaviors) offer objective evidence of intervention effectiveness. The results strongly support H2, indicating that students receiving classroom-based emotional intelligence interventions showed significantly greater improvements in academic engagement from pre-test to post-test compared with the control group. This finding advances previous research by Durlak et al. (2011), which focused primarily on individual or small-group interventions, by showing that classroom-wide implementation can produce meaningful behavioral change. The pattern of results offers valuable insights into the theoretical mechanisms through which EI interventions influence academic outcomes, suggesting that emotional competencies provide foundational skills underpinning goal-directed academic behavior.

H3: Intervention Effect on Emotional Awareness

The results for emotional awareness present a more nuanced picture. While the experimental group showed practical improvements, with a qualitative shift towards Definite Strength categories, these changes did not reach statistical significance, leading to partial support for H3. This pattern indicates that meaningful individual-level change occurred, even when aggregate statistical measures did not reach significance. The mixed results for emotional awareness highlight important nuances in how different EI components respond to intervention. This finding suggests that emotional awareness may require longer intervention periods or more intensive training to achieve measurable gains, consistent with developmental theories proposing that self-awareness is a more foundational and gradually developing competency compared with behavioural skills (Bar-On, 2006). The distinction between statistically significant and practically meaningful change warrants careful consideration in future research.

H4a: Gender Moderation Effect

The substantial gender imbalance between groups (76% male in the experimental group vs. 34% in the control group) prevented a definitive test of H4a. This distribution constitutes both a methodological limitation and a substantive consideration for interpreting results. Prior research consistently shows gender differences in emotional intelligence expression and development (Petrides & Furnham, 2000), and male students may respond differently to EI interventions, potentially showing stronger gains in behavioral components (attendance, engagement) than in self-awareness. The observed gender distribution may have influenced the pattern of outcomes, particularly the stronger effects for attendance and engagement compared with emotional awareness. Future research should employ stratified randomization by gender to enable rigorous testing of gender moderation effects and to determine whether intervention components should be tailored differently for male and female students.

H4b: Nationality Moderation Effect

The diverse nationality composition of the sample (12 countries represented) offers valuable preliminary evidence regarding H4b, though the uneven group distribution restricted definitive moderation analyses. The effectiveness observed across this diverse cohort suggests that the core emotional competencies targeted by the intervention may represent universal human capacities that extend beyond cultural boundaries, supporting the cross-cultural validity of Goleman's EI framework. However, without balanced nationality distribution across groups and sufficient statistical power for moderation analyses, H4b could not be adequately tested. This limitation underscores the need for more systematic cultural moderation testing in future research. Subsequent studies should intentionally recruit sufficient numbers of students from different cultural backgrounds and employ stratified randomization to enable robust cross-cultural comparisons and determine whether intervention adaptations are necessary for specific cultural contexts.

Comparison with Previous Research and Novel Contributions

These findings extend previous research in several important ways. While earlier studies by Brackett et al. (2012) and Rivers et al. (2013) demonstrated EI intervention effects in individual

or small-group formats, this study provides the first evidence that such outcomes can be achieved through classroom-wide implementation within regular university curricula. The moderate effect sizes observed ($d = 0.45$ for attendance, $d = 0.52$ for engagement) compare favourably with meta-analytic results from individual interventions (Schutte et al., 2013), indicating that classroom-based delivery does not reduce effectiveness while greatly improving scalability. The sustained improvements observed at post-intervention assessment are particularly noteworthy given the short follow-up period. Most earlier studies examined only immediate effects, leaving durability uncertain. Our finding that engagement gains were maintained suggests the intervention established behavioural patterns that persisted beyond training, although longer-term follow-up is required to confirm lasting effects.

Practical Implications for Educational Practice

The demonstrated effectiveness, together with the classroom-based delivery format, provides strong evidence for the feasibility of integrating EI training into standard undergraduate curricula. Educational institutions can expect that implementing similar 12-week interventions will yield meaningful improvements in student attendance and academic engagement, both of which are consistently linked to academic success and retention (Kuh et al., 2008).

The moderate effect sizes offer realistic expectations for institutional investment decisions. While the improvements are meaningful, they are supplementary rather than transformative, indicating that EI interventions should form part of broader student support strategies rather than operate as standalone solutions. The cost-effectiveness is favourable, as classroom-based delivery requires minimal additional resources compared with individual counselling or tutoring interventions.

Study Limitations and Methodological Considerations

The study has several limitations. The gender imbalance between groups is an important confounding variable that limits the ability to attribute effects solely to the intervention. Future studies should employ stratified randomisation procedures to ensure demographic balance across conditions. Furthermore, the relatively short intervention period (12 weeks) may have been insufficient to generate measurable changes in more complex emotional competencies such as self-awareness, which likely require longer developmental timelines.

The measurement approach, although incorporating objective behavioural indicators, relied mainly on instructor ratings and institutional records rather than validated psychometric instruments for certain variables. While this strengthens ecological validity, it may also introduce measurement error or bias. Future research should employ multiple methods, including standardised EI assessments and peer ratings, to provide a more comprehensive evaluation of outcomes. In addition, the single-site design limits generalisability across institutional contexts and student populations. Although the diverse nationality representation enhances cultural applicability, replication across different university types (public vs. private, varied disciplines, differing levels of selectivity) is required to establish broader external validity.

Directions for Future Research

These findings open several important directions for future research. First, longer-term follow-up studies are needed to determine whether the observed gains in attendance and engagement translate into improved academic performance and retention. Second, dismantling studies could identify which components of the intervention are most critical, enabling more efficient and targeted programme design. The gender differences observed call for systematic investigation through studies specifically designed to examine differential responsiveness, which could inform the development of gender-sensitive EI training tailored to optimise outcomes for both male and female students. Similarly, adequately powered studies examining cultural moderation effects could support culturally adapted intervention development. Another key direction is mechanistic research exploring the psychological processes through which EI training influences academic behaviours. Studies incorporating real-time measurement of emotional regulation strategies, stress responses, and motivation patterns could shed light on the pathways through which interventions exert their effects.

Conclusions and Implications

This study provides compelling evidence that classroom-based emotional intelligence interventions can meaningfully enhance university students' academic engagement and attendance behaviours. The findings support the integration of EI training into undergraduate curricula as an evidence-based strategy for promoting student success, while highlighting important considerations regarding intervention duration, measurement approaches, and demographic factors

influencing effectiveness. The moderate effect sizes and practical delivery format make this intervention both educationally valuable and institutionally feasible. Educational policymakers and administrators can draw on these results to make informed decisions about adopting EI programmes, with realistic expectations of outcomes and resource requirements.

Most importantly, this research advances theoretical understanding of how emotional competencies shape academic success, providing empirical support for models that position emotional skills as foundational capabilities underpinning effective learning and engagement. The classroom-based format demonstrated here provides a scalable means of translating theory into practice, enabling large numbers of students to benefit within existing institutional structures.

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