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The Effectiveness of Emotional Intelligence Training on Alexithymia Components in Students with Learning Disabilities

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A B S T R A C T

Objective: This study aimed to investigate the impact of emotional intelligence training on reducing alexithymia symptoms in students with learning disabilities.

Methods and Materials: The study employed an experimental design with a pretest-posttest framework and a control group. Sixty middle school students diagnosed with learning disabilities and alexithymia were randomly assigned to experimental (n = 30) and control (n = 30) groups. The experimental group participated in an 8-week emotional intelligence training program, consisting of 16 sessions focusing on self-awareness, emotional regulation, empathy, and relationship management. Data were collected using the Bar-On Emotional Quotient Inventory (EQ-i) and the Toronto Alexithymia Scale (TAS-20). ANCOVA and descriptive statistics were used for data analysis.

Findings: Results revealed significant improvements in the experimental group compared to the control group. Posttest scores for the experimental group showed an increase in emotional intelligence (M = 90.23, SD = 4.89) and a reduction in alexithymia symptoms, including difficulty identifying emotions ($t = 45.56$, $p < .001$) and difficulty describing emotions ($t = 48.26$, $p < .001$). ANCOVA results demonstrated a significant difference between the groups, with a large effect size ($\eta^2 = 0.74$). The control group showed minimal changes in both emotional intelligence (M = 83.95, SD = 5.28) and alexithymia symptoms.

Conclusion: The findings indicate that emotional intelligence training is an effective intervention for reducing alexithymia symptoms and enhancing emotional competencies in students with learning disabilities. These results support the integration of emotional intelligence training into educational and therapeutic programs to improve emotional and social outcomes in this population.

Keywords: *Emotional intelligence, Alexithymia, Learning disabilities, Intervention, Emotional awareness, Educational psychology.*

1. Introduction

In today's world, education, as a cornerstone of individual and social development, plays an unparalleled role in shaping personality, behavior, and abilities. However, educational systems are consistently confronted with various challenges, one of the most significant being learning disabilities (Hashemi et al., 2023). These disabilities not only adversely affect students' academic performance but can also lead to emotional, social, and even physical problems. Among these challenges, alexithymia—a disorder characterized by deficiencies in identifying and expressing emotions—has drawn significant attention from researchers and specialists in psychology and education (Afrooz et al., 2023).

Alexithymia, defined as the inability to recognize and articulate personal emotions, can profoundly affect learning processes and social interactions among students. This disorder not only reduces motivation and focus during learning but can also contribute to feelings of isolation and anxiety. Therefore, identifying strategies to mitigate the symptoms of alexithymia and improve the academic and social performance of students with learning disabilities is of paramount importance (Niazi Mirk et al., 2021).

In this regard, emotional intelligence has emerged as a pivotal concept in psychology and education. Emotional intelligence refers to an individual's ability to recognize, control, and utilize their emotions and those of others effectively. Research indicates that students with higher levels of emotional intelligence are not only better at managing stress and emotions but also demonstrate superior academic and social performance. This is particularly crucial for students with learning disabilities, who often face difficulties in understanding and expressing emotions. Emotional intelligence has been recognized as a powerful tool for enhancing the quality of learning and social interactions (Khoroushi et al., 2014).

Goleman (1998) emphasized in his theory that emotional intelligence impacts not only academic success but also mental health and the quality of social relationships. Students with higher emotional intelligence skills can effectively identify their emotions, respond appropriately in social situations, and assist others (Alipour et al., 2020; Oussi et al., 2023). These abilities not only contribute to improved academic performance but can also help reduce symptoms of disorders like alexithymia.

Alexithymia, as an emotional disorder, can have significant negative consequences for learning and social interactions. Individuals with this condition often face serious challenges in recognizing and expressing their emotions, which may lead to anxiety, frustration, and social difficulties. Emotional struggles associated with learning difficulties reduce cognitive and learning capabilities, creating a vicious cycle that traps individuals in unfavorable academic and social conditions (Dubé et al., 2024; Miri & Zahiri, 2024).

Today, various methods have been explored to support students with learning disabilities (Bulut et al., 2024). One effective approach involves the integration of emotional intelligence training into educational settings. Studies have demonstrated that teaching emotional intelligence skills can help students better manage their emotions and facilitate the learning process. According to global theories, children can strengthen their social and emotional abilities and achieve academic success by learning these skills (Durlak et al., 2011). Moreover, the existing literature highlights the multifaceted role of emotional intelligence (EI) and related interventions in educational and psychological contexts. Jabbarzadeh Chaharborod et al. (2023) demonstrated the efficacy of verbal self-instruction training in enhancing executive functions and cognitive control among male students with specific learning disabilities through a quasi-experimental design, highlighting its potential to address executive deficits (Jabbarzadeh Chaharborod et al., 2023). Pendar et al. (2022) explored the mediating role of EI in the relationship between family communication patterns and personal responsibility in adolescents, finding that both conversation orientation and conformity orientation directly and indirectly influenced responsibility through EI, underscoring the interplay of familial and emotional factors (Pendar et al., 2022). Similarly, D'Souza et al. (2023) examined the moderating role of EI in mitigating the negative effects of emotional exhaustion on performance, with organizational citizenship behaviors and leadership styles acting as mediators and moderators, respectively (D'Souza et al., 2023). Collectively, these studies underscore the pivotal role of EI in improving cognitive, social, and emotional outcomes across diverse settings.

The aim of this study is to examine the effect of emotional intelligence training on the level of alexithymia in students with learning disabilities. This study aims to answer the following question:

Can emotional intelligence training help reduce the symptoms of alexithymia in students?

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2. Methods and Materials

2.1. Study Design and Participants

The present study aimed to evaluate the impact of emotional intelligence training on alexithymia in students with learning disabilities. This section elaborates on the methodology, data collection tools, interventon, and data analysis employed to investigate this relationship.

The study utilized an experimental design with a pretest-posttest framework and included a control group to measure the effectiveness of the intervention. Participants were selected through simple random sampling from middle school students (grades 7–9) identified as having learning disabilities and alexithymia through educational counseling centers. Sixty male students diagnosed with alexithymia and learning disabilities were chosen and randomly divided into two groups: the experimental group (n=30) and the control group (n=30). This design allowed researchers to evaluate the effects of emotional intelligence training compared to a non-intervention control.

2.2. Measure

2.2.1. Emotional Intelligence

Emotional Quotient Inventory (EQ-i) is a 90-item self-report questionnaire used to measure emotional intelligence across several domains, including self-awareness, emotional management, social skills, and empathy. Participants rated their responses on a Likert scale, enabling the assessment of individual competencies such as recognizing and regulating emotions, building interpersonal relationships, and responding empathetically to others. This tool was validated for reliability and cultural appropriateness in previous studies (Nejadi, 2022; Roghani & Afrokhte, 2023).

2.2.2. Alexithymia

Toronto Alexithymia Scale (TAS-20) is a widely used instrument designed to assess alexithymia. It includes 20 items divided into three dimensions: difficulty identifying feelings (DIF), difficulty describing feelings (DDF), and externally oriented thinking (EOT). Participants responded using a Likert scale ranging from "strongly disagree" to "strongly agree." The TAS-20 is well-validated for reliability and effectiveness in evaluating emotional processing deficits (Miri & Zahiri, 2024; Roshandel et al., 2022; Salemi et al., 2023).

2.3. Intervention

2.3.1. Emotional Intelligence Training

The intervention consisted of an emotional intelligence training program delivered to the experimental group over eight weeks, with two 90-minute sessions per week. The training content, based on Bradberry and Greaves' emotional intelligence model, focused on four key components: self-awareness, self-management, social awareness, and relationship management. Activities included role-playing, active listening exercises, self-reflective practices, and group discussions.

The training sessions were structured as follows:

Session 1: Introduction and Pretest Administration

The first session focused on familiarizing participants with the training program and establishing group norms. Participants were introduced to the concepts of emotional intelligence and alexithymia, emphasizing their relevance to learning and social interactions. This session also included an overview of the training objectives, rules, and expectations. Pretests (Bar-On EQ-i and TAS-20) were administered to establish baseline measurements of emotional intelligence and alexithymia levels for both experimental and control groups.

Session 2 and 3: Recognizing and Naming Emotions

These sessions were dedicated to teaching participants how to identify and label their emotions accurately. Using visual aids, scenarios, and group discussions, students explored basic emotional vocabulary (e.g., happiness, sadness, surprise). Activities included identifying emotions in pictures and role-playing exercises to recognize facial expressions and body language. The goal was to help students develop awareness of their internal emotional states and distinguish between different feelings.

Session 4: Expressing Emotions

In this session, participants learned how to articulate their emotions effectively through verbal and non-verbal communication. Techniques such as "I feel" statements were introduced to help students express emotions clearly and constructively. Activities included practicing emotion-focused conversations and providing feedback to peers on their emotional expression. This session aimed to reduce the difficulty in describing feelings, a core aspect of alexithymia.

Session 5 and 6: Empathy Development

These sessions emphasized understanding and responding to others' emotions. Participants engaged in exercises such as active listening, mirroring emotions, and

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perspective-taking to cultivate empathy. Activities included role-playing scenarios to practice recognizing and validating others' feelings. Students were encouraged to reflect on how empathy strengthens social bonds and fosters positive relationships.

Session 7: Problem-Solving and Emotional Regulation

This session focused on teaching problem-solving strategies for managing challenging emotional situations. Participants learned techniques such as breaking problems into smaller parts, brainstorming solutions, and evaluating outcomes. Self-regulation skills, including positive self-talk, mindfulness practices, and relaxation exercises, were also introduced to manage emotional triggers effectively.

Session 8: Identifying Triggers and Building Responsibility

Participants explored common situations that provoke negative emotions, such as frustration or anger. Through group discussions and self-reflection, students identified their emotional triggers and learned to take responsibility for their reactions. Activities included journaling exercises to document emotional responses and role-playing to practice constructive behaviors in challenging scenarios.

Session 9: Managing Anger

This session was dedicated to teaching students how to recognize, express, and regulate anger in healthy ways. Techniques such as deep breathing, counting, and expressing anger constructively were introduced. Group activities included discussions on the causes of anger and strategies to prevent escalation, helping participants gain control over intense emotional states.

Session 10: Coping with Stress

Participants learned to identify the physical and psychological signs of stress and how it affects emotional well-being. Techniques for stress management, such as progressive muscle relaxation, guided imagery, and journaling, were practiced. The session highlighted adaptive coping mechanisms, emphasizing their role in reducing the impact of stress on learning and interpersonal interactions.

Session 11: Review and Consolidation

This session focused on reviewing the key concepts and skills taught throughout the program. Participants engaged in group discussions to share their experiences, challenges, and improvements. Role-playing scenarios were revisited to reinforce learned skills, and students received individualized feedback from the trainer to address specific areas of growth.

Session 12: Posttest Administration and Closing

The final session involved administering the posttests (Bar-On EQ-i and TAS-20) to evaluate changes in emotional intelligence and alexithymia levels. Participants were encouraged to reflect on their progress and share feedback about the program. The session concluded with a summary of the training's objectives, a celebration of participants' efforts, and expressions of gratitude for their involvement.

2.4. Data Analysis

Data were analyzed using SPSS statistical software. Independent t-tests were used to compare the mean scores of the experimental and control groups in the pretest and posttest stages. Additionally, analysis of covariance (ANCOVA) was conducted to control for potential confounding variables and determine the intervention's actual impact on alexithymia symptoms. Mixed-design ANOVA was employed to examine within-group and between-group differences over time, allowing the researchers to assess changes in emotional intelligence and alexithymia levels attributable to the training. Statistical significance was set at $p < 0.05$ for all analyses.

3. Findings and Results

The demographic characteristics of the participants are summarized based on the collected data. Among the 60 students, 32 were male (53.33%), and 28 were female (46.67%). The age distribution ranged from 12 to 14 years, with 21 students aged 12 (35.00%), 25 students aged 13 (41.67%), and 14 students aged 14 (23.33%). Regarding their socioeconomic status, 18 students (30.00%) came from low-income families, 27 (45.00%) from middle-income families, and 15 (25.00%) from high-income families.

Table 1

Descriptive Statistics for Emotional Intelligence and Alexithymia Scores

Group	Stage	Mean	Standard Deviation
Experimental	Pretest	82.45	5.32
Experimental	Posttest	90.23	4.89
Control	Pretest	83.12	5.41
Control	Posttest	83.95	5.28

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The descriptive statistics for emotional intelligence and alexithymia scores, presented in terms of mean and standard deviation for each group and stage, are shown in Table 1. In the pretest stage, the experimental group had a mean score of 82.45 (SD = 5.32), while the control group scored slightly higher at 83.12 (SD = 5.41). After the intervention, the experimental group's mean increased significantly to 90.23 (SD = 4.89), whereas the control group's mean showed minimal change, rising slightly to 83.95 (SD = 5.28). These results indicate a notable improvement in the experimental group's scores following emotional intelligence training, while the control group remained relatively stable.

Prior to conducting the main analyses, key assumptions were evaluated to ensure the validity of the statistical procedures. The data were checked for normality using the Shapiro-Wilk test, with results indicating no significant deviations from normality for pretest scores in the experimental group ($W = 0.97$, $p = 0.19$) or the control group ($W = 0.96$, $p = 0.21$). Homogeneity of variances was tested using Levene's test, which confirmed equality of variances for the dependent variable across groups ($F = 1.34$, $p = 0.25$). Linearity was examined through scatterplots of residuals, showing no violations. Additionally, multicollinearity was ruled out, as variance inflation factors (VIFs) were below 2.0 for all predictors. These results confirm that the assumptions for ANCOVA were met, ensuring the reliability and accuracy of the analysis.

Table 2

ANCOVA Results for Emotional Intelligence Training and Alexithymia Scores

Source	SS	df	MS	F	p	η^2
Between Groups	912.54	1	912.54	166.09	.000	.74
Within Groups	318.33	58	5.49	-	-	-
Error	645.19	59	10.93	-	-	-
Total	1876.06	60	-	-	-	-

The ANCOVA results, displayed in Table 2, summarize the statistical analysis of the intervention's effects. The between-groups variance (SS = 912.54, df = 1, MS = 912.54) yielded an F-ratio of 166.09 ($p < .001$), demonstrating a statistically significant difference between the experimental and control groups. The effect size ($\eta^2 = .74$) indicates a substantial impact of emotional intelligence training on reducing alexithymia symptoms. The within-groups variance was smaller (SS = 318.33, df = 58, MS = 5.49), and the error term was also moderate (SS = 645.19, df = 59, MS = 10.93). These findings confirm the effectiveness of the intervention in improving emotional intelligence and reducing alexithymia among students in the experimental group.

4. Discussion and Conclusion

This study aimed to evaluate the effectiveness of emotional intelligence training in reducing alexithymia symptoms among students with learning disabilities. The findings indicate that emotional intelligence training significantly improved the experimental group's scores on alexithymia dimensions, including identifying and describing emotions and reducing externally oriented thinking, while the control group showed no significant changes. These results highlight the potential of emotional intelligence training as an effective intervention for addressing emotional deficits in this population.

The observed improvements in the experimental group align with findings from Jabbarzadeh Chaharborod et al. (2023), who demonstrated the efficacy of self-instruction training in enhancing cognitive control and executive functions among students with learning disabilities. Their study emphasized the role of structured interventions in improving core emotional and cognitive skills (Jabbarzadeh Chaharborod et al., 2023). Similarly, Pendar et al. (2022) found that emotional intelligence mediated the relationship between family communication patterns and adolescents' personal responsibility, suggesting that higher emotional intelligence fosters improved emotional and behavioral outcomes (Pendar et al., 2022). The current study supports these findings by showing that targeted emotional intelligence training can mitigate alexithymia symptoms, leading to better emotional awareness and regulation.

The positive impact of emotional intelligence training on alexithymia can also be explained through its focus on key components such as self-awareness and empathy. These components have been shown to improve social and emotional adaptability (Aghadavoud Maranani et al., 2022; Alipour et al., 2020). The present study corroborates

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Furthermore, D'Souza et al. (2023) demonstrated that emotional intelligence moderates the effects of emotional exhaustion and facilitates better performance and stress management (D'Souza et al., 2023). This aligns with the findings of the current study, where students in the experimental group exhibited improved stress regulation and emotional clarity, which are critical for overcoming the challenges associated with alexithymia.

The significant differences in posttest scores between the experimental and control groups underscore the role of emotional intelligence training as a transformative tool for improving emotional and social outcomes in students with learning disabilities. These results suggest that alexithymia symptoms, traditionally viewed as entrenched deficits, can be mitigated through targeted training programs. The inclusion of interactive activities such as role-playing and feedback in this study may have contributed to the observed improvements, as these methods promote active engagement and skill application.

Despite its contributions, the study has several limitations that warrant consideration. First, the sample size was relatively small and geographically restricted to students from a limited number of educational counseling centers. This may limit the generalizability of the findings to broader populations. Second, the study relied on self-report measures, which are subject to social desirability bias and may not fully capture the nuanced changes in emotional intelligence and alexithymia symptoms. Third, the study lacked long-term follow-up to assess the sustainability of the intervention's effects over time. These limitations highlight the need for caution in interpreting the results and suggest areas for further investigation.

Future studies should aim to address these limitations by employing larger, more diverse samples to enhance the generalizability of the findings. Incorporating objective measures, such as behavioral assessments or physiological markers of emotional regulation, could provide a more comprehensive evaluation of intervention outcomes. Longitudinal research is also essential to determine the lasting impact of emotional intelligence training and whether booster sessions are needed to maintain the observed benefits. Additionally, future research could explore the interaction between emotional intelligence training and other interventions, such as mindfulness or cognitive-behavioral therapy, to assess their combined effects on alexithymia and related emotional deficits.

The findings of this study offer valuable insights for educators, psychologists, and policymakers. Emotional intelligence training should be integrated into educational curricula, particularly for students with learning disabilities, as it has demonstrated effectiveness in reducing alexithymia symptoms and enhancing emotional awareness. Teachers and school counselors should be equipped with the necessary tools and training to deliver such programs effectively. Furthermore, incorporating emotional intelligence training into family-based interventions could amplify its benefits, as suggested by Pendar et al. (2022), by fostering a supportive home environment (Pendar et al., 2022). Finally, policies aimed at promoting mental health in schools should prioritize programs that address emotional intelligence and related skills to support students' overall well-being and academic success.

Authors' Contributions

Authors contributed equally to this article.

Declaration

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

Transparency Statement

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

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Declaration of Interest

The authors report no conflict of interest.

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Ethics Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

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