# Social-Emotional Training for Aggressive Adolescents: Impacts on Attachment Styles, Social Desirability, and Emotional Regulation

Mohammad Reza. Samadi Manaf[1] , Marjan. Rahmani[2] , Azam. Dibazar Sadeghi[3]*

[1] MA, Department of Educational Psychology, North Tehran Branch, Islamic Azad University, Tehran, Iran
[2] MA, Department of Personality Psychology, North Tehran Branch, Islamic Azad University, Tehran, Iran
[3] MA, Department of Clinical Psychology, Central Tehran Branch, Islamic Azad University, Tehran, Iran

**\* Corresponding author email address**: Behnaz.dibazar@yahoo.com

A r t i c l e   I n f o

A B S T R A C T

**Purpose:** This study aimed to examine the effectiveness of a structured social-emotional training program in improving attachment styles, reducing social desirability tendencies, and enhancing emotional regulation in aggressive adolescents.

**Methods and Materials:** A randomized controlled trial was conducted with 30 adolescents (aged 13–17) in Nigeria who exhibited elevated aggression levels. Participants were randomly assigned to either an experimental group (n = 15) that received an eight-session social-emotional training intervention or a control group (n = 15) that received no intervention. The sessions integrated elements of attachment theory, emotional self-regulation, and social skills training. Data were collected at pre-test, post-test, and five-month follow-up using standardized measures for secure, anxious, and avoidant attachment styles, social desirability, and emotional regulation. Data were analyzed using repeated measures ANOVA and Bonferroni post-hoc tests via SPSS-27.

**Findings:** Statistically significant time × group interaction effects were found for all dependent variables (p < .001). The experimental group showed significant increases in secure attachment (F = 31.46, $\eta^2$ = .529) and emotional regulation (F = 32.07, $\eta^2$ = .540), and significant decreases in anxious attachment (F = 27.88, $\eta^2$ = .510), avoidant attachment (F = 29.33, $\eta^2$ = .515), and social desirability (F = 24.99, $\eta^2$ = .473). Post-hoc analyses confirmed significant changes from pre-test to post-test and follow-up in the experimental group for all outcomes, with no significant differences between post-test and follow-up, indicating sustained effects.

**Conclusion:** The results demonstrate that targeted social-emotional training is an effective intervention for reducing maladaptive attachment patterns and social desirability behaviors while enhancing emotional regulation in aggressive adolescents. These findings support the integration of SEL-based programs into adolescent behavioral health services.

*Keywords:* *Social-emotional learning, adolescent aggression, attachment styles, emotional regulation, social desirability, intervention, Nigeria.*

## 1.    Introduction

Adolescence is a critical developmental period characterized by significant emotional, cognitive, and social transitions. During this stage, young people begin to consolidate their identity, form more complex interpersonal relationships, and develop the emotional and behavioral foundations that shape their adult personality. However, when adolescents face difficulties in managing their emotions or navigating social expectations, these challenges often manifest in maladaptive behaviors such as aggression, poor emotional regulation, insecure attachment styles, and heightened sensitivity to social desirability pressures. To address these developmental challenges, researchers and practitioners have increasingly turned to social-emotional training interventions that aim to cultivate emotional intelligence, resilience, and prosocial behaviors in adolescents (Collie, 2022; Liew & Spinrad, 2022; Min et al., 2024).

Social-emotional competencies refer to a broad set of skills that include emotional awareness, empathy, interpersonal communication, self-regulation, and responsible decision-making. These competencies not only support academic performance and behavioral adjustment but also form the foundation of secure attachment patterns and emotional well-being (Bahrami et al., 2024; Elias et al., 2025; Rebecca et al., 2024). Research indicates that when adolescents develop the capacity to understand their own emotions and those of others, they are better equipped to regulate emotional impulses, reduce aggression, and navigate social dynamics without resorting to manipulative or overly conforming behaviors for social approval (Morgan et al., 2024; Smith & Whitley, 2023).

Aggression in adolescence is often rooted in poor emotional regulation and insecure attachment patterns. Adolescents who experience difficulties in forming secure emotional bonds with caregivers may develop anxious or avoidant attachment styles, leading to heightened reactivity in stressful situations and a tendency to externalize distress through aggression or withdrawal (Collie Rebecca et al., 2024; Guo et al., 2023; Junker, 2023). Simultaneously, adolescents may adopt socially desirable behaviors as a defense mechanism to mask internal insecurity, particularly in social settings that emphasize conformity and peer approval (Speidel et al., 2023; Zhang et al., 2023). Addressing these interconnected issues requires a comprehensive intervention strategy that integrates attachment theory, emotional regulation frameworks, and social-emotional learning (SEL) principles.

Social-emotional learning has been shown to significantly improve adolescents' emotional self-regulation, reduce behavioral problems, and enhance secure interpersonal relationships (Huang et al., 2020; Huynh et al., 2021; Ozerova, 2023). Studies conducted across cultural and developmental contexts highlight the role of SEL programs in decreasing disruptive behaviors and fostering emotional resilience in youth (Cosso et al., 2022; Ghasemi et al., 2023; Pollak et al., 2023). For instance, Bahrami et al. (2024) demonstrated that online SEL training based on the CASEL model significantly improved self-awareness and social responsibility in Iranian adolescents (Bahrami et al., 2024), while Marion Cornelia van de et al. (2023) confirmed that SEL competence is a strong predictor of psychosocial health outcomes across vocational education contexts (Marion Cornelia van de et al., 2023).

Interventions targeting emotional regulation have shown substantial promise in reducing adolescent aggression. Emotional regulation involves strategies such as cognitive reappraisal and impulse control, which are essential for modulating affective responses in high-stress scenarios. According to Liew and Spinrad (2022), emotional self-regulation is foundational to whole-child school success, linking academic motivation to emotional competence (Liew & Spinrad, 2022). Similarly, McLeod and Boyes (2021) reported that mindful breathing and emotion awareness training led to reductions in test anxiety among high school students, further supporting the role of self-regulation in adaptive functioning (McLeod & Boyes, 2021).

From an attachment theory perspective, secure attachment is essential for emotional balance and social trust. Insecure attachment styles—particularly anxious and avoidant patterns—are consistently associated with greater emotional dysregulation, peer rejection, and behavioral maladjustment (Khawaja et al., 2022; Riemersma et al., 2021; Rihtman et al., 2022). Adolescents with insecure attachments often misinterpret social cues, feel chronically misunderstood, and react with hostility or excessive conformity, resulting in a spectrum of maladaptive behaviors (Mehrdadfar et al., 2023; Pourtaghi et al., 2022). These tendencies highlight the need for interventions that promote emotional safety, interpersonal trust, and secure internal working models of relationships.

In recent years, the use of school-based SEL programs has expanded considerably, with evidence indicating that both universal and targeted interventions can improve social

competence and decrease problem behaviors (Olson et al., 2021; ÖzdoĞAn, 2021). For example, Esen Aygün and Şahin Taşkın (2022) found that SEL-based curricula significantly improved classroom climate and academic outcomes in Turkish middle schools (Esen Aygün & Şahin Taşkın, 2022). Moreover, P et al. (2022) reported improved coping and adjustment skills among students with learning disabilities following SEL interventions, emphasizing the adaptability of such programs to diverse populations (P et al., 2022).

Aggressive adolescents represent a particularly vulnerable subgroup in need of tailored SEL interventions. Such adolescents often struggle with emotional reactivity, interpersonal misunderstandings, and compensatory behaviors like social desirability, which may conceal internal conflict rather than resolve it. According to Qadiri and Shearbaf (2018), targeted social-emotional training improved resilience and adaptability in high-risk male students living in boarding schools (Qadiri & Aghamohamedian Shearbaf, 2018). Similarly, Mokarram et al. (2021) found that social-emotional skill training enhanced social competence in high school students from single-parent households, suggesting its relevance for populations facing relational instability (Mokarram et al., 2021).

Emerging research also supports the effectiveness of interventions that combine emotional awareness training with secure attachment development. For instance, Mehrdadfar et al. (2023) highlighted the efficacy of a unified protocol for enhancing both parent–child relationships and child emotion regulation in children with cochlear implants (Mehrdadfar et al., 2023). These results reinforce the importance of addressing emotional processing and interpersonal connection simultaneously, particularly in adolescents with behavioral issues.

This study builds upon the existing literature by implementing an evidence-based, eight-session social-emotional training intervention for adolescents identified as aggressive, with the goal of improving their attachment style, reducing their dependence on social desirability strategies, and enhancing their emotional regulation capacities.

## 2. Methods and Materials

### 2.1. Study Design and Participants

This study employed a randomized controlled trial (RCT) design to evaluate the effectiveness of a social-emotional

training program on attachment styles, social desirability, and emotional regulation in aggressive adolescents. A total of 30 adolescents (aged 13–17 years) from secondary schools in Lagos, Nigeria, were selected using purposive sampling based on elevated scores in aggression screening tools administered by school counselors. Participants were randomly assigned to either the experimental group (n = 15), who received the intervention, or the control group (n = 15), who received no treatment during the study period. The intervention lasted for eight weeks, and a follow-up assessment was conducted five months after the post-test to assess long-term effects. Inclusion criteria included being enrolled as a student, having parental consent, and scoring above the clinical cutoff on aggression screening. Exclusion criteria included ongoing psychiatric treatment or developmental disorders.

### 2.2. Measures

To assess attachment styles, the Collins and Read Adult Attachment Scale (AAS) developed by Collins and Read (1990) was used. This self-report instrument comprises 18 items designed to measure individual differences in adult attachment patterns across three dimensions: Close (comfort with closeness), Depend (comfort with depending on others), and Anxiety (fear of abandonment and rejection). Respondents rate items on a 5-point Likert scale ranging from 1 (not at all characteristic of me) to 5 (very characteristic of me). Higher scores in each subscale reflect stronger presence of the corresponding attachment feature. This tool has demonstrated strong psychometric properties in international studies, and its Persian version has also shown acceptable validity and reliability in Iranian populations, including adolescent and young adult samples.

Social desirability was measured using the Marlowe-Crowne Social Desirability Scale (MC-SDS), originally developed by Crowne and Marlowe (1960). The full version consists of 33 true-false items that assess the tendency of respondents to answer in socially acceptable ways rather than truthfully, thereby controlling for response bias. Several abbreviated versions also exist, such as the 13-item short form, which has been widely used in psychological research. For this study, the standard 33-item version was employed. Scores are calculated by summing the number of socially desirable responses, with higher scores indicating greater social desirability bias. The scale's reliability and validity have been repeatedly confirmed in various cultural contexts,

including in Iran, where it has been adapted and validated for use with adolescent samples.

The Emotion Regulation Questionnaire (ERQ) developed by Gross and John (2003) was utilized to assess participants' emotional regulation strategies. This 10-item self-report scale measures two key dimensions of emotion regulation: Cognitive Reappraisal (6 items) and Expressive Suppression (4 items). Each item is rated on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree), with higher scores indicating more frequent use of the respective strategy. The ERQ is recognized for its strong internal consistency and factorial validity across diverse populations. The Persian version has been psychometrically validated in several Iranian studies, with confirmed reliability coefficients and construct validity in adolescent and young adult samples.

## 2.3. Intervention

The intervention consisted of eight structured sessions, each lasting between 75 and 90 minutes, designed to enhance social-emotional functioning among aggressive adolescents. The protocol integrated components of attachment-based therapy, cognitive-behavioral techniques, and emotional regulation strategies. Sessions were conducted weekly in small groups of 8–10 participants in a school setting. The primary objectives included strengthening secure attachment patterns, increasing awareness of emotional processes, reducing reliance on socially desirable yet inauthentic responses, and fostering adaptive emotional regulation strategies such as cognitive reappraisal and assertive communication.

Session 1: Building Trust and Group Cohesion

The first session focused on establishing rapport, setting ground rules, and building a sense of group safety and cohesion. Participants were introduced to the goals and structure of the program, encouraged to express their expectations, and participated in ice-breaking activities to foster trust. The importance of confidentiality, mutual respect, and active participation was emphasized. This session aimed to provide a secure emotional climate that is foundational for the development of therapeutic alliance and group engagement.

Session 2: Understanding Emotions and Self-Awareness

In the second session, participants explored the nature of emotions, including how they are experienced in the body and expressed behaviorally. Facilitators guided adolescents through identifying basic and complex emotions and discussed the functions and consequences of emotional expression and suppression. Self-awareness exercises such as emotion diaries and role-playing helped participants develop insight into their emotional responses, with a focus on recognizing triggers related to aggressive behavior.

Session 3: Attachment and Early Relationship Patterns

This session introduced the concept of attachment theory, helping participants understand how early caregiver relationships shape emotional responses and interpersonal behavior. Through guided reflection and group discussion, adolescents explored their own attachment patterns (secure, anxious, avoidant) and how these influence their current interactions. Participants were encouraged to identify past relational experiences that might contribute to their current social difficulties and aggressive reactions.

Session 4: Emotional Regulation Strategies I – Cognitive Reappraisal

In session four, the focus shifted to emotional regulation skills, specifically cognitive reappraisal. The session began with psychoeducation on the impact of thoughts on emotions and behaviors. Participants were taught how to reframe negative interpretations of interpersonal events and replace them with more adaptive, realistic thoughts. Interactive exercises, such as "thought logs" and "reframing games," were used to practice the skill in real-life scenarios, especially in peer conflict situations.

Session 5: Emotional Regulation Strategies II – Expressive Control

This session concentrated on managing the outward expression of strong emotions such as anger, shame, and jealousy. Adolescents learned techniques such as deep breathing, grounding strategies, and delay tactics ("stop-think-act") to reduce impulsive aggression. Group members practiced these techniques through simulated peer conflict situations. Emphasis was placed on balancing emotional expression with social appropriateness and authenticity to reduce socially desirable but dishonest behavior.

Session 6: Empathy and Perspective-Taking

The sixth session aimed to strengthen interpersonal empathy and reduce hostile attribution bias. Through structured activities like role reversals, storytelling, and group sharing, adolescents were guided to understand others' emotional experiences and intentions. This session addressed the development of perspective-taking skills and challenged egocentric thinking, which often underlies aggressive reactions. Participants discussed ways to express empathy in social interactions and how it can contribute to healthier peer relationships.

Session 7: Assertiveness and Interpersonal Communication

The focus of the seventh session was on enhancing assertive communication and reducing passive, aggressive, or manipulative behavior styles. Adolescents learned the difference between assertiveness and aggression and practiced "I-statements," active listening, and respectful disagreement. Group role-plays and feedback encouraged the practice of assertive behaviors in emotionally charged situations. This session aimed to reinforce authentic self-expression and discourage socially desirable compliance that leads to resentment or emotional suppression.

Session 8: Integration and Relapse Prevention

The final session provided a review and integration of key skills learned throughout the intervention. Participants reflected on their personal progress, identified strategies they found most helpful, and developed individualized action plans for applying these skills in daily life. Group members shared commitments for future behavior and received positive reinforcement from peers. Relapse prevention techniques, such as self-monitoring and support-seeking, were introduced to sustain behavioral gains over time.

### 2.4. Data Analysis

Data were analyzed using IBM SPSS Statistics version 27. Descriptive statistics (means and standard deviations) were used to summarize the data. To test the effectiveness of the intervention over time, a repeated measures analysis of variance (ANOVA) was conducted with time (pre-test, post-test, and follow-up) as the within-subject factor and group (experimental vs. control) as the between-subject factor. Where significant main effects or interactions were found, the Bonferroni post-hoc test was applied to control for Type I error in pairwise comparisons. Assumptions of normality, sphericity, and homogeneity of variance were checked prior to analysis and met.

### 3. Findings and Results

The sample included 30 adolescents (16 males and 14 females) with a mean age of 15.1 years (SD = 1.21). In terms of gender distribution, 53.3% of participants (n = 16) were male and 46.7% (n = 14) were female. Regarding school level, 36.7% (n = 11) were in Junior Secondary School 3, while 63.3% (n = 19) were in Senior Secondary School 1. Among participants, 60% (n = 18) came from two-parent households, while 40% (n = 12) lived with a single parent or guardian. The distribution of participants across socioeconomic levels, based on parental occupation and education, showed 40% (n = 12) from low-income, 43.3% (n = 13) from middle-income, and 16.7% (n = 5) from high-income households.

**Table 1**

*Means and Standard Deviations for Attachment Style, Social Desirability, and Emotional Regulation by Group and Time*

| Variable | Group | Pre-Test (M ± SD) | Post-Test (M ± SD) | Follow-Up (M ± SD) |
|---|---|---|---|---|
| Secure Attachment | Experimental | 2.33 ± 0.31 | 3.41 ± 0.28 | 3.36 ± 0.30 |
| | Control | 2.35 ± 0.33 | 2.38 ± 0.34 | 2.40 ± 0.35 |
| Anxious Attachment | Experimental | 3.52 ± 0.38 | 2.61 ± 0.31 | 2.67 ± 0.34 |
| | Control | 3.49 ± 0.41 | 3.44 ± 0.39 | 3.42 ± 0.40 |
| Avoidant Attachment | Experimental | 3.46 ± 0.35 | 2.58 ± 0.33 | 2.63 ± 0.36 |
| | Control | 3.51 ± 0.34 | 3.47 ± 0.36 | 3.45 ± 0.37 |
| Social Desirability | Experimental | 17.26 ± 2.21 | 14.04 ± 1.89 | 14.23 ± 2.02 |
| | Control | 17.39 ± 2.17 | 17.18 ± 2.15 | 17.11 ± 2.08 |
| Emotional Regulation | Experimental | 3.17 ± 0.43 | 4.19 ± 0.39 | 4.14 ± 0.41 |
| | Control | 3.11 ± 0.41 | 3.13 ± 0.42 | 3.10 ± 0.44 |

Descriptive results show notable post-test and follow-up improvements for the experimental group in Secure Attachment, Emotional Regulation, and decreases in Anxious Attachment, Avoidant Attachment, and Social Desirability. The control group displayed minimal variation across all variables. For example, Secure Attachment in the experimental group increased from M = 2.33 to M = 3.41, while Anxious Attachment decreased from M = 3.52 to M = 2.61. Emotional Regulation scores increased from M = 3.17 to M = 4.19 in the same group, reflecting a strong positive response to the intervention.

Prior to conducting the repeated measures ANOVA, assumptions were thoroughly evaluated. The Shapiro–Wilk test confirmed the normality of the dependent variables at each time point for both groups (p-values ranged from .129 to .486). Levene's test showed no significant differences in

error variances between groups at pre-test (F = 1.47, p = .238), post-test (F = 0.83, p = .372), or follow-up (F = 0.94, p = .340), indicating homogeneity of variance. Mauchly's test of sphericity was also non-significant (W = 0.931, $\chi^2(2)$ = 2.11, p = .348), suggesting that the assumption of sphericity was met for the within-subject factor. These results confirmed that the data satisfied the statistical assumptions required for repeated measures ANOVA.

**Table 2**

*Repeated Measures ANOVA Results for Each Dependent Variable*

| Variable | Source | SS | df | MS | F | p | η² |
|---|---|---|---|---|---|---|---|
| Secure Attachment | Time | 8.23 | 2 | 4.11 | 32.72 | <.001 | .542 |
| | Time × Group | 7.89 | 2 | 3.95 | 31.46 | <.001 | .529 |
| Anxious Attachment | Time | 6.74 | 2 | 3.37 | 28.91 | <.001 | .518 |
| | Time × Group | 6.59 | 2 | 3.30 | 27.88 | <.001 | .510 |
| Avoidant Attachment | Time | 7.12 | 2 | 3.56 | 30.67 | <.001 | .527 |
| | Time × Group | 6.95 | 2 | 3.47 | 29.33 | <.001 | .515 |
| Social Desirability | Time | 28.21 | 2 | 14.10 | 25.84 | <.001 | .482 |
| | Time × Group | 27.34 | 2 | 13.67 | 24.99 | <.001 | .473 |
| Emotional Regulation | Time | 9.46 | 2 | 4.73 | 33.51 | <.001 | .551 |
| | Time × Group | 9.13 | 2 | 4.57 | 32.07 | <.001 | .540 |

The ANOVA results indicate significant time effects and time × group interactions across all dependent variables (all p < .001). The largest effect size was for Emotional Regulation (η² = .551), followed closely by Secure Attachment (η² = .542). Significant interaction effects also appeared in Anxious Attachment (F = 27.88), Avoidant Attachment (F = 29.33), and Social Desirability (F = 24.99), indicating the intervention had a meaningful differential effect over time compared to the control group.

**Table 3**

*Bonferroni Post-Hoc Comparisons for Time Points Within the Experimental Group*

| Variable | Comparison | Mean Difference | p |
|---|---|---|---|
| Secure Attachment | Post vs. Pre | 1.08 | <.001 |
| | Follow-Up vs. Pre | 1.03 | <.001 |
| | Follow-Up vs. Post | -0.05 | .632 |
| Anxious Attachment | Post vs. Pre | -0.91 | <.001 |
| | Follow-Up vs. Pre | -0.85 | <.001 |
| | Follow-Up vs. Post | 0.06 | .684 |
| Avoidant Attachment | Post vs. Pre | -0.88 | <.001 |
| | Follow-Up vs. Pre | -0.83 | <.001 |
| | Follow-Up vs. Post | 0.05 | .701 |
| Social Desirability | Post vs. Pre | -3.22 | <.001 |
| | Follow-Up vs. Pre | -3.03 | <.001 |
| | Follow-Up vs. Post | 0.19 | .773 |
| Emotional Regulation | Post vs. Pre | 1.02 | <.001 |
| | Follow-Up vs. Pre | 0.97 | <.001 |
| | Follow-Up vs. Post | -0.05 | .715 |

Bonferroni-adjusted comparisons showed statistically significant improvements between pre-test and both post-test and follow-up scores for all variables in the experimental group (p < .001). No significant changes occurred between post-test and follow-up scores, indicating the stability of intervention effects over five months. The greatest change was observed in Emotional Regulation (Δ = 1.02), followed by Secure Attachment and Social Desirability, suggesting these areas benefited most directly and enduringly from the training program.

## 4.    Discussion and Conclusion

The aim of this study was to evaluate the effectiveness of a structured social-emotional training intervention in

improving attachment styles, reducing social desirability tendencies, and enhancing emotional regulation among aggressive adolescents. The findings revealed that participants in the experimental group showed statistically significant improvements across all three dependent variables from pre-test to post-test, and that these improvements were sustained at the five-month follow-up. In contrast, the control group demonstrated no meaningful change across the same time points, highlighting the specificity and efficacy of the intervention.

In terms of attachment styles, participants in the experimental group exhibited significant shifts from insecure attachment (anxious and avoidant) toward more secure patterns. These results align with previous findings indicating that social-emotional interventions can support the development of secure attachment in adolescents, particularly by fostering trust, emotional safety, and perspective-taking skills (Elias et al., 2025; Ghasemi et al., 2023). Studies by Huynh et al. (2021) and Marion Cornelia van de et al. (2023) suggest that when youth are given opportunities to explore emotions within structured and supportive environments, they are more likely to reconstruct internal working models of relationships in healthier ways (Huynh et al., 2021; Marion Cornelia van de et al., 2023). The improvement in attachment may also be partially explained by enhanced emotion recognition and empathy, which were integral components of our intervention—a conclusion supported by research on the role of empathy in attachment security (Hakimi Firoumani et al., 2021).

Regarding social desirability, results indicated a notable reduction in socially desirable response patterns among adolescents who received the intervention. This suggests that the training promoted authenticity and diminished the adolescents' need to conform to perceived social expectations to gain approval. The reduction in social desirability may reflect a strengthened sense of self-worth and emotional confidence, as participants learned to value genuine emotional expression over superficial social compliance. These findings resonate with the work of Speidel et al. (2023), who demonstrated that SEL programs targeting caregiver and educator practices can reduce conformity-based social responses in youth (Speidel et al., 2023). Similarly, Guo et al. (2023) found that enhanced social-emotional skills are correlated with reduced reliance on impression management strategies among school-aged children (Guo et al., 2023). Importantly, reduced social desirability tendencies suggest that participants developed more adaptive self-concepts, thereby enhancing their overall psychosocial adjustment (McLeod & Boyes, 2021; Rebecca et al., 2024).

The most robust findings were observed in the domain of emotional regulation. Participants in the experimental group significantly improved their use of adaptive emotional regulation strategies such as cognitive reappraisal and expressive control. These gains were sustained during the follow-up period, indicating the durability of training effects. Emotional regulation is foundational to adolescent adjustment, and deficits in this area are commonly linked to aggression, impulsivity, and peer conflict (Collie, 2022; Liew & Spinrad, 2022). Our results align closely with previous work by Min et al. (2024), who reported that short-term SEL interventions based on the SEE curriculum led to measurable gains in emotional regulation among elementary students (Min et al., 2024). Similarly, Moreno-Gomez and Cejudo (2019) found that mindfulness-based SEL programs enhanced emotional maturity and reduced behavioral dysregulation in young children (Moreno-Gomez & Cejudo, 2019). This reinforces the effectiveness of our multimodal approach, which integrated mindfulness, empathy training, and emotional labeling.

The observed outcomes are further supported by research indicating that improvements in emotion regulation can directly contribute to more secure attachments and less reliance on external social approval (ÖZdoĞAn, 2021; Zhang et al., 2023). Adolescents who can regulate their emotions effectively are more likely to navigate peer and authority relationships without resorting to aggression or withdrawal. The overlap between improved emotion regulation and reduced social desirability also highlights the interconnected nature of these constructs. According to Pollak et al. (2023), effective SEL programs reduce maladaptive coping strategies such as avoidance and social masking, while promoting emotional authenticity and interpersonal sensitivity (Pollak et al., 2023).

These findings gain further contextual support from cross-cultural studies. For instance, Bahrami et al. (2024) showed that online SEL training improved self-awareness and social functioning among Iranian adolescents, even in the absence of face-to-face interaction (Bahrami et al., 2024). Similarly, Cosso et al. (2022) demonstrated the impact of a social-emotional development program in Colombia on behavioral and emotional outcomes in young children, underlining the global relevance of SEL frameworks (Cosso et al., 2022). Our findings in a Nigerian adolescent population contribute to this growing body of

evidence and suggest that well-structured SEL interventions can be culturally adaptable and developmentally effective.

The current study's results also align with neurodevelopmental research emphasizing the importance of emotional perception in managing behavioral difficulties. As reported by Löytömäki et al. (2022; 2023), difficulties in perceiving and interpreting emotional cues are common in youth with neurodevelopmental challenges and contribute to poor social-emotional outcomes (Löytömäki et al., 2023). The intervention in this study included emotion identification and perspective-taking exercises, which likely contributed to improvements in emotional regulation and attachment. In turn, the reduction in social desirability may have reflected increased emotional awareness and confidence in interpersonal contexts.

Furthermore, previous studies have emphasized the protective role of father involvement, co-parenting, and family dynamics in shaping adolescents' social-emotional development (Khawaja et al., 2022; Pourtaghi et al., 2022). Although family context was not a primary focus in this study, the group-based intervention may have functioned as a compensatory relational environment, allowing participants to internalize prosocial norms and emotional support. Similarly, the findings reflect the importance of autonomy-supportive climates as identified by Collie Rebecca et al. (2024), who showed that students' perceived autonomy correlates with emotional competence and well-being (Collie Rebecca et al., 2024).

Collectively, the results of this study provide strong empirical support for implementing social-emotional training as a targeted intervention for aggressive adolescents. The combination of decreased attachment insecurity, lower social desirability bias, and improved emotion regulation suggests a multidimensional transformation in how adolescents experience and respond to emotional stimuli and social challenges. By addressing core psychological processes simultaneously, this intervention has the potential to promote long-lasting behavioral and emotional change.

Despite the promising results, this study is subject to several limitations. First, the sample size was relatively small (n = 30), which limits the generalizability of the findings. While the randomized controlled design enhances internal validity, future studies with larger and more diverse samples would strengthen external validity. Second, the reliance on self-report measures may introduce social desirability bias, particularly in evaluating social desirability itself. Although efforts were made to create a psychologically safe environment for honest responding,

observational or third-party assessments would offer valuable supplementary perspectives. Third, while the five-month follow-up period allowed for examination of sustained outcomes, longer-term follow-ups would be necessary to determine the stability of the training effects into later adolescence.

Future research should explore the scalability and adaptability of this intervention in other cultural, socioeconomic, and educational contexts. It would also be valuable to examine the intervention's effects across gender and age groups to identify potential moderators of efficacy. Incorporating neurophysiological or behavioral data (e.g., cortisol levels, peer nomination, or teacher ratings) could enhance the robustness of outcome measures. Additionally, future studies should explore how family dynamics, such as parental attachment styles or emotional climate at home, interact with the outcomes of social-emotional training programs. Comparative studies contrasting online versus in-person delivery formats could offer insights into optimizing accessibility and cost-effectiveness.

Educators, school psychologists, and youth counselors should consider integrating structured social-emotional training modules into middle and high school curricula, particularly for students exhibiting signs of emotional dysregulation or relational aggression. The group-based format offers a safe space for adolescents to experiment with new interpersonal behaviors and receive constructive feedback. Implementation should prioritize continuity, facilitator training, and cultural sensitivity to maximize student engagement and impact. When used alongside academic instruction, SEL programs can cultivate not only emotional balance but also the social maturity required for long-term success in school and life.

## Authors' Contributions

All authors significantly contributed to this study.

## Declaration

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

## Transparency Statement

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

## Acknowledgments

## References

Bahrami, F., Ashayeri, H., Rahmanifar, S., & Jadidi, H. (2024). The effectiveness of online social-emotional learning based on the CASEL model on self-awareness, social awareness, and social management. *Journal of Applied Psychology*, *1*(69), 84-106. https://ensani.ir/fa/article/567676/

Collie Rebecca, J., Martin, A. J. A. U. R. L., & Caldecott-Davis, K. (2024). Students' perceived social-emotional competence: The role of autonomy-support and links with well-being, social-emotional skills, and behaviors. *Learning and Instruction*. https://doi.org/10.1016/j.learninstruc.2023.101866

Collie, R. J. (2022). Social-Emotional Need Satisfaction, Prosocial Motivation, and Students' Positive Behavioral and Well-Being Outcomes. *Social Psychology of Education*, *25*(2-3), 399-424. https://doi.org/10.1007/s11218-022-09691-w

Cosso, J., de Vivo, A. R. R., Hein, S., Silvera, L. P. R., Ramirez-Varela, L., & Ponguta, L. A. (2022). Impact of a social-emotional skills-building program (Pisotón) on early development of children in colombia: A pilot effectiveness study. *111*, 101898. https://doi.org/10.1016/j.ijer.2021.101898

Elias, M. J., Marsili, F., Fullmer, L., Morganti, A., & Bruno, E. (2025). The social-emotional competencies of gifted children must be intentionally developed, ideally in inclusive education contexts. *Gifted Education International*, *41*(1), 57-75.

Esen Aygün, H., & Şahin Taşkın, C. (2022). The Effect of Social-Emotional Learning Program on Social-Emotional Skills, Academic Achievement and Classroom Climate. *Psycho-Educational Research Reviews*, *11*(1), 59-76. https://doi.org/10.52963/PERR_Biruni_V11.N1.05

Ghasemi, M., Seif, D., & Pirzadi, H. (2023). Predicting Depression Based on Dimensions of Social-Emotional Competence Among Gifted Students. *Research and Development in Medical Education*, *12*, 29. https://doi.org/10.34172/rdme.2023.33141

Guo, J., Tang, X., Marsh, H. W., Parker, P., Basarkod, G., Sahdra, B., & Salmela-Aro, K. (2023). The roles of social-emotional skills in students' academic and life success: A multi-informant and multi-cohort perspective. *Journal of personality and social psychology*, *124*(5), 1079. https://doi.org/10.1037/pspp0000426

Hakimi Firoumani, M., Hamidi, F., & Akbari Marghan, H. (2021). The Effectiveness of Educational Games Based on Social-Emotional Learning on Empathy and Social Competency in Preschool Children. *Social Psychology*, *63*(10), 1-15. https://www.magiran.com/paper/2462668/the-effectiveness-of-educational-games-based-on-social-emotional-learning-on-empathy-and-social-competence-in-preschool-children?lang=en

Huang, C. C., Lu, S., Ríos, J. A., Chen, Y., Stringham, M., & Cheung, S. (2020). Associations Between Mindfulness, Executive Function, Social-Emotional Skills, and Quality of Life Among Hispanic Children. *International journal of environmental research and public health*, *17*(21), 7796. https://doi.org/10.3390/ijerph17217796

Huynh, V.-S., Giang, T.-V., Nguyen, T.-T., & Dinh, D.-H. (2021). Exploring the Challenges of Social-Emotional Learning Integration in Secondary Schools: A Phenomenological Research in Vietnam. *Psychology research and behavior management*, *Volume 14*, 621-635. https://doi.org/10.2147/prbm.s300748

Junker, R. (2023). On the Relationship Between Teacher Stress, Student Age, and Social-Emotional Competence. *Obm Integrative and Complementary Medicine*, *08*(01), 1-23. https://doi.org/10.21926/obm.icm.2301011

Khawaja, M., Malik, T. A., & Masood-ul-Hassan, S. (2022). Role of Father Involvement, Co-Parenting Relationship Quality, and Father's Work Hours in Social-Emotional Behavioral Outcomes of Children in the Pakistani Cultural Context. https://doi.org/10.21203/rs.3.rs-1902643/v1

Liew, J., & Spinrad, T. L. (2022). *Emotional self-regulation processes as foundation for social-emotional competencies and whole-child school success*. Routledge. https://doi.org/10.4324/9781138609877-REE108-1

Löytömäki, J., Laakso, M. L., & Huttunen, K. (2023). Social-Emotional and Behavioural Difficulties in Children with Neurodevelopmental Disorders: Emotion Perception in Daily Life and in a Formal Assessment Context. *Journal of Autism and Developmental Disorders*, *53*(12), 4744-4758. https://doi.org/10.1007/s10803-022-05768-9

Marion Cornelia van de, S., Kocken, P., Diekstra, R. F. W., Reis, R., Gravesteijn, C., & Fekkes, M. (2023). What Are the Most Essential Social-Emotional Skills?: Relationships Between Adolescents' Social-Emotional Skills and Psychosocial Health Variables: An Explorative Cross-Sectional Study of a Sample of Students in Preparatory Vocational Secondary Education. *Frontiers in Education*, *8*. https://doi.org/10.3389/feduc.2023.1225103

McLeod, C., & Boyes, M. (2021). The Effectiveness of Social-Emotional Learning Strategies and Mindful Breathing with Biofeedback on the Reduction of Adolescent Test Anxiety. *Canadian Journal of Education/Revue Canadienne De l'éducation*, *44*(3), 815-847. https://doi.org/10.53967/cje-rce.v44i3.4869

Mehrdadfar, M., Ghasemzadeh, S., Ghobari-Bonab, B., Hasanzadeh, S., & Vakili, S. (2023). Effectiveness of unified protocols for online transdiagnostic treatment on social-emotional skills and parent-child interaction in school-aged children with cochlear implants. *International Journal of Pediatric Otorhinolaryngology*, *167*, 111490. https://doi.org/10.1016/j.ijporl.2023.111490

Min, H. J., Park, S. H., Lee, S. H., Lee, B. H., Kang, M., & et al. (2024). Building Resilience and Social-Emotional Competencies in Elementary School Students through a Short-Term Intervention Program Based on the SEE Learning Curriculum. *Behavioral Sciences*, *14*(6), 458. https://doi.org/10.3390/bs14060458

Mokarram, F., Kazemi, R., & Taklavi, S. (2021). Comparing the Efficacy of Training Social-Emotional Skills and Training Social Problem Solving on Social Competence in Female Single Parent, Second Period High School Students. *The Journal of Psychological Science*. https://doi.org/10.52547/jps.20.105.1651

Moreno-Gomez, A. J., & Cejudo, J. (2019). Effectiveness of a Mindfulness-Based Social-Emotional Learning Program on Psychosocial Adjustment and Neuropsychological Maturity in Kindergarten Children. *Mindfulness*, *10*(1), 111-121. https://doi.org/10.1007/s12671-018-0956-6

Morgan, T. L., Cieminski, A. B., Marmo, S., & Morgan, K. K. (2024). The Effect of the Advocacy Social-Emotional Learning Program on Emotional Competence. *Ijce*, *2*(1), 29-38. https://doi.org/10.47852/bonviewijce42022852

Olson, S., Lindsey, B. C., & Tan, K. (2021). Social-Emotional Learning in a Multitiered System. 126-132. https://doi.org/10.1093/oso/9780197585160.003.0013

ÖZdoĞAn, A. Ç. (2021). Subjective Well-Being and Social-Emotional Loneliness of University Students: The Mediating Effect of the Meaning of Life. *Journal of Pedagogical Research*, *5*(1), 18-30. https://doi.org/10.33902/jpr.2021066865

Ozerova, E. (2023). Social-Emotional Skills, Behavioural Problems and Learning Outcomes of Elementary School Children. https://doi.org/10.22364/atee.2022.59

P, D. D., Jeyavel, S., Subhasree, G., & Jojo, C. E. (2022). Proactive Coping and Social-Emotional Adjustment Among Students With and Without Learning Disabilities in Kerala, India. *Frontiers in psychology*, *13*. https://doi.org/10.3389/fpsyg.2022.949708

Pollak, I., Stiehl, K. A. M., Birchwood, J., Schrank, B., Zechner, K. A., Wiesner, C., & Woodcock, K. (2023). Promoting Peer Connectedness Through Social-Emotional Learning: Evaluating the Intervention Effect Mechanisms and Implementation Factors of a Social-Emotional Learning Programme for 9 to 12-Year-Olds. *Journal of youth and adolescence*, *53*(1), 89-116. https://doi.org/10.1007/s10964-023-01871-x

Pourtaghi, V., Sheikholeslami, R., Khormaei, F., & Hossein Chari, M. (2022). Explaining Children's Social-Emotional Development: The Role of Family Financial Stress, Father Involvement, and Mother's Child Attachment. *Journal of Developmental Psychology*, *19*(74), 12-29. https://ensani.ir/fa/article/544649/

Qadiri, F., & Aghamohamedian Shearbaf, H. (2018). The effectiveness of social-emotional skills training on the resilience and adaptation of male adolescents who are students at boarding schools. *Journal of Education and Learning Studies*, *11*(2), 71-87. https://www.sid.ir/paper/382961/en

Rebecca, J. C., Martin, A. J., Renshaw, L., & Caldecott-Davis, K. (2024). Students' perceived social-emotional competence: The role of autonomy-support and links with well-being, social-emotional skills, and behaviors. *Learning and Instruction*. https://doi.org/10.1016/j.learninstruc.2023.101866

Riemersma, I., Santvoort, F. v., Doesum, K. V., Hosman, C. M. H., Janssens, J., Weeland, M. M., & Otten, R. (2021). Social-Emotional Problems of Children With Mild Intellectual Disabilities Having Parents With Mental Health Concerns: A Quantitative Comparison Study. *Journal of Intellectual Disabilities*, *26*(4), 811-823. https://doi.org/10.1177/17446295211030092

Rihtman, T., Gadsby, N., & Porter, J. (2022). Supporting the Social-Emotional Needs of Children and Young People With Developmental Coordination Disorder: Occupational Therapists' Perceptions of Practice in England. *British Journal of Occupational Therapy*, *85*(9), 653-661. https://doi.org/10.1177/03080226211054383

Smith, J. D., & Whitley, J. (2023). Teaching with Acceptance and Commitment: Building teachers' social-emotional competencies for teaching effectiveness. *The Educational Forum*, *87*(1), 90-104. https://doi.org/10.1080/00131725.2022.2053620

Speidel, R., Wong, T. K. Y., Al-Janaideh, R., Colasante, T., & Malti, T. (2023). Nurturing Child Social-Emotional Development: Evaluation of a Pre-Post and 2-Month Follow-Up Uncontrolled Pilot Training for Caregivers and Educators. *Pilot and Feasibility Studies*, *9*(1). https://doi.org/10.1186/s40814-023-01357-4

Zhang, J., Dong, C., Jiang, Y., Zhang, Q., Li, H., & Li, Y. (2023). Parental Phubbing and child social-emotional adjustment: A meta-analysis of studies conducted in China. *Psychology research and behavior management*, 4267-4285. https://doi.org/10.2147/PRBM.S417718