Comparison of the Effectiveness of Training in Cognitive Emotion Regulation Strategies and Self-Regulated Learning Strategies on the Social Adaptation of Elementary Students with Specific Learning Disorder in Reading

Fatemeh. Tabari Far[1] , Hosseinali. Ghanadzadegan[2*] , Shaban. Heydari[3]

[1] PhD Student, Department of Educational Psychology, Sari Branch, Islamic Azad University, Sari, Iran
[2] Assistant Professor, Department of General Psychology, Sari Branch, Islamic Azad University, Sari, Iran
[3] Assistant Professor, Department of Educational Psychology, Sari Branch, Islamic Azad University, Sari, Iran

* Corresponding author email address: ghanad.hamid@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 compare the effectiveness of cognitive emotion regulation training and self-regulated learning strategies in improving the social adaptation of elementary school students diagnosed with Specific Learning Disorder in Reading (SLD-R).

Methodology: The study employed a quasi-experimental design with a pre-test, post-test, and follow-up structure, including a control group. A total of 60 elementary school students (aged 10–12) diagnosed with SLD-R in Sari were selected using a convenience sampling method and were randomly assigned to three groups: cognitive emotion regulation training, self-regulated learning strategy training, and a control group (20 students per group). The Elementary School Children's Adaptation Questionnaire (Dokhanchi, 1998) was used to measure social adaptation at three time points. The experimental groups received eight sessions of structured training based on Gross's (2002) emotion regulation model and Pintrich's (1999) self-regulated learning model, while the control group received no intervention. Data were analyzed using repeated measures ANOVA and Bonferroni post hoc tests in SPSS.

Findings: Results indicated that both intervention groups experienced significant improvements in social adaptation compared to the control group (p < 0.0001). The cognitive emotion regulation group showed the highest improvement, with significant differences between pre-test, post-test, and follow-up scores. The self-regulated learning group also exhibited improvements, though their post-test and follow-up scores were lower than those of the cognitive emotion regulation group.

Conclusion: These findings highlight the importance of incorporating emotion regulation and self-regulated learning interventions into educational and psychological support programs for students with learning disabilities.

Keywords: Social adaptation, cognitive emotion regulation, self-regulated learning, specific learning disorder, elementary students

1. Introduction

Learning is a complex cognitive and emotional process that requires the integration of multiple skills, including attention, memory, self-regulation, and emotional adaptation. However, for students with Specific Learning Disorder in Reading (SLD-R), the ability to manage cognitive and emotional challenges is often impaired, leading to difficulties in academic and social domains. Research suggests that emotion regulation and self-regulated learning strategies play a crucial role in the social and academic adaptation of students with learning difficulties (Abasi et al., 2015; Bulut et al., 2024; Lievore, 2024).

Social adaptation is a key factor in children's overall development, influencing their interpersonal relationships, academic success, and psychological well-being. Students with SLD-R often struggle with poor self-regulation, frustration management, and effective communication skills, which can hinder their ability to engage with peers and teachers (Bagherzade et al., 2018). Research has shown that students with learning disabilities tend to exhibit lower levels of social competence, higher anxiety, and difficulties in forming peer relationships, which may further exacerbate their learning challenges (Ahmadzadeh et al., 2022).

One of the primary reasons for the social difficulties of students with learning disabilities is emotion dysregulation, which refers to an impaired ability to understand, express, and manage emotions in social interactions. Emotional regulation is crucial for resolving conflicts, seeking support, and engaging in cooperative learning activities (Mohammadzadeh & Torabian, 2023). Studies indicate that cognitive emotion regulation strategies, such as reappraisal, problem-solving, and acceptance, significantly contribute to better social adjustment among students with learning disabilities (Hatami & Tabatabaeinejad, 2023). Therefore, interventions targeting cognitive emotion regulation may improve students' ability to navigate social environments and cope with academic stress.

Cognitive emotion regulation strategies refer to mental processes that individuals use to control their emotional responses to stressful situations. These strategies include adaptive techniques such as cognitive reappraisal, problem-solving, and positive refocusing, which are associated with better psychological adjustment and social competence (Kraaij & Garnefski, 2019). Studies suggest that students with learning disabilities often rely on maladaptive emotion regulation strategies, such as catastrophizing, rumination,

and self-blame, which negatively impact their self-esteem and social interactions (Babayi-Nadinloui et al., 2018).

Training students in cognitive emotion regulation techniques has been shown to improve emotional resilience, social skills, and overall psychological well-being. For example, Ashori and Najafi (2020) found that emotion regulation training enhanced cognitive flexibility and reduced emotional distress in students with disabilities, enabling them to better cope with academic and social challenges (Ashori & Najafi, 2020). Similarly, research by Ahmadzadeh et al. (2022) demonstrated that emotion regulation training improved communication skills and social adjustment in adolescents with learning difficulties (Ahmadzadeh et al., 2022). These findings highlight the potential of cognitive emotion regulation strategies in fostering social adaptation, particularly among students struggling with emotional self-regulation.

Another critical factor influencing social adaptation in students with SLD-R is self-regulated learning (SRL), which refers to the ability to plan, monitor, and regulate cognitive, behavioral, and emotional processes during learning. Self-regulated learning enables students to set goals, manage their time effectively, seek help when needed, and adapt their learning strategies to different contexts (Khaleghi Tabar et al., 2022).

Studies indicate that students with learning disabilities often lack self-regulation skills, leading to academic underachievement, low motivation, and difficulty adapting to structured learning environments (Mousavi et al., 2020). The inability to regulate learning processes also affects social behavior, as students may experience frustration, withdrawal, or disruptive behaviors in the classroom (Melero et al., 2021). Interventions focused on self-regulated learning strategies have been found to significantly improve both academic performance and social adaptation.

For instance, research by Behnaz (2016) found that training students in self-regulated learning strategies improved social adaptation and reduced social anxiety, allowing them to participate more actively in peer interactions (Behnaz 2016). Similarly, Bagherzade et al. (2018) demonstrated that self-awareness and self-regulation in learning were positively correlated with social competence, indicating that students who could manage their academic challenges effectively also exhibited better social skills (Bagherzade et al., 2018). These findings suggest that training in self-regulated learning strategies may not only enhance academic success but also improve social interactions and emotional well-being in students with SLD-

R. Both cognitive emotion regulation and self-regulated learning strategies play a significant role in shaping students' ability to adapt socially. However, the comparative effectiveness of these two approaches remains underexplored, particularly among students with learning disabilities. Some studies suggest that emotion regulation training has a more immediate impact on social interactions, as it equips students with the skills to recognize, express, and manage emotions in real-time social contexts (Abooei et al., 2021).

Conversely, research on self-regulated learning suggests that its effects on social adaptation may be more gradual, as students learn to manage frustration, develop persistence, and adopt adaptive learning behaviors over time (Enayati Shabkolai et al., 2023). Moreover, while emotion regulation training primarily focuses on interpersonal adjustment, self-regulated learning strategies encompass broader cognitive and behavioral regulation skills, which may contribute to long-term academic and social success.

Despite growing evidence on the importance of emotion regulation and self-regulated learning, there is a need for experimental research comparing their effectiveness in improving social adaptation among students with SLD-R. Given the high prevalence of social difficulties in this population, identifying the most effective intervention can inform educational and psychological support programs for students with learning disabilities. Thus, the present study aims to compare the effectiveness of cognitive emotion regulation strategies and self-regulated learning strategies in enhancing social adaptation among elementary school students diagnosed with SLD-R. Specifically, the study seeks to answer the following research questions:

2. Methods and Materials

2.1. Study Design and Participants

This study follows a quasi-experimental design with a pre-test, post-test, and follow-up assessment, including a control group. The target population consists of second-cycle elementary school students (aged 10 to 12) diagnosed with Specific Learning Disorder in Reading in Sari during the 2023-2024 academic year. The sample size, determined using G*Power software, includes 60 students who meet the diagnostic criteria for this disorder according to the DSM-5. Participants are selected using a convenience sampling method and are randomly assigned to one of three groups: a cognitive emotion regulation strategy training group, a self-regulated learning strategy training group, and a control

group, with 20 students in each. The three groups are matched based on age and gender to ensure comparability.

The study involves three phases: pre-test, intervention, and post-test, followed by a three-month follow-up assessment. Initially, the research team visits elementary schools in Sari to identify students with Specific Learning Disorder in Reading based on DSM-5 diagnostic criteria. After obtaining informed consent and explaining the research objectives to participants and their parents, students are randomly assigned to one of the three groups. All participants complete the social adaptation questionnaire before the intervention. The intervention phase consists of group-based training sessions for the two experimental groups, while the control group remains on a waiting list without any intervention. Following the completion of the training programs, all three groups retake the adaptation questionnaire. The follow-up assessment is conducted three months later to evaluate the long-term effects of the interventions. Data are then analyzed using SPSS software to examine descriptive and inferential statistics.

2.2. Measures

2.2.1. Social Adaptation

Data collection involves the Elementary School Children's Adaptation Questionnaire, developed by Asghar Dokhanchi in 1998. This questionnaire consists of 37 four-option items, with response choices ranging from "never" to "most of the time," rated by the children's mothers based on their behavioral observations. The questionnaire assesses adaptation in different domains, including self-management, family interactions, and peer relationships, covering aspects such as cooperation and responsibility at home and school. The development of this questionnaire followed a logical-content approach, where adaptation was initially defined as the ability to cope with oneself, family members, and peers. Questions were then formulated to measure these abilities, with redundant or weak items being eliminated through expert review, leaving 37 final questions. The internal consistency reliability of this questionnaire, assessed using the split-half method, was reported as 0.79, while its validity was found to be 0.81 in Dokhanchi's study. The total score ranges from 0 to 111, with higher scores indicating better social adaptation (Enayati Shabkolai et al., 2023).

2.3. Interventions

2.3.1. Cognitive Emotion Regulation Training

The cognitive emotion regulation training is based on Gross's (2002) model of emotion regulation. This program consists of eight sessions designed to help students recognize and manage emotions effectively. The sessions begin with an introduction and familiarization phase, followed by exercises on identifying positive and negative emotions, understanding the role of emotions in interpersonal relationships, and differentiating emotional intensities across various contexts. Students are trained in emotion regulation strategies, including cognitive reappraisal, attention redirection, and delayed response techniques. The training further includes anger management exercises, such as engaging in structured games, self-talk techniques, and relaxation strategies like deep breathing and counting. The final sessions focus on regulating others' emotions through active engagement, humor, and social communication, concluding with a review of the training content.

2.3.2. Self-Regulated Learning Strategy Training

The self-regulated learning strategy training follows Pintrich's (1999) model of self-regulation. This program also includes eight sessions aimed at developing students' ability to manage their learning processes effectively. The sessions start with rapport-building and fostering a positive attitude toward learning, followed by discussions on motivation and interest enhancement techniques. Participants learn goal-setting strategies, concentration techniques, and methods for effective study planning and time management. Additional sessions introduce cognitive learning strategies, including rehearsal, elaboration, and organization techniques, with specific instruction on the

PQ4R method (Preview, Question, Read, Reflect, Recite, and Review). The final sessions focus on self-regulation skills, incorporating reflective review exercises to reinforce previously learned strategies.

2.4. Data Analysis

For data analysis, both descriptive and inferential statistical methods are used. Descriptive statistics include frequency distributions, central tendency measures such as the mean, and measures of dispersion such as the standard deviation, providing an overview of participants' demographic characteristics and research variables. Inferential statistics are applied to test the study hypotheses and generalize findings to the broader population. If data meet the assumption of normality, repeated measures ANOVA is used to assess differences across the three groups over time, including post-hoc tests to determine specific group differences. All statistical analyses are conducted using SPSS version 21.

3. Findings and Results

The findings section begins with a descriptive analysis of the study variables across the three groups: the control group, the cognitive emotion regulation strategy group, and the self-regulated learning strategy group. Table 1 presents the mean and standard deviation for social adaptation scores in the pre-test, post-test, and follow-up assessments. The results indicate that in the pre-test, the three groups had relatively similar mean scores, suggesting no significant initial differences. However, in the post-test and follow-up assessments, noticeable changes were observed in the intervention groups, whereas the control group showed minimal variation over time.

Table 1

Descriptive Statistics of Study Variables

Group	Pre-Test Mean	Pre-Test SD	Post-Test Mean	Post-Test SD	Follow-Up Mean	Follow-Up SD
Control	100.95	9.17	101.15	8.72	96.20	8.14
Cognitive Emotion Regulation	99.25	8.96	140.30	23.91	141.20	23.10
Self-Regulated Learning	99.80	9.32	121.50	6.98	122.00	6.94

As shown in Table 1, in the pre-test phase, the control group had a mean score of 100.95 with a standard deviation of 9.17, the cognitive emotion regulation group had a mean score of 99.25 with a standard deviation of 8.96, and the self-regulated learning strategy group had a mean score of 99.80

with a standard deviation of 9.32. These results confirm that before the intervention, the groups were approximately equivalent in terms of social adaptation.

Following the implementation of the interventions, the post-test scores demonstrated a substantial increase in the

two experimental groups. The mean social adaptation score for the cognitive emotion regulation group increased to 140.30 (SD = 23.91), while the self-regulated learning strategy group reached a mean score of 121.50 (SD = 6.98). In contrast, the control group remained nearly unchanged, with a post-test mean score of 101.15 (SD = 8.72), indicating that the intervention played a key role in improving social adaptation.

The follow-up assessment, conducted three months after the intervention, further confirmed the sustainability of these effects. The cognitive emotion regulation group maintained a high mean score of 141.20 (SD = 23.10), while the self-regulated learning strategy group demonstrated continued improvement with a mean score of 122.00 (SD = 6.94). However, the control group experienced a slight decline in social adaptation, with a mean score of 96.20 (SD = 8.14), suggesting that without intervention, social adaptation did not improve over time.

These descriptive results suggest that both cognitive emotion regulation training and self-regulated learning strategies had a positive impact on the social adaptation of students with specific learning disorders in reading. The next section examines the statistical significance of these differences using inferential analyses.

To examine the main objective of this study, a repeated measures mixed-design analysis of variance (ANOVA) was conducted, considering the three measurement points (pre-test, post-test, and follow-up) across the three groups. Before performing the main analysis, the assumptions of homogeneity of variance-covariance matrices, variance homogeneity, and sphericity were tested. The Box's M test indicated that the assumption of homogeneity of variance-covariance matrices was met, as the test result was not significant at the 0.05 level (p > 0.05). Additionally, Levene's test results showed that the variance homogeneity assumption was upheld, as the significance levels in all three conditions were greater than 0.05. Furthermore, Mauchly's test of sphericity confirmed that the assumption of equal covariances was met, as the calculated chi-square value was not statistically significant (p > 0.05).

Table 2

Results of Repeated Measures ANOVA for Comparing the Study Groups on Social Adaptation

Source of Variation	Sum of Squares	df	Mean Square	F Value	Significance Level (p)	Effect Size	Statistical Power
Time Effect	16674.811	2	8337.406	102.047	0.0001	0.642	1
Time * Group Effect	13037.189	4	3259.297	39.893	0.0001	0.583	1
Group Effect	22723.34	2	11361.67	30.84	0.0001	0.52	1
Error Variance	9314	114	81.702				

The results in Table 2 indicate that the main effect of time (within-group factor) on social adaptation was statistically significant (F(2,114) = 102.047, p < 0.01), meaning that the participants' social adaptation scores changed significantly across the three measurement points. In other words, there was a significant difference between pre-test, post-test, and follow-up scores. The main effect of the group (between-group factor) was also significant (F(2,114) = 30.84, p < 0.01), indicating a meaningful difference between the three groups (control, cognitive emotion regulation, and self-regulated learning strategies). Additionally, the interaction effect of time and group was statistically significant (F(4,114) = 39.893, p < 0.01), which means that the effect of time on social adaptation differed among the study groups.

To further examine the observed differences, post hoc Bonferroni tests were conducted to compare pairs of groups.

Table 3

Bonferroni Post Hoc Test for Pairwise Comparisons of Study Groups

Group (I)	Group (J)	Mean Difference	Significance Level (p)
Control	Cognitive Emotion Regulation	-27.48*	0.0001
Control	Self-Regulated Learning	-15.00*	0.0001
Cognitive Emotion Regulation	Control	27.48*	0.0001
Cognitive Emotion Regulation	Self-Regulated Learning	12.48*	0.002
Self-Regulated Learning	Control	15.00*	0.0001
Self-Regulated Learning	Cognitive Emotion Regulation	-12.48*	0.002

Table 3 presents the results of pairwise comparisons across the three groups. In terms of social adaptation, the mean difference between the control group and both experimental groups (cognitive emotion regulation and self-regulated learning strategies) was statistically significant (p < 0.01). This confirms that both interventions were effective in improving students' social adaptation compared to the control group. Additionally, there was a significant difference between the two intervention groups, suggesting that cognitive emotion regulation and self-regulated learning

strategies did not have identical effects on social adaptation. Consequently, hypotheses 4 and 5 of the study, regarding the significant impact of cognitive emotion regulation and self-regulated learning strategies on increasing students' social adaptation, were confirmed, and the null hypothesis was rejected.

To further investigate changes in social adaptation across different time points, Bonferroni post hoc tests were conducted for within-group comparisons.

Table 4

Bonferroni Post Hoc Test for Pairwise Comparisons Across Measurement Time Points for Each Group

Group	Time (I)	Time (J)	Mean Difference	Significance Level (p)
Control	Pre-Test	Post-Test	-0.20	1.00
Control	Pre-Test	Follow-Up	4.47	0.21
Control	Post-Test	Follow-Up	4.95	0.30
Cognitive Emotion Regulation	Pre-Test	Post-Test	-41.05*	0.0001
Cognitive Emotion Regulation	Pre-Test	Follow-Up	-41.95*	0.0001
Cognitive Emotion Regulation	Post-Test	Follow-Up	0.90	0.122
Self-Regulated Learning	Pre-Test	Post-Test	-21.70*	0.0001
Self-Regulated Learning	Pre-Test	Follow-Up	-22.20*	0.0001
Self-Regulated Learning	Post-Test	Follow-Up	0.50	0.025

Table 4 shows pairwise comparisons across time points for each study group. In the control group, no significant differences were found between pre-test, post-test, and follow-up scores, indicating that social adaptation levels remained stable over time without intervention. However, in the cognitive emotion regulation group, there was a significant difference between pre-test and both post-test and follow-up scores (p < 0.0001), suggesting that the intervention significantly improved social adaptation. Notably, the difference between post-test and follow-up scores was not statistically significant (p = 0.122), indicating that the benefits of the cognitive emotion regulation training persisted over time.

A similar pattern was observed in the self-regulated learning group, where significant differences were found between pre-test and both post-test and follow-up scores (p < 0.0001). The difference between post-test and follow-up scores was marginally significant (p = 0.025), suggesting that while the self-regulated learning strategy training led to improvements in social adaptation, there was a slight decline over time.

These results confirm that both cognitive emotion regulation and self-regulated learning strategies effectively enhanced social adaptation in students with Specific Learning Disorder in Reading. Moreover, the effects of

cognitive emotion regulation training remained stable over time, whereas self-regulated learning strategies showed a slight reduction in effect during the follow-up phase. Thus, the findings support the effectiveness of both interventions, while also suggesting that cognitive emotion regulation training may have a more lasting impact on social adaptation.

4.   Discussion and Conclusion

The present study aimed to compare the effectiveness of cognitive emotion regulation training and self-regulated learning strategies on the social adaptation of elementary school students with Specific Learning Disorder in Reading (SLD-R). The results demonstrated that both interventions significantly improved social adaptation compared to the control group, with cognitive emotion regulation training showing a more pronounced and sustained effect. These findings support the hypothesis that targeted interventions in emotional and self-regulatory processes can significantly enhance the social functioning of students with learning disabilities.

The repeated measures ANOVA indicated a significant main effect of time, meaning that students' social adaptation scores changed significantly across the three measurement

points (pre-test, post-test, and follow-up). The interaction effect of time and group was also significant, confirming that the pattern of change differed between the control and intervention groups. The Bonferroni post hoc test for pairwise comparisons further revealed that both intervention groups experienced significant improvements in social adaptation from pre-test to post-test, which were maintained during the follow-up period. However, the cognitive emotion regulation group exhibited greater improvements than the self-regulated learning strategy group, suggesting that emotion regulation training had a more substantial impact on social adaptation.

The results align with previous studies emphasizing the importance of cognitive emotion regulation strategies in social functioning. Emotion regulation is a fundamental skill for social adaptation, as it allows students to manage frustration, communicate effectively, and develop positive peer relationships (Kraaij & Garnefski, 2019). The significant improvement in social adaptation scores in the cognitive emotion regulation group supports findings from Ahmadzadeh et al. (2022), who demonstrated that emotion regulation training enhanced communication skills and emotional well-being in adolescents with learning difficulties (Ahmadzadeh et al., 2022). Similarly, Ashori and Najafi (2020) found that students with disabilities who received emotion regulation training exhibited greater cognitive flexibility and reduced emotional distress, allowing them to better navigate social environments (Ashori & Najafi, 2020).

A possible explanation for these findings is that students with SLD-R often struggle with frustration, anxiety, and negative self-perceptions, which hinder their ability to form positive social relationships (Babayi-Nadinloui et al., 2018). Cognitive emotion regulation training provides students with effective coping mechanisms, such as cognitive reappraisal and problem-solving, enabling them to respond to social challenges in a constructive manner (Mohammadzadeh & Torabian, 2023). The results of the present study support this perspective, as students who received emotion regulation training exhibited greater improvements in social adaptation, which were sustained even during the follow-up period.

The self-regulated learning strategy group also showed significant improvements in social adaptation, albeit to a lesser extent than the cognitive emotion regulation group. This finding is consistent with research indicating that self-regulated learning is positively associated with social competence (Bagherzade et al., 2018). Self-regulated

learning strategies enable students to plan, monitor, and regulate their cognitive and emotional processes, which can indirectly enhance social adaptation by improving self-efficacy and reducing frustration in academic settings (Khaleghi Tabar et al., 2022).

However, the slightly weaker impact of self-regulated learning strategies compared to cognitive emotion regulation training may be attributed to the fact that SRL strategies primarily focus on academic self-regulation, whereas social adaptation requires a more direct emphasis on emotional and interpersonal skills (Enayati Shabkolai et al., 2023). Previous research has shown that students with learning disabilities who receive self-regulated learning training develop greater persistence, goal-setting skills, and self-efficacy, which can positively influence their interactions with peers and teachers over time (Mousavi et al., 2020). The results of the present study support this, as students in the SRL training group demonstrated gradual improvements in social adaptation, though their post-test and follow-up scores remained lower than those in the cognitive emotion regulation group.

These findings also align with studies examining the long-term effects of self-regulated learning on psychosocial outcomes. Behnaz (2016) found that students trained in self-regulated learning strategies exhibited reduced social anxiety and increased adaptability in classroom environments (Behnaz 2016). Similarly, Bagherzade et al. (2018) reported that self-awareness and self-regulation skills were significantly correlated with social competence, suggesting that students who can effectively manage their learning processes are also more capable of engaging in positive social interactions (Bagherzade et al., 2018). The findings of the present study are consistent with this research, indicating that self-regulated learning strategies contribute to social adaptation, but their impact may require more time to manifest compared to emotion regulation training.

Despite the valuable contributions of this study, several limitations should be acknowledged. First, the sample was limited to elementary school students in Sari diagnosed with SLD-R, which may limit the generalizability of the findings to other populations, such as students with other types of learning disabilities or older adolescents. Second, the study relied on self-report and parental assessments of social adaptation, which may introduce response bias. Future research could incorporate objective behavioral measures or teacher evaluations to enhance the validity of the findings. Third, the follow-up period was only three months, which

may not be sufficient to capture the long-term effects of the interventions. Future studies should conduct longitudinal follow-ups to determine whether the observed improvements in social adaptation are maintained over extended periods.

Future research should explore the mechanisms underlying the observed effects by examining mediating variables, such as self-efficacy, resilience, and emotional intelligence, to better understand how emotion regulation and self-regulated learning strategies influence social adaptation. Additionally, studies could investigate individual differences in intervention responsiveness, considering factors such as gender, cognitive ability, and family environment, which may moderate the effectiveness of these interventions. Another important direction for future research is to explore the integration of cognitive emotion regulation and self-regulated learning strategies into a combined intervention model, as both approaches contribute to social and academic success in complementary ways. Finally, research should evaluate the effectiveness of these interventions in real-world educational settings, such as inclusive classrooms, to assess their practical applicability in diverse learning environments.

The findings of this study have important implications for educators, psychologists, and policymakers working with students with learning disabilities. Schools should consider implementing structured cognitive emotion regulation training programs to help students develop adaptive coping strategies for social and academic challenges. Additionally, teachers should be trained in self-regulated learning strategies to support students in developing goal-setting, self-monitoring, and problem-solving skills in the classroom. Intervention programs should be integrated into school curricula and delivered in small-group or individualized formats to maximize their effectiveness. Lastly, collaboration between teachers, school psychologists, and parents is essential in creating a supportive environment that reinforces the development of social adaptation skills in students with SLD-R.

This study provides compelling evidence that both cognitive emotion regulation training and self-regulated learning strategies significantly improve the social adaptation of students with SLD-R, with emotion regulation training exhibiting a greater impact. These findings highlight the importance of targeted interventions that address emotional and self-regulatory skills to enhance the social functioning and academic success of students with learning disabilities. Future research should continue exploring innovative intervention models to further improve the social adaptation of this vulnerable student population.

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

Declaration of Interest

The authors report no conflict of interest.

Funding

Ethical Considerations

In this study, to observe ethical considerations, participants were informed about the goals and importance of the research before the start of the interview and participated in the research with informed consent.

References

Abasi, M., Begian, M., Ayadi, N., & Dargahi, S. (2015). Compare Self compassion, Cognitive Avoidance and Emotional Self-regulation in Students with and without Learning Disabilities. *Quarterly Journal of Health Breeze*, *4*(1), 31-40. https://jfh.sari.iau.ir/article_651627_961a58b7a043967e2019124d98afcba1.pdf

Abooei, A., Barzegar bafrooee, K., & Rahimi, M. (2021). The effectiveness of self-compassion training on emotion regulation of female students with specific learning disorder. *Journal of Educational Psychology Studies*, *18*(43), 121-101. https://doi.org/10.22111/jeps.2021.6495

Ahmadzadeh, T., Sharifi, T., Ahmadi, R., & Ghazanfari, A. (2022). Effectiveness of emotion regulation training on communication skills, social adjustment and emotional wellbeing among adolescent girls of Gachsaran city with two months follow-up [Research]. *Rooyesh-e-Ravanshenasi*

Journal(RRJ), *11*(1), 143-154. http://frooyesh.ir/article-1-3263-en.html

Ashori, M., & Najafi, F. (2020). Cognitive Emotion Regulation Training on Cognitive Flexibility and Alexithymia in Hearing-Impaired Students. *MEJDS*, *10*(0), 50-50. http://jdisabilstud.org/article-1-1310-en.html

Babayi-Nadinloui, K., Aminzadeh, Z., & Sattari, M. (2018). The relationship between metacognitive beliefs, cognitive impairment, and ambiguity tolerance with cognitive emotion regulation in women dependent on drugs. *Quarterly Journal of Social Health and Addiction*, *5*(19), 91-110. https://ensani.ir/fa/article/385125

Bagherzade, S., Hosseini Tabaghdehi, S. L., & Hafezian, M. (2018). Relationship of self-awareness and self-regulated learning to social adjustment among girl high school students. *Journal of Educational Psychology Studies*, *15*(30), 29-50. https://doi.org/10.22111/jeps.2018.3607

Behnaz , H. (2016). Effectiveness of emotional self-efficacy training on social adjustment and social anxiety in adolescents. *Journal of Applied Psycology Research*, *7*(2), 69-80. https://www.magiran.com/paper/2078288

Bulut, S., Bukhori, B., & Parsakia, K. (2024). Enhancing Selective Attention in Children with Learning Disorders: Efficacy of Executive Functions Training. *KMAN Counseling & Psychology Nexus*, *1*(2), 86-93. https://doi.org/10.61838/kman.psychnexus.1.2.14

Enayati Shabkolai, M., Enayati Shabkalai, M., & Bagheri Dadokolai, M. (2023). The Effectiveness of Treatment based on Acceptance and Commitment on Social Adaptation, Academic Self-Regulation and Cognitive Flexibility of Students with Specific Learning Disorders. *International Journal of Education and Cognitive Sciences*, *4*(1), 33-41. https://doi.org/10.61838/kman.ijecs.4.1.5

Hatami, A., & Tabatabaeinejad, F. (2023). Effectiveness of Existential Therapy on Emotional Capital, Cognitive Emotion Regulation, and Mental Well-Being of Undergraduate Female Students with Social Anxiety: A Quasi-Experimental Study. *JRUMS*, *22*(2), 129-146. https://doi.org/10.52547/jrums.22.2.129

Khaleghi Tabar, S., Kashani, V. L., Seadatee Shamir, A., & Abolmaali, A.-H. K. (2022). The effect of successful intelligence model training on tolerance of ambiguity, self-regulatory learning strategies and social adjustment of female students. *medical journal of mashhad university of medical sciences*, *65*(3), 1356-1372. https://mjms.mums.ac.ir/article_21702.html?lang=en

Kraaij, V., & Garnefski, N. (2019). The Behavioral Emotion Regulation Questionnaire: Development, psychometric properties and relationships with emotional problems and the Cognitive Emotion Regulation Questionnaire. *Personality and individual differences*, *137*, 56-61. https://doi.org/10.1016/j.paid.2018.07.036

Lievore, R. (2024). Let's Face It! The Role of Social Anxiety and Executive Functions in Recognizing Others' Emotions From Faces: Evidence From Autism and Specific Learning Disorders. *Development and Psychopathology*, 1-13. https://doi.org/10.1017/s0954579424000038

Melero, S., Orgilés, M., Espada, J. P., & Morales, A. (2021). How does depression facilitate psychological difficulties in children? The mediating role of cognitive emotion regulation strategies. *Clinical Psychology & Psychotherapy*, *28*(2), 384-393. https://doi.org/10.1002/cpp.2516

Mohammadzadeh, S., & Torabian, L. (2023). Investigating the relationship between emotion regulation and social adjustment among male and female students in Nazarabad

city. *Iranian Quarterly Journal of Psychology and Behavioral Sciences*, *36*, 14. https://en.civilica.com/doc/2124137/

Mousavi, A., Dargaj, F., & Abu al-Moali al-Husseini, K. (2020). The scientific pattern of how cognitive emotion regulation and socioeconomic status will affect educational motivation [الگوی علی روابط بین تنظیم شناختی هیجان، پایگاه اجتماعی – اقتصادی با انگیزش تحصیلی: نقش واسطه‌ای خودناتوان سازی]. *Journal-of-Psychological-Science*, *19*(92), 999-1010. http://psychologicalscience.ir/article-1-567-en.html