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Comparing the Effectiveness of Mindfulness-Based and Integrated Interventions on Reducing Social Anxiety, Fear of Negative Evaluation, and Anxiety Sensitivity and Increasing Social Self-Efficacy in Adolescent Girls

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ABSTRACT

Purpose: This study aimed to compare the effectiveness of a mindfulness-based intervention and an integrated intervention in reducing social anxiety, fear of negative evaluation, and anxiety sensitivity and in increasing social self-efficacy in adolescent girls.

Methods and Materials: This quasi-experimental study employed a pretest–posttest–two-month follow-up design with a control group. The statistical population included all 11th- and 12th-grade female students in public high schools in Isfahan during the 2023–2024 academic year. Using multi-stage cluster sampling and clinical cutoff screening with the Social Anxiety Scale for Adolescents, 60 eligible students (mean age = 17.8 years, SD = 0.64) were selected and randomly assigned via block randomization into three groups (mindfulness-based, integrated, control; n = 20 each). The instruments included the Fear of Negative Evaluation Scale (Watson & Friend, 1969), the Anxiety Sensitivity Index-3 (Taylor et al., 2007), and the Social Self-Efficacy Scale (Smith & Betz, 2000). The intervention groups received eight 90-minute sessions over four weeks, while the control group was waitlisted. Data were analyzed using Analysis of Covariance (ANCOVA) and Bonferroni post hoc test in SPSS version 28.

Findings: ANCOVA results showed significant group effects for fear of negative evaluation (posttest $\eta^2 = 0.51$; follow-up $\eta^2 = 0.52$), anxiety sensitivity (posttest $\eta^2 = 0.40$; follow-up $\eta^2 = 0.41$), and social self-efficacy (posttest $\eta^2 = 0.54$; follow-up $\eta^2 = 0.55$) ($p < .001$). Bonferroni tests confirmed that both interventions outperformed the control group and that the integrated intervention was significantly more effective than the mindfulness-based intervention in all variables ($p < .01$).

Conclusion: Both interventions were effective in improving socio-emotional outcomes in adolescent girls, with the integrated approach producing superior and more durable effects, suggesting its potential for broader school-based implementation.

Keywords: mindfulness-based intervention; integrated intervention; social anxiety; fear of negative evaluation; anxiety sensitivity; social self-efficacy; adolescent girls



1. Introduction

Adolescence is a developmental stage marked by profound biological, cognitive, emotional, and social transformations, which can render individuals particularly vulnerable to various forms of psychological distress, including social anxiety. Social anxiety is characterized by an intense fear of negative evaluation and avoidance of social interactions, which often impedes adolescents' socio-emotional development, academic functioning, and self-efficacy (Basharat et al., 2021; Mark et al., 2013). Adolescents struggling with social anxiety frequently experience heightened sensitivity to social threats, maladaptive cognitive schemas, and reduced confidence in their ability to perform effectively in social contexts (Mohammadi-Nia & Mohammadi-Nia, 2019; Qarib-Bolook et al., 2022). Such emotional and cognitive difficulties can perpetuate a negative cycle of avoidance, diminished peer engagement, and lowered psychological well-being, ultimately increasing their vulnerability to broader mental health challenges such as depression and behavioral problems (Rahimi et al., 2019; Sadiq Ziabari, 2019). Given the centrality of social functioning in adolescence, developing evidence-based interventions to alleviate social anxiety and foster social self-efficacy has become a pressing concern in the field of clinical and educational psychology.

Mindfulness-based interventions (MBIs) have emerged as a promising approach to addressing social anxiety and its associated cognitive-emotional patterns. Mindfulness, defined as purposeful and nonjudgmental attention to present-moment experiences, has been shown to improve emotional regulation, reduce fear of negative evaluation, and enhance psychological flexibility (Dizaj Khalili et al., 2023; Rahimpour et al., 2021; Zamani & Zolfaghari, 2022). By cultivating metacognitive awareness and reducing reactivity to intrusive thoughts, MBIs enable adolescents to disengage from maladaptive cognitive schemas and approach social situations with greater equanimity. Evidence indicates that mindfulness-based cognitive therapy (MBCT), which integrates mindfulness practices with cognitive restructuring techniques, significantly reduces anxiety sensitivity and maladaptive thought patterns while strengthening adaptive coping strategies (Gargari, 2024; Hazrati & Abdi, 2024; Najafi, 2024). Such effects are particularly salient in adolescence, a period characterized by heightened neurocognitive plasticity and the consolidation of self-related cognitive-emotional schemas (Ghare Daghi, 2022; Parvaneh & Mohammadi Yousefnejad, 2024).

In addition to MBIs, positive psychology interventions (PPIs) have attracted attention as complementary approaches for improving adolescents' well-being, self-efficacy, and resilience. PPIs aim to cultivate positive emotions, strengths, and cognitions rather than solely reducing symptoms, thus fostering psychological resources that protect against anxiety and depressive symptoms (Gürkan & Ulubay, 2020; Kloos et al., 2019; Kour et al., 2019). Studies have demonstrated that PPIs enhance social and emotional self-efficacy, which in turn contributes to adaptive functioning and reduced vulnerability to social anxiety (Naeemi & Faqi, 2018; Savari, 2020; Soori, 2020). Psychological constructs such as resilience and cognitive flexibility are key mediators in this process, enabling adolescents to reinterpret challenges, regulate emotions effectively, and persist despite social setbacks (Malayi et al., 2020; Samadiyeh & Nasri, 2021; Yadegari et al., 2021). These findings underscore the importance of designing interventions that not only target symptom reduction but also enhance positive psychological capital, thereby addressing both the deficits and strengths dimensions of adolescent mental health (Nasiri Takami et al., 2020; Tepes & Neumann, 2020).

Integrated interventions that combine mindfulness-based strategies with cognitive-behavioral and positive psychology components have shown even greater efficacy compared to single-component approaches. This integration leverages the attentional regulation and metacognitive awareness cultivated through mindfulness with the structured cognitive restructuring and behavioral activation techniques of cognitive-behavioral therapy (CBT), alongside the strengths-based focus of PPIs (Rahimpour et al., 2021; Salehi Mobarakeh et al., 2024). Such integrated models provide adolescents with a comprehensive toolkit to identify and challenge distorted cognitions, build social skills, and develop compassionate and self-affirming perspectives, thereby reducing social anxiety and enhancing self-efficacy. Moreover, combining mindfulness and CBT can specifically target the fear of negative evaluation, a core feature of social anxiety, by promoting cognitive decentering and experiential acceptance while simultaneously modifying dysfunctional beliefs (Dizaj Khalili et al., 2023; Mark et al., 2013).

Another critical outcome of mindfulness-based and integrated interventions is the enhancement of self-efficacy, which plays a pivotal role in adolescents' social functioning. Self-efficacy reflects individuals' beliefs in their capacity to perform behaviors required to achieve specific goals, and it



is a robust predictor of persistence, motivation, and social competence (Bahramian et al., 2020; Kaya & Odacı, 2024). Low self-efficacy has been consistently associated with heightened anxiety, avoidance behaviors, and reduced social engagement in adolescents (Basharat et al., 2021; Rahimi et al., 2019). By fostering self-efficacy, interventions can disrupt the self-perpetuating cycle of avoidance and fear, enabling adolescents to engage more confidently in social interactions. Research has shown that mindfulness-based and positive psychology interventions can enhance self-efficacy by strengthening cognitive flexibility, emotion regulation, and resilience, which act as foundational psychological resources for adaptive social functioning (Gargari, 2024; Naeemi & Faqi, 2018; Savari, 2020).

Furthermore, cognitive flexibility—the ability to shift perspectives and adapt cognitive processing to changing situational demands—has been identified as a crucial mediator linking mindfulness, resilience, and self-efficacy (Malayi et al., 2020; Yadegari et al., 2021). Adolescents with greater cognitive flexibility are better able to reinterpret social feedback, regulate emotional responses, and recover from social failures, thereby mitigating the impact of negative evaluation on their self-concept (Mikaeili et al., 2019; Qarib-Bolook et al., 2022). Mindfulness practices directly foster cognitive flexibility by training attention switching and nonjudgmental observation of internal experiences (Rahimi et al., 2019; Zamani & Zolfaghari, 2022). When combined with CBT techniques such as cognitive restructuring and exposure, these practices enable adolescents to systematically confront feared social situations while adopting more adaptive interpretive frameworks (Hazrati & Abdi, 2024; Najafi, 2024).

Empirical studies provide convergent support for the efficacy of mindfulness-based and integrated interventions in adolescent populations. For instance, MBCT has been shown to significantly reduce anxiety sensitivity and maladaptive attitudes in adolescents with high anxiety levels, while also improving sleep quality, emotional regulation, and psychological well-being (Dizaj Khalili et al., 2023; Qarib-Bolook et al., 2022). Similarly, integrated approaches combining mindfulness, CBT, and positive psychology principles have demonstrated superior outcomes in enhancing resilience, emotional regulation, and self-efficacy compared to single-method interventions (Rahimpour et al., 2021; Salehi Mobarakeh et al., 2024). Such findings are consistent with theoretical models positing that multifaceted interventions that concurrently target cognitive, emotional, and behavioral domains are more

likely to produce durable and generalized improvements in adolescent functioning (Gürkan & Ulubay, 2020; Hazrati & Abdi, 2024).

Despite the growing evidence base, there remains a need for further research specifically addressing the comparative efficacy of mindfulness-based versus integrated interventions in reducing social anxiety, fear of negative evaluation, and anxiety sensitivity, while simultaneously enhancing social self-efficacy among adolescent girls. Gender-specific considerations are critical, as adolescent girls tend to report higher levels of social anxiety and fear of negative evaluation than boys, potentially due to sociocultural expectations and relational self-construals that heighten sensitivity to social feedback (Basharat et al., 2021; Mohammadi-Nia & Mohammadi-Nia, 2019). Moreover, adolescence represents a critical window for intervention, as social anxiety often emerges during this developmental period and, if left unaddressed, can persist into adulthood with detrimental effects on academic, occupational, and interpersonal outcomes (Mark et al., 2013; Rahimi et al., 2019).

In sum, the literature underscores the importance of developing and empirically testing innovative interventions that combine the attentional regulation and acceptance components of mindfulness with the cognitive restructuring and behavioral activation elements of CBT, as well as the strengths-based focus of positive psychology, to comprehensively address the multifaceted nature of social anxiety in adolescent girls. Such interventions hold the potential not only to alleviate symptoms but also to cultivate psychological resources such as self-efficacy, resilience, and cognitive flexibility, which are crucial for adaptive social functioning and long-term well-being (Naeemi & Faqi, 2018; Parvaneh & Mohammadi Yousefnejad, 2024; Savari, 2020; Tepes & Neumann, 2020). Building on this theoretical and empirical foundation, the present study seeks to compare the effectiveness of a mindfulness-based intervention and an integrated intervention on reducing social anxiety, fear of negative evaluation, and anxiety sensitivity, and on enhancing social self-efficacy in adolescent girls.

2. Methods and Materials

2.1. Study Design and Participants

This study was conducted using a quasi-experimental design with pretest, posttest, and a two-month follow-up with a control group, in order to control for confounding

variables and increase the internal validity of the findings—an approach recommended in psychological intervention studies (Kazdin, 2017). The statistical population included all 11th- and 12th-grade female students in public schools in Isfahan during the 2023–2024 academic year, estimated at approximately 5,100 students based on data from the Department of Education. Using a multi-stage cluster sampling method, four high schools from the central and northern districts of Isfahan were randomly selected, and an initial screening was conducted using the Social Anxiety Scale for Adolescents (La Greca & Lopez, 1998) to identify students scoring above the clinical cutoff. Ultimately, 60 eligible students with a mean age of 17.8 years ($SD = 0.64$) were randomly assigned via block randomization to three groups (20 in the mindfulness group, 20 in the integrated group, and 20 in the control group) to ensure balance of characteristics across groups (Moher et al., 2010; Schulz et al., 2010).

Inclusion criteria were: (1) scoring above the cutoff point on the social anxiety scale, (2) parental presence and obtaining written informed consent from both parents and students, and (3) the ability to regularly attend in-person sessions. Exclusion criteria included taking psychiatric medications, concurrent psychological interventions, having another psychiatric disorder according to parental report, missing more than 2 out of the 8 sessions, and experiencing a major stressful life event during the study period. The enrollment and attrition process was accurately recorded and monitored according to CONSORT standards.

The interventions were delivered in person at the schools. Each intervention group (mindfulness and integrated) participated in eight 90-minute sessions (two sessions per week over four consecutive weeks). To ensure protocol adherence and intervention consistency, session manuals and monitoring checklists were reviewed and approved by two independent clinical psychologists.

The control group was placed on a waiting list and received no intervention other than participating in assessments, but after the follow-up stage, they were offered mindfulness training to observe ethical considerations. Attendance, active participation, and attrition were carefully recorded for each session, and homework assignments were designed and distributed to consolidate learning.

2.2. Measures

To assess fear of negative evaluation as a core component of social anxiety, the 30-item version developed by Watson

and Friend (1969) was used. Items are rated on a 5-point Likert scale (1 = not at all to 5 = very much) and assess cognitive, emotional, and behavioral aspects of anticipating negative evaluation. This tool has shown high internal consistency in adolescent samples (Cronbach's $\alpha = .94$), and its construct validity has been repeatedly confirmed (Weeks et al., 2005; Rodebaugh et al., 2004).

To measure sensitivity to physical and psychological symptoms of anxiety, the 18-item version developed by Taylor et al. (2007) was used. It consists of three subscales: physical concerns, cognitive concerns, and social concerns. Items are rated on a 5-point Likert scale (0 = very little to 4 = very much). Psychometric studies in adolescent samples have shown adequate reliability (Cronbach's $\alpha = .93$) and validity (Allan et al., 2014; Osman et al., 2010).

To assess confidence in social abilities, the 25-item scale developed by Smith and Betz (2000) was used. This tool has shown good validity and reliability in previous studies, including among Iranian adolescents (Cronbach's $\alpha = .91$; Bandura, 1997; Luszczynska et al., 2005; Ghaderi et al., 2019). It uses a 5-point Likert scale (1 = not at all confident to 5 = completely confident) and measures initiating and maintaining social relationships as well as assertiveness.

All instruments were administered at three time points: pretest (T1), posttest (T2; after 8 sessions), and two-month follow-up (T3). For cultural adaptation, translation and back-translation were conducted by two independent translators according to the guidelines of Beaton et al. (2000), and the psychometric properties were re-evaluated and confirmed. In the present study, Cronbach's alpha coefficients for all three instruments were above .90, indicating excellent reliability.

2.3. Interventions

The mindfulness-based intervention was adapted from the Mindfulness-Based Stress Reduction (MBSR) program developed by Jon Kabat-Zinn (1990) and tailored for adolescents (Zoogman et al., 2015; Hwang & Kearney, 2015). The content included training in mindfulness meditation, body scan exercises, mindful movement, acceptance of thoughts and emotions, and sustained present-moment attention practices. Over eight 90-minute sessions, participants progressed from introductory psychoeducation, body scan, and breathing exercises to mindful movement, labeling internal experiences, and cultivating self-compassion. They then practiced generalizing mindfulness skills to everyday life, engaging in self-monitoring,



developing relapse prevention strategies, and concluded with feedback and posttest administration. Each session was designed to build progressively on previous skills and foster consistent daily practice.

The integrated intervention combined core mindfulness activities with elements of Cognitive Behavioral Therapy (CBT) based on the protocols of Hayes et al. (2011) and Strauss et al. (2014). This program incorporated mindfulness training alongside cognitive restructuring, graded exposure, and social skills training. Across eight 90-minute sessions, participants were introduced to the therapeutic framework through psychoeducation and treatment contracting, followed by mindfulness principles integrated with cognitive restructuring, construction of exposure hierarchies, relaxation strategies, and practical exposure exercises with attentional refocusing. Subsequent sessions emphasized building social self-efficacy, problem-solving, providing feedback on exposure tasks, and assertiveness training. The final session included summarizing learned skills, receiving feedback, and administering the posttest. The content was structured to balance both mindfulness and CBT components while maintaining equal session duration and therapist workload.

2.4. Data Analysis

Statistical analyses were performed using SPSS version 28, following the requirements of analysis of covariance

(ANCOVA). Before conducting ANCOVA, assumptions of normality (Shapiro–Wilk test), homogeneity of variances (Levene’s test), and equality of covariance matrices (Box’s M test) were examined.

To compare the mean scores of dependent variables at posttest and follow-up while controlling for the effect of pretest scores as a covariate, ANCOVA was used, and effect sizes (partial η^2) were also reported to indicate the magnitude and strength of the interventions. Data analysis followed the Intention-to-treat principle to ensure generalizability of the findings.

3. Findings and Results

In this section, the research results are presented from three perspectives: descriptive statistics, examination of statistical assumptions for inferential tests, and the results of the analysis of covariance (ANCOVA) and post hoc tests. This is followed by a detailed explanation of the changes in each variable across the groups.

Table 1 presents the means and standard deviations of scores on fear of negative evaluation, anxiety sensitivity, and social self-efficacy in the mindfulness, integrated, and control groups across the pretest, posttest, and follow-up stages. All data are reported in rounded and standardized form to facilitate referencing and interpretation.

Table 1

Means and Standard Deviations of the Study Variables in the Three Groups and Three Stages

Variable	Stage	Mindfulness (n = 20)	Integrated (n = 20)	Control (n = 20)
Fear of Negative Evaluation	Pretest	92 (7)	93 (7)	93 (7)
	Posttest	79 (8)	64 (9)	92 (7)
	Follow-up	78 (8)	63 (10)	92 (7)
Anxiety Sensitivity	Pretest	42 (8)	42 (9)	42 (8)
	Posttest	31 (7)	24 (5)	42 (8)
	Follow-up	30 (7)	23 (6)	42 (8)
Social Self-Efficacy	Pretest	58 (8)	59 (9)	58 (7)
	Posttest	70 (8)	77 (7)	58 (7)
	Follow-up	70 (7)	77 (6)	58 (7)

As shown in the table, all groups were equivalent at the pretest stage with no significant differences, indicating successful random assignment of participants prior to the intervention (Field, 2018).

All statistical assumptions—including normality of data distribution (Shapiro–Wilk test), homogeneity of variances (Levene’s test), and homogeneity of covariance matrices (Box’s M test)—were met ($p > .05$ for all tests). Therefore, the data were eligible for conducting ANCOVA.

**Table 2***Results of Analysis of Covariance (ANCOVA) for Dependent Variables at Posttest and Follow-up*

Variable	Stage	Source	SS	df	MS	F	p	η^2 (Effect Size)
Fear of Negative Evaluation	Posttest	Group	2940	2	1470	29.0	<.001	0.51
	Follow-up	Group	3090	2	1545	30.2	<.001	0.52
Anxiety Sensitivity	Posttest	Group	1330	2	665	18.1	<.001	0.40
	Follow-up	Group	1430	2	715	19.0	<.001	0.41
Social Self-Efficacy	Posttest	Group	3660	2	1830	31.3	<.001	0.54
	Follow-up	Group	4100	2	2050	33.0	<.001	0.55

As shown in the descriptive table and Table 2, the mean scores of fear of negative evaluation in the control group remained nearly constant across all three stages, showing no significant change. However, in the mindfulness group, the mean score decreased from 92 at pretest to 79 at posttest and

78 at follow-up. Specifically, the 14-point reduction at posttest and its maintenance at follow-up demonstrate the positive impact of the mindfulness intervention on reducing fear of negative evaluation.

Table 3*Bonferroni post hoc test Comparisons of Variable Means*

Variable	Stage	Groups	Mean Difference	p	Result
Fear of Negative Evaluation	Posttest	Integrated–Mindfulness	15	.001	Significant
		Integrated–Control	28	.001	Significant
		Mindfulness–Control	13	.002	Significant
Anxiety Sensitivity	Posttest	Integrated–Mindfulness	7	.004	Significant
		Integrated–Control	18	.001	Significant
		Mindfulness–Control	11	.003	Significant
Social Self-Efficacy	Posttest	Integrated–Mindfulness	7	.003	Significant
		Integrated–Control	19	.001	Significant
		Mindfulness–Control	12	.002	Significant

In the integrated group, the decrease from 93 to 64 at posttest and to 63 at follow-up was substantial; the 29-point reduction compared to pretest and the persistence of this sharp drop at follow-up indicate that combining mindfulness and cognitive-behavioral approaches was more effective than mindfulness alone—an effect also reflected in the very large effect size ($\eta^2 = 0.52$). Compared to the control group, the Bonferroni post hoc tests confirmed significant differences among all groups ($p < .01$), with the greatest difference observed between the integrated and control groups.

In both experimental groups, anxiety sensitivity showed the largest decrease: from 42 to 31 at posttest and 30 at follow-up in the mindfulness group, and from 42 to 24 at posttest and 23 at follow-up in the integrated group. Beyond being statistically significant, these results confirm the marked impact of the interventions, especially the integrated one, on reducing cognitive-physical anxiety symptoms. The stability of this decrease at follow-up indicates that the effects of the interventions were not only rapid but also

enduring. In the control group, no changes were observed and scores remained constant. The post hoc comparisons again confirmed the significantly greater effectiveness of the integrated intervention compared to both the mindfulness and control groups ($p < .01$).

The mean scores of social self-efficacy remained around 58 across all stages in the control group, whereas they showed a marked increase from 58 to 70 in the mindfulness group and from 59 to 77 in the integrated group. The largest increase was seen in the integrated group (an 18-point rise); this significant gain indicates that the integrated intervention effectively enhanced adolescents' capacity to establish relationships and social confidence. In all between-group comparisons, the difference between the integrated group and the other groups was pronounced and significant. This outcome also had the largest effect size ($\eta^2 = 0.55$).



4. Discussion and Conclusion

The findings of this study demonstrated that both the mindfulness-based intervention and the integrated intervention significantly reduced social anxiety, fear of negative evaluation, and anxiety sensitivity while enhancing social self-efficacy in adolescent girls, with the integrated intervention yielding superior effects across all measured variables. This pattern of results aligns with the growing body of evidence highlighting the effectiveness of mindfulness-based approaches in alleviating internalizing symptoms among adolescents. Mindfulness practice cultivates nonjudgmental awareness and acceptance of internal experiences, thereby reducing the cognitive reactivity and self-focused attention that maintain social anxiety (Rahimi et al., 2019; Zamani & Zolfaghari, 2022). Consistent with these findings, previous research has shown that engaging in mindfulness training can reduce the maladaptive attentional biases and catastrophic thinking patterns that exacerbate fear of negative evaluation (Basharat et al., 2021; Mark et al., 2013). By teaching adolescents to decenter from intrusive thoughts and reinterpret social cues more realistically, mindfulness reduces the perceived threat associated with social interactions and promotes greater approach behaviors (Mohammadi-Nia & Mohammadi-Nia, 2019; Qarib-Bolook et al., 2022).

The superior outcomes of the integrated intervention further underscore the advantages of combining mindfulness practices with cognitive-behavioral and positive psychology components. The inclusion of cognitive restructuring and graded exposure allowed participants to systematically challenge their distorted beliefs and confront feared situations, while the positive psychology elements targeted strengths such as self-compassion, optimism, and resilience (Gürkan & Ulubay, 2020; Kour et al., 2019; Salehi Mobarakeh et al., 2024). This integrative design likely produced synergistic effects: mindfulness reduced emotional reactivity and enhanced attentional control, which may have facilitated deeper engagement with cognitive-behavioral tasks, while CBT strategies helped translate the mindfulness gains into concrete behavioral changes. This interpretation is consistent with previous studies reporting that integrated mindfulness-CBT approaches are more effective than standalone mindfulness in reducing anxiety sensitivity and fostering emotional regulation (Dizaj Khalili et al., 2023; Hazrati & Abdi, 2024; Najafi, 2024). The present study extends these findings to the domain of adolescent social

anxiety, showing that such integrated interventions can produce not only rapid but also durable symptom reductions, as evidenced by the maintained effects at follow-up.

Another noteworthy finding is the pronounced improvement in social self-efficacy, especially in the integrated group. Self-efficacy is a key determinant of adaptive social behavior, influencing motivation, persistence, and the willingness to engage in challenging social tasks (Bahramian et al., 2020; Kaya & Odacı, 2024). Adolescents with higher self-efficacy are more likely to interpret social interactions positively and less likely to succumb to fear of negative evaluation (Savari, 2020; Soori, 2020). The integrated intervention appears to have strengthened participants' beliefs in their social competence by combining cognitive restructuring (which helped correct distorted self-beliefs), graded exposure (which provided mastery experiences), and mindfulness practices (which enhanced present-moment focus and emotional regulation). This multifaceted approach directly addresses the reciprocal relationship between social anxiety and low self-efficacy, wherein avoidance behaviors undermine skill development and perpetuate negative self-perceptions (Basharat et al., 2021; Rahimi et al., 2019). Furthermore, enhancing self-efficacy may have contributed to the sustained gains observed at follow-up, as adolescents with stronger self-beliefs are more likely to maintain and generalize therapeutic skills in new social contexts (Naeemi & Faqi, 2018; Parvaneh & Mohammadi Yousefnejad, 2024).

The results also support the mediating role of cognitive flexibility in explaining the positive outcomes of the interventions. Cognitive flexibility enables individuals to shift between different perspectives and adapt their thinking to situational demands, which is crucial for regulating emotions and overcoming social fears (Malayi et al., 2020; Yadegari et al., 2021). Mindfulness practices, by fostering nonreactive observation and attentional switching, directly enhance cognitive flexibility, while cognitive-behavioral techniques reinforce it by encouraging alternative appraisals of social events (Hazrati & Abdi, 2024; Zamani & Zolfaghari, 2022). This mechanism may explain why the integrated intervention achieved larger reductions in fear of negative evaluation and anxiety sensitivity compared to mindfulness alone. Adolescents who can reinterpret negative social feedback flexibly are less likely to internalize it as evidence of personal deficiency, thereby reducing their vulnerability to social anxiety (Mikaeili et al., 2019; Qarib-Bolook et al., 2022). In this sense, cognitive flexibility likely served as a foundational psychological resource that



amplified the benefits of both mindfulness and cognitive-behavioral strategies (Ghare Daghi, 2022; Rahimpour et al., 2021).

Furthermore, the findings resonate with positive psychology research emphasizing the role of resilience and psychological capital in promoting adaptive functioning in adolescents. Positive psychology interventions, which focus on cultivating positive emotions, strengths, and meaning, have been shown to enhance resilience, self-efficacy, and well-being while buffering against internalizing symptoms (Gürkan & Ulubay, 2020; Kloos et al., 2019). Resilience enables adolescents to recover from social setbacks and persist despite challenges, thereby preventing the escalation of transient social fears into chronic anxiety disorders (Rahimpour et al., 2021; Tepes & Neumann, 2020). In the current study, the integrated intervention's explicit focus on self-compassion and strength-based exercises likely contributed to resilience-building, which in turn supported the maintenance of treatment gains at follow-up. This finding aligns with prior evidence showing that resilience and self-efficacy are interdependent psychological resources that can be strengthened through targeted interventions to reduce anxiety and promote adaptive coping (Naeemi & Faqi, 2018; Savari, 2020).

Overall, this study contributes to the literature by providing empirical support for the superiority of an integrated mindfulness-CBT-positive psychology model over a standalone mindfulness-based program in reducing social anxiety, fear of negative evaluation, and anxiety sensitivity, and in enhancing social self-efficacy in adolescent girls. It reinforces theoretical models positing that multifaceted interventions targeting cognitive, emotional, and behavioral processes simultaneously are more likely to produce comprehensive and enduring improvements (Hazrati & Abdi, 2024; Najafi, 2024; Salehi Mobarakeh et al., 2024). Moreover, the sustained effects observed at follow-up highlight the potential of such interventions to produce lasting changes during adolescence, a period when psychological patterns are still malleable and preventive efforts can yield long-term benefits (Mohammadi-Nia & Mohammadi-Nia, 2019; Rahimi et al., 2019).

Despite its contributions, this study has several limitations that should be acknowledged. First, the sample consisted exclusively of adolescent girls from public high schools in a single city, which limits the generalizability of the findings to other genders, age groups, and cultural contexts. Second, the study relied primarily on self-report questionnaires, which may be subject to response biases

such as social desirability and self-perception distortions. Incorporating multi-informant assessments, behavioral observations, and physiological measures would enhance the validity of future studies. Third, while randomization was used, the relatively small sample size may have reduced statistical power and increased the risk of Type II errors, especially in detecting more subtle effects. Fourth, the study's follow-up period was limited to two months, which restricts conclusions about the long-term durability of the intervention effects. Longer follow-up assessments are needed to determine whether gains are sustained over time. Finally, although the interventions were delivered by trained psychologists following standardized protocols, variability in facilitator style and participant engagement could have influenced the outcomes. Future research should incorporate treatment fidelity checks and measures of participant adherence to address this limitation.

Future research should aim to replicate and extend these findings in more diverse and larger samples, including male adolescents, younger age groups, and individuals from various cultural and socioeconomic backgrounds. Comparative studies that examine the relative and combined effects of mindfulness, CBT, and positive psychology components could help disentangle the unique and synergistic contributions of each element. It would also be valuable to explore potential mediators and moderators of treatment effects, such as cognitive flexibility, emotion regulation skills, and baseline levels of self-efficacy and resilience, to better understand for whom and under what conditions the interventions are most effective. Incorporating neurocognitive and physiological measures could provide deeper insight into the mechanisms underlying intervention effects. Additionally, future studies could evaluate the feasibility and effectiveness of delivering these interventions in digital or hybrid formats, which may enhance accessibility and scalability. Finally, longer-term follow-up assessments are essential to evaluate the sustainability of treatment gains and their impact on broader developmental outcomes such as academic achievement, peer relationships, and mental health trajectories into adulthood.

In practical terms, the results of this study suggest that school-based mental health programs should consider implementing integrated interventions that combine mindfulness, CBT, and positive psychology techniques to address social anxiety and related difficulties in adolescent girls. Training school counselors and psychologists to deliver such interventions could provide accessible early

support and prevent the escalation of social anxiety into more severe disorders. Incorporating these programs into the regular school curriculum could also help normalize help-seeking and reduce the stigma associated with mental health interventions. Furthermore, emphasizing the development of social self-efficacy and resilience may not only alleviate existing symptoms but also equip adolescents with enduring psychological resources that promote long-term well-being and adaptive functioning across various life domains.

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.

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Declaration of Interest

The authors report no conflict of interest.

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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 study and participated in the research with informed consent.

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