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The Effectiveness of Cognitive Behavioral Therapy on Social Anxiety and Academic Procrastination in Adolescents

Hanieh. Rameshgar[1], Zeynab. Naghipour[2], Ali. Delfi[3], Hediyeh. Fallahpour[4], Eshagh. Samkhaniani[5*]

[1] Master of Clinical Psychology, Beh.C., Islamic Azad University, Behshahr, Iran
[2] Master of Educational Psychology, To.C., Islamic Azad University, Tonekabon, Iran
[3] Faculty of Educational Sciences and Psychology, Shahid Chamran Ahvaz, Ahvaz, Iran
[4] Master of Clinical Psychology, Sar.C., Islamic Azad University, Sari, Iran
[5] Assistant Professor, Department of Psychology, Ayandegan University, Tonekabon, Iran

*** Corresponding author email address**: esamkhanian84@aihe.ac.ir

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A B S T R A C T

Objective: The present study aimed to determine the effectiveness of cognitive behavioral therapy on social anxiety and academic procrastination among adolescents.

Methods and Materials: The present study employed a quasi-experimental design with a pretest–posttest structure and a control group. The statistical population consisted of adolescents who were referred to counseling and psychological services clinics in Tehran during 2025. Using convenience sampling, 30 adolescents were selected and randomly assigned into experimental and control groups, with 15 participants in each group. Data were collected using the Social Anxiety Scale for Adolescents and the Academic Procrastination Scale. After the pretest assessment, the experimental group participated in eight 90-minute sessions of cognitive behavioral therapy, while the control group continued their routine daily activities without intervention. At the completion of the intervention, both groups completed the posttest measures. Data were analyzed using descriptive statistics and analysis of covariance (ANCOVA) through IBM SPSS Statistics.

Findings: The findings indicated that cognitive behavioral therapy had a significant effect on reducing social anxiety and academic procrastination among adolescents. After controlling for pretest scores, the results of analysis of covariance showed that the group effect on posttest social anxiety scores was statistically significant, $F(1, 27) = 42.32$, $p < .001$, $\eta^2 = .62$. Additionally, the group effect on academic procrastination scores was significant, $F(1, 27) = 32.64$, $p < .001$, $\eta^2 = .57$. The obtained effect sizes demonstrated that cognitive behavioral therapy produced substantial improvements in both psychological and academic functioning among participants in the experimental group compared to the control group.

Conclusion: The results of the present study demonstrated that cognitive behavioral therapy is an effective intervention for reducing social anxiety symptoms and academic procrastination among adolescents.

Keywords: *Cognitive Behavioral Therapy, Social Anxiety, Academic Procrastination, Adolescents.*

1. Introduction

Adolescence is recognized as one of the most sensitive developmental periods in the human lifespan, characterized by rapid biological, cognitive, emotional, and social changes that substantially influence psychological adjustment and behavioral functioning. During this developmental stage, adolescents encounter multiple interpersonal, educational, and emotional challenges that may increase their vulnerability to psychological disorders and maladaptive behaviors. Among the most prevalent psychological difficulties observed during adolescence are social anxiety and academic procrastination, both of which can negatively affect academic achievement, interpersonal relationships, emotional well-being, and future psychosocial functioning (Hamzepour Matoughi et al., 2023; Kennedy et al., 2018). The increasing prevalence of anxiety-related symptoms and procrastination behaviors among adolescents has made these variables important concerns for mental health professionals, educators, and families.

Social anxiety disorder is characterized by persistent fear and avoidance of social or performance situations in which individuals believe they may be negatively evaluated by others. Adolescents with social anxiety commonly experience excessive self-consciousness, fear of embarrassment, avoidance of social interactions, and heightened emotional distress in interpersonal contexts (Alden & Fung, 2021). Social anxiety during adolescence is associated with impaired peer relationships, reduced self-esteem, social withdrawal, loneliness, and decreased psychological well-being. Adolescents suffering from social anxiety often avoid classroom participation, group activities, and social communication, which can lead to long-term educational and social impairments (Ghasemi Tabaq et al., 2021; Parsons & Biesanz, 2021). Emotional solitude and social isolation resulting from social anxiety may further intensify cognitive distortions and dysfunctional beliefs about self-worth and social competence (Alden & Fung, 2021).

Recent social and technological changes have also contributed to the intensification of social anxiety symptoms among adolescents. Excessive exposure to social comparison through social media platforms has increased adolescents' sensitivity to peer evaluation and emotional distress. Adolescents with higher levels of social anxiety are more likely to engage in negative self-comparisons and experience heightened emotional dysregulation in virtual social environments (Parsons & Biesanz, 2021). Moreover, social anxiety has been linked to deficits in emotion regulation processes, maladaptive coping styles, and reduced psychological flexibility, all of which contribute to the persistence and severity of anxiety symptoms (Mollazamani & Mardoukhi, 2023; Sloan et al., 2017). Emotional dysregulation has increasingly been conceptualized as a transdiagnostic factor underlying multiple psychological disorders, including anxiety, depression, and behavioral difficulties (Sloan et al., 2017).

Academic procrastination is another widespread problem among adolescents and refers to the intentional delay of academic tasks despite awareness of the negative consequences of postponement. Academic procrastination includes delays in preparing for examinations, completing homework assignments, and fulfilling educational responsibilities. This maladaptive behavior has been associated with poor academic performance, low self-efficacy, emotional distress, reduced motivation, and impaired psychological adjustment (Kavousian & Karimi, 2018; Won & Yu, 2018). Adolescents who procrastinate frequently experience guilt, stress, frustration, and reduced academic satisfaction, which may contribute to the development of broader emotional and behavioral problems.

Several psychological and interpersonal factors contribute to the emergence and maintenance of academic procrastination during adolescence. Perceived parental control, low autonomy support, emotional insecurity, poor self-regulation skills, and maladaptive perfectionism have been identified as important predictors of procrastination behaviors (Won & Yu, 2018). Furthermore, adolescents with higher levels of social anxiety may avoid academic tasks due to fear of failure, fear of criticism, and heightened sensitivity to negative evaluation. In this regard, social anxiety and academic procrastination appear to share common cognitive and emotional mechanisms, including avoidance behaviors, dysfunctional beliefs, low self-confidence, and emotion regulation difficulties (Ghasemi Tabaq et al., 2021; Sloan et al., 2017). The co-occurrence of these variables can intensify adolescents' emotional distress and interfere with their academic and social development.

Family conflict and stressful life experiences may also increase the vulnerability of adolescents to anxiety-related symptoms and maladaptive academic behaviors. Exposure to chronic interpersonal stress, emotional neglect, and parent-adolescent conflict has been associated with increased psychological distress and emotional dysregulation during adolescence (Bountress et al., 2020; Mehri Nejad et al., 2019). Adolescents who experience

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heightened family tension may demonstrate increased avoidance behaviors, lower emotional resilience, and reduced motivation for academic engagement. Likewise, stressful and traumatic experiences during childhood and adolescence can increase sensitivity to stress and emotional instability, thereby intensifying anxiety symptoms and maladaptive coping behaviors (Kennedy et al., 2018).

Given the psychological and educational consequences associated with social anxiety and academic procrastination, effective psychological interventions are necessary to reduce emotional distress and improve adolescents' adaptive functioning. Among the available therapeutic approaches, cognitive behavioral therapy (CBT) has received extensive empirical support as one of the most effective evidence-based interventions for anxiety disorders and maladaptive behaviors (Beck, 2020; Hofmann et al., 2021). Cognitive behavioral therapy is based on the assumption that maladaptive cognitions, dysfunctional beliefs, and behavioral avoidance patterns contribute to the development and maintenance of emotional and behavioral problems. Therefore, modifying irrational thoughts and promoting adaptive coping skills can reduce psychological distress and improve behavioral functioning (Beck, 2020).

Cognitive behavioral therapy employs a variety of techniques, including cognitive restructuring, behavioral activation, exposure exercises, relaxation training, self-monitoring, problem-solving strategies, and emotion regulation skills. These interventions aim to help individuals identify dysfunctional thinking patterns, challenge maladaptive beliefs, and replace ineffective coping strategies with more adaptive behaviors (Beck, 2020). The effectiveness of CBT has been confirmed across numerous psychological disorders, including anxiety disorders, depression, interpersonal difficulties, compulsive behaviors, and emotional dysregulation (Granero et al., 2017; Hofmann et al., 2021). Meta-analytic evidence suggests that CBT produces significant improvements in emotional symptoms, behavioral functioning, and quality of life across diverse clinical populations (Hofmann et al., 2021).

In recent years, increasing attention has been directed toward the effectiveness of CBT in adolescent populations. Research findings indicate that CBT interventions can significantly reduce anxiety symptoms and improve emotional regulation capacities among adolescents (Shibani et al., 2020; Wati et al., 2025). Wati et al. demonstrated that CBT counseling effectively reduced anxiety symptoms among adolescents by improving emotional awareness, cognitive control, and adaptive coping strategies (Wati et al., 2025). Similarly, Shibani et al. reported that CBT significantly improved anxiety, depression, irritability, and emotion regulation among adolescents with disruptive mood dysregulation disorder (Shibani et al., 2020). These findings emphasize the important role of cognitive and emotional interventions in enhancing adolescent psychological adjustment.

Several studies have specifically investigated the effectiveness of CBT for social anxiety symptoms. Tarakçıoğlu reported that CBT was effective in reducing social anxiety symptoms and self-harm behaviors in a 15-year-old adolescent diagnosed with social anxiety disorder (Tarakçıoğlu, 2024). Kourki et al. further demonstrated that integrating psychodrama with group CBT significantly improved interpersonal sensitivity and reduced social anxiety among adolescent girls (Kourki et al., 2023). Similarly, Mollazamani and Mardoukhi found that CBT improved psychological flexibility, quality of life, and social anxiety symptoms among mothers of children with learning disorders (Mollazamani & Mardoukhi, 2023). These findings suggest that CBT may influence both emotional symptoms and broader psychosocial functioning through improvements in cognitive processing and emotional regulation.

The mechanisms underlying the effectiveness of CBT in reducing social anxiety have also been examined in contemporary research. Garke et al. demonstrated that improvements in emotion regulation during CBT predicted subsequent reductions in social anxiety symptoms (Garke et al., 2025). These findings support the conceptualization of emotion regulation as a central mechanism of therapeutic change in anxiety treatment. Likewise, self-compassion-focused interventions, which share conceptual overlap with CBT, have been shown to reduce self-criticism and emotional distress, thereby improving psychological functioning among individuals with anxiety-related problems (Wakelin et al., 2022). The integration of emotional awareness, cognitive restructuring, and behavioral exposure within CBT may therefore facilitate substantial improvements in adolescents' social functioning and emotional resilience.

Research has also supported the effectiveness of CBT-related interventions in reducing maladaptive academic behaviors and improving self-regulation skills. Ghasemi found that CBT significantly reduced academic procrastination among adolescents of divorce by enhancing cognitive control and behavioral organization (Ghasemi, 2023). In addition, metacognitive skills training has been

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shown to reduce academic procrastination and improve delayed academic gratification among students (Kavousian & Karimi, 2018). These findings suggest that interventions targeting dysfunctional cognitions and self-regulatory deficits can effectively decrease procrastination behaviors. Since academic procrastination is strongly associated with avoidance tendencies and fear of failure, CBT techniques may help adolescents develop more adaptive coping strategies and improve academic engagement.

Furthermore, group-based CBT interventions have demonstrated positive outcomes in improving communication skills, reducing problematic internet use, and enhancing interpersonal functioning among adolescents (Kafi Nia & Farhadi, 2019). CBT has also shown effectiveness in promoting marital satisfaction, improving relationship functioning, and reducing interpersonal distress across different populations (Gregory, 2021; Henriqueta, 2021). These findings highlight the broad applicability of CBT in addressing cognitive, emotional, interpersonal, and behavioral difficulties. Mindfulness-based cognitive approaches have additionally been recognized for their effectiveness in enhancing emotional awareness and reducing psychological distress (Kenny, 2021). Behavioral rehearsal and practical training methods used within CBT frameworks have similarly demonstrated effectiveness in improving therapeutic outcomes related to social anxiety (Bjaasted et al., 2025).

Despite the substantial body of evidence supporting the effectiveness of CBT for anxiety-related problems and maladaptive behaviors, relatively limited research has simultaneously examined the impact of CBT on both social anxiety and academic procrastination among adolescents within the Iranian cultural context. Given the developmental importance of adolescence and the potential long-term consequences of untreated anxiety and procrastination, identifying effective interventions for these problems remains essential. Additionally, the overlap between social anxiety and academic procrastination suggests that interventions targeting cognitive distortions, avoidance behaviors, and emotional dysregulation may produce improvements across both domains simultaneously.

Therefore, considering the psychological, educational, and social consequences associated with social anxiety and academic procrastination, as well as the growing empirical support for cognitive behavioral therapy, the present study aimed to determine the effectiveness of cognitive behavioral therapy on social anxiety and academic procrastination among adolescents.

2. Methods and Materials

2.1. Study Design and Participants

The present study employed a quasi-experimental research design with a pretest–posttest format and a control group. The statistical population consisted of adolescents who were referred to counseling and psychological services clinics in Tehran during 2025. From this population, 30 adolescents were selected through convenience sampling based on their willingness to participate and the inclusion criteria of the study. The participants were then randomly assigned into two equal groups, including an experimental group and a control group, with 15 participants in each group. The inclusion criteria included being within the adolescent age range, obtaining elevated scores on measures of social anxiety and academic procrastination, willingness to participate in the intervention sessions, and the absence of severe psychiatric disorders requiring immediate specialized treatment. Exclusion criteria included absence from more than two intervention sessions and unwillingness to continue participation in the study. Before the implementation of the intervention, both groups completed the pretest measures. Subsequently, the experimental group participated in eight 90-minute sessions of cognitive behavioral therapy, while the control group continued their routine daily activities without receiving any psychological intervention. At the end of the intervention period, both groups completed the posttest assessments under similar conditions.

2.2. Measures

The Social Anxiety Scale for Adolescents developed by La Greca and Lopez in 1998 was used to assess social anxiety symptoms among participants. This scale consists of 16 items scored on a five-point Likert scale ranging from “Completely like me” (5) to “Completely unlike me” (1). The total score ranges from 16 to 80, with higher scores indicating greater levels of social anxiety. A cutoff score of 48 has been suggested for identifying clinically meaningful symptoms. The psychometric properties of the Persian version of the scale were previously examined in Iran by Estoor and Razavieh. The results of factor analysis supported a three-factor structure for the instrument. Convergent and divergent validity were established through correlations with the Children’s Depression Questionnaire and the Children’s Manifest Anxiety Scale. Test–retest reliability for the total questionnaire was reported as 0.88, while Cronbach’s alpha coefficients for the subscales ranged

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from 0.74 to 0.84, indicating satisfactory internal consistency and reliability.

Academic procrastination was assessed using the Academic Procrastination Scale developed by Solomon and Rothblum in 1984. The scale contains 27 items designed to evaluate three dimensions of academic procrastination, including preparation for examinations, preparation for homework assignments, and preparation for end-of-term papers or research projects. The first component consists of 8 items, the second component includes 11 items, and the third component contains 8 items. In the Iranian adaptation of the instrument, the items related to end-of-term papers were explained to participants as research assignments and classroom projects to ensure cultural relevance and comprehension. Responses are rated on a four-point Likert scale ranging from "Rarely" to "Always," with scores assigned from 1 to 4, respectively. Several items, including items 2, 4, 6, 11, 15, 16, 21, 23, and 25, are reverse scored. Previous studies conducted in Iran have demonstrated acceptable psychometric properties for the scale. Cronbach's alpha reliability coefficient was reported as 0.79, and evidence for construct validity was established through significant correlations with measures of depression, irrational beliefs, self-esteem, and daily avoidance behaviors.

2.3. Intervention

The intervention program consisted of eight 90-minute sessions of cognitive behavioral therapy administered to the experimental group over the course of the study. The sessions were conducted in a group format by a trained therapist specializing in cognitive behavioral approaches. The therapeutic program focused on identifying and modifying maladaptive thoughts, cognitive distortions, and dysfunctional beliefs associated with social anxiety and academic procrastination. Throughout the sessions, participants were trained in cognitive restructuring techniques, self-monitoring strategies, behavioral activation, problem-solving skills, stress management, relaxation exercises, and gradual exposure to anxiety-provoking social situations. Additionally, participants learned time management and goal-setting strategies to reduce procrastination behaviors and improve academic functioning. Homework assignments and practical exercises were provided at the end of each session to facilitate the generalization of learned skills into daily life situations. During the intervention period, the control group did not receive any structured psychological treatment and continued their routine activities.

2.4. Data Analysis

The collected data were analyzed using descriptive and inferential statistical methods. Descriptive statistics, including means and standard deviations, were calculated for the study variables in the pretest and posttest stages. To evaluate the effectiveness of cognitive behavioral therapy on social anxiety and academic procrastination, inferential statistical analyses were conducted using analysis of covariance (ANCOVA) while controlling for pretest scores. Prior to conducting the main analyses, the assumptions of normality, homogeneity of variances, and homogeneity of regression slopes were examined and confirmed. All statistical analyses were performed using IBM SPSS Statistics, and the significance level for hypothesis testing was considered at $p < .05$.

3. Findings and Results

The age range of the participants was between 13 and 18 years, with a mean age of 15.47 years (SD = 1.62). In the experimental group, 53.3% of the participants were female and 46.7% were male, while in the control group, 46.7% were female and 53.3% were male. There were no statistically significant demographic differences between the two groups before the intervention, indicating the relative homogeneity of the groups at baseline.

Table 1

Descriptive Statistics of Social Anxiety and Academic Procrastination in the Experimental and Control Groups

Variable	Group	n	Pretest Mean	Pretest SD	Posttest Mean	Posttest SD
Social Anxiety	Experimental	15	53.86	5.86	42.87	4.45
	Control	15	52.42	5.45	54.56	5.36
Academic Procrastination	Experimental	15	64.32	6.35	55.37	5.68
	Control	15	66.41	6.31	67.14	6.73

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As presented in Table 1, the mean scores of social anxiety and academic procrastination in the experimental group decreased from the pretest to the posttest stage following the cognitive behavioral therapy intervention. In contrast, the control group showed no meaningful reduction in either variable during the same period. Specifically, the mean social anxiety score in the experimental group decreased from 53.86 to 42.87, while the mean academic procrastination score declined from 64.32 to 55.37. These descriptive findings suggest that cognitive behavioral therapy contributed to reductions in both social anxiety and academic procrastination among adolescents.

Prior to conducting the main inferential analyses, the assumptions underlying multivariate analysis of covariance were examined. The normality of the data distribution was assessed using the Kolmogorov–Smirnov test. The results indicated that all study variables had significance levels greater than .05 in both the pretest and posttest stages, demonstrating that the distributions did not significantly deviate from normality. In addition, the assumptions of homogeneity of variances and homogeneity of regression slopes were examined and confirmed. Therefore, the use of multivariate and univariate analysis of covariance was considered appropriate for analyzing the study data.

Table 2

Results of Analysis of Covariance for Social Anxiety and Academic Procrastination

Variable	Source	Sum of Squares	df	Mean Square	F	p	Eta Squared
Social Anxiety	Pretest	1724.458	1	1724.458	38.45	.001	.59
	Group	1964.963	1	1964.963	42.32	.001	.62
	Error	1186.712	27	43.952			
Academic Procrastination	Pretest	1153.378	1	1153.378	27.15	.001	.54
	Group	1527.165	1	1527.165	32.64	.001	.57
	Error	1263.428	27	46.793			

The results presented in Table 2 demonstrated that, after controlling for pretest scores, the effect of group membership on posttest scores of social anxiety and academic procrastination was statistically significant. For social anxiety, the group effect was significant, $F(1, 27) = 42.32$, $p < .001$, $\eta^2 = .62$, indicating that cognitive behavioral therapy significantly reduced social anxiety among adolescents in the experimental group compared to the control group. Similarly, for academic procrastination, the group effect was significant, $F(1, 27) = 32.64$, $p < .001$, $\eta^2 = .57$, suggesting that cognitive behavioral therapy led to a significant reduction in academic procrastination among participants in the intervention group. The obtained effect sizes indicated that the intervention had a large practical impact on both dependent variables.

4. Discussion

The present study aimed to investigate the effectiveness of cognitive behavioral therapy on social anxiety and academic procrastination among adolescents. The findings demonstrated that cognitive behavioral therapy significantly reduced social anxiety symptoms and academic procrastination in the experimental group compared to the control group. The obtained results indicate that adolescents who participated in the cognitive behavioral intervention experienced substantial improvements in emotional regulation, maladaptive thinking patterns, behavioral avoidance, and academic functioning following the intervention sessions. These findings support the effectiveness of cognitive behavioral therapy as an evidence-based psychological intervention for adolescents experiencing emotional and behavioral difficulties.

One of the major findings of the present study was the significant reduction in social anxiety symptoms among adolescents who received cognitive behavioral therapy. This finding is consistent with previous studies demonstrating the effectiveness of CBT in reducing social anxiety and improving interpersonal functioning among adolescents and other populations (Kourki et al., 2023; Mollazamani & Mardoukhi, 2023; Tarakçıoğlu, 2024; Wati et al., 2025). Tarakçıoğlu reported that CBT successfully reduced symptoms of social anxiety and maladaptive emotional behaviors among adolescents with severe emotional difficulties (Tarakçıoğlu, 2024). Likewise, Kourki et al. demonstrated that group cognitive behavioral therapy integrated with psychodrama significantly improved interpersonal sensitivity and reduced social anxiety among adolescent girls (Kourki et al., 2023). The findings of the present study are also aligned with the broader literature supporting CBT as one of the most effective interventions

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for anxiety-related disorders (Beck, 2020; Hofmann et al., 2021).

The effectiveness of cognitive behavioral therapy in reducing social anxiety may be explained through several cognitive and behavioral mechanisms. Adolescents with social anxiety often possess dysfunctional beliefs related to self-worth, fear of negative evaluation, and perceived social incompetence. These maladaptive cognitions contribute to avoidance behaviors, emotional distress, and heightened self-consciousness during interpersonal interactions (Alden & Fung, 2021; Ghasemi Tabaq et al., 2021). Cognitive behavioral therapy directly targets these distorted beliefs by helping individuals identify irrational thoughts, challenge cognitive distortions, and replace maladaptive interpretations with more realistic and adaptive cognitions (Beck, 2020). Through repeated cognitive restructuring and behavioral exposure exercises, adolescents gradually become less fearful of social situations and more confident in their social abilities.

Another important explanation for the reduction of social anxiety involves improvements in emotion regulation capacities. Recent evidence has emphasized the central role of emotion regulation difficulties in the maintenance of anxiety disorders (Sloan et al., 2017). Adolescents with social anxiety frequently experience difficulty managing emotional arousal, interpersonal stress, and self-critical thoughts. Garke et al. found that improvements in emotion regulation during CBT significantly predicted subsequent reductions in social anxiety symptoms (Garke et al., 2025). Similarly, self-compassion and emotional awareness interventions have been shown to reduce self-criticism and emotional vulnerability among individuals experiencing anxiety symptoms (Wakelin et al., 2022). In the present study, the CBT sessions included relaxation training, emotional awareness, and coping skills development, which likely enhanced participants' ability to regulate emotional responses during stressful social interactions.

The findings may also be interpreted through the role of behavioral avoidance in social anxiety. Adolescents experiencing social anxiety often avoid classroom participation, peer interactions, and public performance situations due to fears of embarrassment and rejection (Alden & Fung, 2021). Behavioral avoidance reinforces anxiety by preventing individuals from experiencing corrective social feedback. Cognitive behavioral therapy interrupts this maladaptive cycle by encouraging gradual exposure to anxiety-provoking situations and reinforcing adaptive social behaviors (Beck, 2020). The repeated practice of exposure exercises during the intervention may have reduced avoidance patterns and increased adolescents' tolerance for interpersonal discomfort. Behavioral rehearsal strategies incorporated within CBT have previously demonstrated effectiveness in improving therapeutic outcomes among socially anxious individuals (Bjaasted et al., 2025).

The present findings further demonstrated that cognitive behavioral therapy significantly reduced academic procrastination among adolescents. This finding is consistent with prior studies indicating that interventions focused on cognitive restructuring, self-regulation, and metacognitive skills can reduce procrastination behaviors and improve academic functioning (Ghasemi, 2023; Kavousian & Karimi, 2018; Won & Yu, 2018). Ghasemi reported that CBT significantly reduced academic procrastination among adolescents of divorce by improving emotional control and adaptive cognitive functioning (Ghasemi, 2023). Similarly, Kavousian and Karimi found that metacognitive skills training reduced academic procrastination and improved delayed academic gratification among students (Kavousian & Karimi, 2018). These findings collectively support the notion that procrastination is strongly associated with dysfunctional cognitive patterns and emotional avoidance processes.

One explanation for the effectiveness of CBT on academic procrastination involves the modification of maladaptive beliefs associated with academic performance. Adolescents who engage in procrastination often experience irrational beliefs related to perfectionism, fear of failure, low self-efficacy, and negative self-evaluation. These cognitions increase emotional distress and encourage task avoidance behaviors. Cognitive behavioral therapy assists individuals in identifying these irrational beliefs and replacing them with more realistic and constructive thoughts (Beck, 2020). Through cognitive restructuring, adolescents learn to perceive academic tasks as manageable rather than threatening, thereby reducing avoidance tendencies and increasing motivation for task completion.

The reduction in academic procrastination may additionally be explained by improvements in self-regulation and time-management skills acquired during the intervention. Academic procrastination is frequently associated with poor planning abilities, emotional dysregulation, and difficulties in sustaining goal-directed behaviors (Won & Yu, 2018). CBT interventions commonly include behavioral activation, scheduling strategies, goal setting, self-monitoring, and problem-solving techniques

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that improve organizational skills and increase behavioral accountability (Beck, 2020). By learning structured coping strategies, adolescents become more capable of initiating academic tasks and managing educational responsibilities effectively.

The relationship between social anxiety and academic procrastination may further explain why improvements occurred simultaneously in both variables. Social anxiety and procrastination share several common psychological mechanisms, including fear of negative evaluation, avoidance behaviors, low self-confidence, and emotional dysregulation (Ghasemi Tabaq et al., 2021; Sloan et al., 2017). Adolescents with high social anxiety may avoid academic tasks due to concerns about criticism, performance failure, or negative social judgment. Consequently, reductions in anxiety symptoms may indirectly contribute to reductions in procrastination behaviors. As adolescents become more emotionally secure and socially confident, they may demonstrate greater willingness to engage in academic activities and classroom participation.

The findings of the present study are also consistent with broader evidence supporting the transdiagnostic effects of cognitive behavioral therapy across emotional and behavioral disorders. Hofmann et al. emphasized that CBT effectively improves multiple domains of psychological functioning by targeting underlying cognitive and emotional mechanisms shared across disorders (Hofmann et al., 2021). Similarly, CBT has shown effectiveness in reducing emotional distress, improving interpersonal relationships, and enhancing adaptive functioning across various populations (Granero et al., 2017; Gregory, 2021; Henriqueta, 2021). Group-based CBT interventions have also demonstrated positive effects on communication skills, emotional adjustment, and behavioral control among adolescents (Kafi Nia & Farhadi, 2019). These findings suggest that CBT not only reduces symptom severity but also promotes broader psychological resilience and adaptive coping capacities.

Mindfulness-oriented and emotion-focused cognitive approaches may also support the observed findings. Kenny highlighted that mindfulness-based cognitive approaches facilitate emotional acceptance, self-awareness, and adaptive coping among individuals experiencing emotional distress (Kenny, 2021). In the present study, components of emotional awareness and self-monitoring integrated into the intervention may have contributed to increased psychological flexibility and emotional control. Similarly, Mollazamani and Mardoukhi found that CBT enhanced psychological flexibility and quality of life among individuals experiencing social anxiety symptoms (Mollazamani & Mardoukhi, 2023). These findings indicate that cognitive behavioral interventions may improve both symptom reduction and broader emotional functioning.

The social and developmental context of adolescence should also be considered when interpreting the present findings. Adolescents are particularly vulnerable to interpersonal stress, peer evaluation, and emotional instability due to ongoing cognitive and social development (Kennedy et al., 2018). Social comparison processes, especially within social media environments, may intensify emotional distress and self-critical thinking patterns among adolescents with social anxiety (Parsons & Biesanz, 2021). In addition, family conflict and stressful interpersonal experiences can contribute to emotional dysregulation and maladaptive coping behaviors (Bountress et al., 2020; Mehri Nejad et al., 2019). Cognitive behavioral therapy may therefore provide adolescents with practical coping strategies that enhance emotional resilience, reduce maladaptive cognitive patterns, and improve adaptive social and academic functioning during this sensitive developmental period.

5. Conclusion

Overall, the findings of the present study provide empirical support for the effectiveness of cognitive behavioral therapy in reducing social anxiety and academic procrastination among adolescents. By targeting maladaptive cognitions, emotional dysregulation, behavioral avoidance, and deficient self-regulation skills, CBT appears capable of producing meaningful improvements in both emotional well-being and academic functioning. The integration of cognitive restructuring, behavioral activation, emotional regulation strategies, and exposure techniques likely contributed to the observed therapeutic outcomes. Consequently, cognitive behavioral therapy may be considered an effective psychological intervention for adolescents experiencing anxiety-related difficulties and maladaptive academic behaviors.

6. Limitations & Suggestions

One of the limitations of the present study was the relatively small sample size and the use of convenience sampling, which may limit the generalizability of the findings to broader adolescent populations. In addition, the participants were selected from counseling clinics in a single

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city, which may reduce the applicability of the findings to adolescents from different cultural, educational, or socioeconomic backgrounds. Another limitation was the reliance on self-report questionnaires, which may have been influenced by response biases and participants' subjective perceptions. Furthermore, the absence of a long-term follow-up period made it difficult to evaluate the stability and durability of the treatment effects over time.

Future research is recommended to examine the long-term effectiveness of cognitive behavioral therapy through follow-up assessments conducted several months after the intervention. Researchers are also encouraged to investigate the effectiveness of CBT across larger and more diverse adolescent populations using randomized sampling methods. Comparative studies examining the effectiveness of CBT alongside other therapeutic approaches, such as mindfulness-based interventions, acceptance and commitment therapy, or emotion-focused therapy, may provide a broader understanding of effective treatment strategies for adolescents. Additionally, future studies may explore the mediating role of variables such as emotion regulation, self-esteem, psychological flexibility, and family functioning in the relationship between CBT and reductions in social anxiety and academic procrastination.

The findings of the present study have several practical implications for psychologists, school counselors, educators, and mental health professionals working with adolescents. Cognitive behavioral therapy programs may be implemented within schools, counseling centers, and adolescent mental health services to reduce anxiety symptoms and improve academic functioning. Educational workshops focused on cognitive restructuring, emotional regulation, time management, and coping skills may help adolescents manage social fears and procrastination behaviors more effectively. Parents and teachers may also benefit from training programs designed to improve supportive communication patterns and reduce interpersonal stress among adolescents. Overall, integrating CBT-based interventions into adolescent mental health and educational settings may contribute to improved psychological well-being, academic engagement, and social adjustment among students.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

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

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

All authors equally contributed to this article.

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