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Effectiveness of Cognitive-Behavioral Therapy in Reducing Emotional Processing Difficulties and Fear of Negative Evaluation in Shy Students

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ABSTRACT

Objective: This study aimed to investigate the effectiveness of CBT in improving emotional processing and reducing fear of negative evaluation in students with shyness. Methods:

Methods and Materials: A quasi-experimental design with a pretest-posttest control group and follow-up phase was employed. The study involved 30 undergraduate students exhibiting shyness from the Islamic Azad University, Sari Branch, during the first semester of the 2023-24 academic year. Participants were purposefully selected and randomly assigned to either the experimental group (n=15) or the control group (n=15). Emotional processing was assessed using the Emotional Processing Scale (Baker), and fear of negative evaluation was measured using the Fear of Negative Evaluation Questionnaire (Watson). The experimental group received nine 60-minute group cognitive-behavioral therapy (CBT) sessions, while the control group was placed on a waiting list. Following the intervention, both groups underwent the same assessments. Data were analyzed using Multivariate Analysis of Covariance (MANCOVA) and Univariate Analysis of Covariance (ANCOVA) with SPSS version 25.

Findings: Results indicated that CBT significantly improved emotional processing ($P<0.001$) and reduced fear of negative evaluation ($P<0.001$) in the experimental group compared to the control group.

Conclusion: CBT was found to be an effective intervention for enhancing emotional processing and reducing fear of negative evaluation in students with shyness. This suggests that CBT can be a valuable therapeutic approach for addressing psychological challenges associated with shyness.

Keywords: Cognitive-behavioral therapy, emotional processing, fear of negative evaluation, shyness.

Introduction

Shyness is a common psychological construct that can affect an individual's social functioning and emotional well-being. It is characterized by discomfort or apprehension in social situations, resulting in difficulties initiating and maintaining social interactions (Zhao et al., 2018). Shyness is often associated with a heightened fear of negative evaluation, which can exacerbate social anxiety and result in avoidance behaviors (Zhang et al., 2018). Although shyness is not considered a clinical disorder, its impact on interpersonal relationships, academic performance, and overall mental health can be profound (Beck & Haigh, 2017).

Shyness is distinct from social anxiety disorder, although the two are closely related. While social anxiety

disorder involves persistent and excessive fear of social situations, shyness can be viewed as a more transient and situational form of discomfort (Hofmann et al., 2012). However, both conditions share common features, including an exaggerated fear of negative evaluation and difficulties with emotional regulation (Miers et al., 2017). Shy individuals often experience intense physiological symptoms such as sweating, increased heart rate, and blushing in social settings, which can lead to social withdrawal and isolation (Hofmann, 2007).

One critical factor contributing to the experience of shyness is emotional processing. Emotional processing involves the ability to perceive, understand, and regulate emotions effectively (Gross, 2015). In individuals with shyness, difficulties in emotional processing can lead to maladaptive emotional responses, such as excessive fear, anxiety, and avoidance in social situations (Kashdan et al., 2017). These emotional difficulties can further impair social interactions, as shy individuals may overestimate the threat posed by social situations, leading to heightened anxiety and avoidance behaviors (Weeks et al., 2017). Emotional dysregulation can also contribute to the physiological symptoms of anxiety, which reinforce negative beliefs about social interactions (Alden et al., 2014).

Another critical component of shyness is the fear of negative evaluation, which refers to an individual's concern about being judged or criticized by others. Fear of negative evaluation is a central feature of social anxiety and is associated with a heightened sensitivity to potential criticism (Watson & Friend, 1969). This fear can significantly impair an individual's ability to engage in social interactions, as they may avoid situations where they anticipate negative judgments. Research has shown that individuals with high levels of fear of negative evaluation are more likely to experience social anxiety and related disorders (Miers et al., 2017).

Cognitive-behavioral therapy (CBT) is an effective treatment for social anxiety and related conditions, including shyness. CBT is based on the premise that maladaptive cognitive patterns contribute to emotional distress and behavioral dysfunction (Beck, 2011). By identifying and challenging negative thoughts and beliefs, CBT aims to help individuals reframe their perceptions of social situations and reduce anxiety. CBT is effective in reducing the fear of negative evaluation, improving emotional regulation, and enhancing social functioning in individuals with social anxiety (Hofmann et al., 2012). Studies have demonstrated that CBT can help individuals with social anxiety reappraise social situations, thus reducing their anxiety and increasing their willingness to engage in social interactions (Heimberg et al., 2014).

In addition to its effects on anxiety, CBT has also been shown to improve emotional processing by helping individuals develop adaptive coping strategies, such as relaxation techniques, cognitive restructuring, and graded exposure to feared social situations (Feske & Chambless, 1995). These interventions can help individuals with shyness manage their emotional responses to social situations, thereby reducing avoidance and improving their ability to navigate social interactions (Hofmann et al., 2012).

Given the potential benefits of CBT for individuals with shyness, this study aims to investigate its effectiveness in enhancing emotional processing and reducing the fear of negative evaluation in students. The objective of this research is to determine whether CBT can improve emotional processing, reduce the fear of negative evaluation, and ultimately alleviate the symptoms of shyness in students. By addressing these psychological factors, CBT may offer a valuable intervention for enhancing social functioning and emotional well-being in students with shyness.

Methods and Materials

Study Design and Participants

This study employed a quasi-experimental pretest-posttest design with an active control group and a follow-up phase to assess the effectiveness of Cognitive-Behavioral Therapy (CBT) in improving emotional processing and reducing fear of negative evaluation among undergraduate students with shyness. The study adhered to ethical guidelines, ensuring voluntary participation, informed consent, and confidentiality.

The statistical population consisted of undergraduate students from multiple branches of Islamic Azad University who, during the first semester of the 2023-24 academic year, exhibited signs of shyness. The sample size was determined using G-Power software, considering an effect size of 0.6, a one-tailed test, a 95% confidence level, and a test power of 80%, resulting in a total sample of 60 students (30 per group). A stratified

random sampling method was used to improve external validity. Initially, a screening process was conducted using the Stanford Shyness Scale, and students who met the cut-off score were invited to participate. To minimize selection bias, participants were randomly assigned to either: Experimental Group (n=30) – Received CBT intervention, Active Control Group (n=30) – Received an alternative treatment (psychoeducation on emotional regulation and stress management) to control for expectancy effects.

Inclusion Criteria: Age between 20 and 30 years, scoring above the cut-off on the Stanford Shyness Scale, no use of psychiatric medications in the past three months, no participation in psychological treatment or therapy for shyness in the last six months, and willingness to participate in the full intervention and follow-up. Exclusion Criteria: Absence from more than two therapy sessions, use of psychiatric medications or substance abuse within the last five months, presence of a severe psychological disorder (e.g., major depression, psychosis) diagnosed by a licensed clinician, and any medical condition preventing participation in therapy sessions.

After identifying students with shyness through the Emotional Processing Scale (Baker), the Fear of Negative Evaluation Questionnaire (Watson), and the Perceived Stress Scale (Cohen), and obtaining their consent to participate in the study, they were randomly assigned to the experimental and control groups (pretest phase). The experimental group received 12 sessions of group cognitive-behavioral therapy, while the control group remained on the waiting list. After completing the intervention for the experimental group, all three questionnaires were re-administered to both groups (posttest phase). One month later, the questionnaires were distributed again for follow-up, and the collected data were reanalyzed.

Instruments

Emotional Processing Questionnaire: The Emotional Processing Scale was developed by Baker and colleagues (2007). The initial version consisted of 48 items, which were later shortened to a 25-item version by Baker et al. in 2010. This scale comprises five dimensions or subscales: suppression, unpleasant emotional experiences, emotional control, avoidance, and unprocessed emotional signals. Responses range from 1 (strongly disagree) to 5 (strongly agree). Total scores range from 25 to 100. To calculate subscale scores, the following items are used: Suppression: Items 7, 9, 16, 19, 25; Unpleasant emotional experiences: Items 3, 8, 11, 12, 22; Unprocessed emotional signals: Items 1, 2, 5, 20, 24; Avoidance: Items 4, 13, 14, 21, 23; Emotional control: Items 6, 10, 15, 17, 18. Baker and colleagues examined the factorial structure of this questionnaire using exploratory factor analysis and extracted five factors. Cronbach's alpha and test-retest reliability coefficients for this scale were reported as 0.92 and 0.79, respectively. In Iran, Lotfi obtained a correlation coefficient of 0.54 between this scale and the Emotion Regulation Scale, indicating convergent validity.

Fear of Negative Evaluation Questionnaire: This questionnaire was developed by Watson and Friend (1969). It consists of 12 items scored on a 5-point Likert scale ranging from 1 (not applicable at all) to 5 (completely applicable). The minimum score is 12, and the maximum is 60. Scores are categorized as follows: 12-24: Low fear of negative evaluation, 24-36: Moderate fear of negative evaluation, and above 36: High fear of negative evaluation. The reliability of this questionnaire has been reported as greater than 0.70.

Intervention

Participants in the experimental group received 12 weekly sessions of group cognitive-behavioral therapy (CBT), each lasting 60 minutes. The CBT intervention followed Aaron T. Beck's cognitive-behavioral framework (1967), focusing on: Cognitive Restructuring – Identifying and modifying negative automatic thoughts about social interactions. Behavioral Experiments – Gradual exposure to feared social situations. Relaxation Techniques – Deep breathing and progressive muscle relaxation. Emotional Regulation Strategies – Training in adaptive emotion regulation and coping mechanisms. Mindfulness and Self-Acceptance – Techniques to reduce self-focus and fear of negative evaluation.

To ensure treatment fidelity, sessions were conducted by licensed clinical psychologists specializing in CBT, with supervision and adherence monitoring in place.

Data Analysis

The research data were analyzed at both descriptive and inferential levels. At the descriptive level, statistical

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indices such as frequency, standard deviation, mean, variability, skewness, and kurtosis were used. At the inferential level, after distributing and collecting the questionnaires, Kolmogorov-Smirnov and covariance tests were applied using SPSS 22 software.

Findings and Results

Demographic findings showed that 53.33% of the participants in the experimental group were female and 46.67% were male. Additionally, 40% of the participants in the control group were female and 60% were male. The majority of participants in the experimental group (46.67%) were between 23 and 26 years old, while the smallest group (20%) was between 20 and 22 years old. In the control group, the majority (40%) were between 23 and 26 years old, and the smallest group (26.67%) was between 27 and 30 years old. This section of the research presents the mean and standard deviation of the scores for participants, grouped by category, before and after the training.

Table 1

Descriptive Statistics of Research Variables

Variable	Pre-test	Post-test	Follow-up	Pre-test	Post-test	Follow-up
Suppression	16.93	16.40	16.27	16.60	14.07	14.20
Standard Deviation	1.28	1.56	1.33	1.83	0.80	0.56
Unpleasant Emotional experience	17.33	17.73	17.40	17.17	14.17	14.67
Standard Deviation	1.04	0.96	1.21	1.00	0.90	0.76
Emotion Control	12.33	12.67	12.27	12.40	15.47	15.27
Standard Deviation	1.24	1.23	1.63	1.06	0.99	1.33
Avoidance	17.60	17.87	17.60	18.07	14.73	14.93
Standard Deviation	1.12	1.30	0.98	1.00	0.88	0.80
Unprocessed Emotional Signs	17.67	17.80	17.07	17.40	14.67	14.73
Standard Deviation	1.17	1.08	1.00	0.98	0.82	0.70
Emotional Processing	82.20	82.13	82.07	81.67	67.67	68.60
Standard Deviation	2.42	3.60	2.72	2.74	1.99	1.80
Fear of Negative Evaluation	36.87	36.73	36.60	37.07	34.33	34.27
Standard Deviation	1.60	1.49	1.24	1.62	1.59	1.44

Table 2

Shapiro-Wilk Test for Research Indicators

Indicator	Kurtosis	Kurtosis Error	Skewness	Skewness Error	Test Statistic	P-value
Emotional Processing	0.172	0.427	-1.647	0.833	0.133	0.154
Fear of Negative Evaluation	-0.009	-0.427	-0.216	0.833	0.162	0.118

As indicated in Table 2, the significance level of the Shapiro-Wilk test for all research indicators is greater than 0.05, meaning the data follows a normal distribution. To evaluate the effectiveness of cognitive-behavioral therapy on emotional processing, fear of negative evaluation, and perceived stress among students with social anxiety, repeated-measures ANOVA was used. The assumptions for the test were also checked.

Table 3

Assumption Tests for Repeated-Measures ANOVA

Variable	Levene's Test	Regression Slope Homogeneity	Mauchly's Sphericity	M Box's Test
Emotional Processing	F = 1.904	P = 0.235	F = 0.684	P = 0.329
Fear of Negative Evaluation	F = 0.820	P = 0.373	F = 0.489	P = 0.551

According to Table 3, the Levene's test confirmed homogeneity of variance, the Mauchly's test confirmed sphericity, and the M Box's test showed equal covariance matrices. Based on these assumptions, the repeated-measures ANOVA could be conducted, with the results shown in Table 4.

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Table 4

Results of Repeated-Measures ANOVA

Component	Source	SS	Df	MS	F	P-value	Eta Squared
Emotional Processing	Time	998.822	2	499.411	73.891	0.001	0.725
	Group	188.044	1	188.044	271.033	0.001	0.906
	Time × Group	851.356	2	425.678	62.982	0.001	0.692
Fear of Negative Evaluation	Time	44.156	2	22.078	9.543	0.001	0.254
	Group	51.378	1	51.378	24.012	0.001	0.462
	Time × Group	32.956	2	16.478	7.122	0.002	0.203

As shown in Table 4, the effect of time on emotional processing and fear of negative evaluation was significant in the pre-test, post-test, and follow-up stages ($p < 0.001$). The group effect revealed significant differences between the experimental and control groups in terms of mean scores for emotional processing and fear of negative evaluation across all stages ($p < 0.001$). The interaction effect between group and time was also significant for both variables ($p<0.001$). The Bonferroni post-hoc test results for time comparisons are shown in Table 5.

Table 5

Bonferroni Post-hoc Test Results for Time Comparisons

Variable	Time	Cognitive-Behavioral Therapy	Mean Difference	P-value
Emotional Processing	Pre-test - Post-test	7.033	0.641	0.001
	Pre-test - Follow-up	7.100	0.678	0.001
	Post-test - Follow-up	0.067	0.693	1.000
Fear of Negative Evaluation	Pre-test - Post-test	1.433	0.379	0.002
	Pre-test - Follow-up	1.533	0.398	0.002
	Post-test - Follow-up	0.100	0.400	0.832

The Bonferroni post-hoc test results in Table 5 showed that the mean scores for emotional processing and fear of negative evaluation were significantly lower between the pre-test and post-test, as well as between the pre-test and follow-up, in the experimental group. Therefore, the research hypothesis is confirmed, and cognitive-behavioral therapy is effective on these variables. There was no significant difference between post-test and follow-up, indicating that the effects of cognitive-behavioral therapy were stable over time.

Discussion and Conclusion

The results indicated that cognitive-behavioral therapy (CBT) has an impact on the emotional processing of students with social anxiety, which aligns with the prior findings (Aldao & Dixon-Gordon, 2014; Elizabeth et al., 2021). To explain this finding, it can be stated that shyness and low self-esteem are common problems affecting many individuals.

In terms of etiology and clinical symptoms, individuals with social anxiety tend to engage in excessive rumination during social interactions. Shyness involves an unusual and anxious focus on oneself in social situations, leading to psychological and muscular tension (Zhao et al., 2018). Shyness can have adverse effects on other aspects of life. Regarding the psychopathology of emotional disorders such as shyness, individuals with social anxiety tend to exhibit exaggerated reactions before, during, and after facing social situations and tend to rely on maladaptive emotion regulation strategies such as suppression, rumination, experiential avoidance, and post-event rumination. In contrast, cognitive-behavioral therapy focuses on cognitive restructuring, which directly addresses appraisals to correct deeper and semi-conscious belief systems. These beliefs play a significant role in the etiology and persistence of emotional vulnerability. Cognitive restructuring in CBT places a strong emphasis on the content of thought, as the mind perpetuates the cycle of irrational rumination (Taheri et al., 2020). CBT, by focusing on correcting thought content and labeling some incorrect and ineffective thoughts, increases the

tendency to inhibit them. On the other hand, dialectical behavior therapy challenges thoughts, which may lead to a diminished sense of control, as suppressed thoughts become more accessible. CBT involves various strategies, such as teaching breathing exercises, relaxation training, behavioral experiments, stress and anxiety management, and cognitive restructuring, to shape skills related to acceptance, reduce avoidance, and increase cognitive and behavioral flexibility, ultimately improving emotional processing in students with social anxiety.

The results also showed that cognitive-behavioral therapy affects the fear of negative evaluation in students with social anxiety. This finding is consistent with the prior studies (Elizabeth et al., 2021; Mark et al., 2013).

To explain this finding, it can be stated that individuals with a fear of negative evaluation by others experience greater anxiety and negative feelings from evaluative situations compared to those who have less fear of negative evaluation and often try to avoid potential social evaluation threats. Adolescents, when placed in situations where they might make mistakes or fail, experience negative self-evaluation and exhibit poor performance (Wei, 2015). The reduction in fear of negative evaluation following behavioral and cognitive treatments is a predictable change. The construct of fear of negative evaluation encompasses elements such as thoughts, expectations, negative social judgments, and embarrassing behaviors, and thus its reduction during treatment can be a good indicator of improvement in individuals with social anxiety. Fear of negative evaluation also causes individuals to perceive a wide range of social interactions as anxiety-inducing, such as performance situations like eating or writing in public, starting and continuing conversations, attending parties, dating, meeting strangers, or interacting with authority figures (Hofart et al., 2008).

Although the primary goal of CBT is not relaxation, the non-judgmental observation of negative internal events or physiological arousal leads to the emergence of these conditions. CBT employs techniques to alter the individual's perspective on the effectiveness of coping strategies and confronting thoughts and moods, guiding them toward accepting and modifying unpleasant thoughts and feelings, thereby enabling them to feel more in control and empowered when dealing with their thoughts and emotions. Rape's model of fear of negative evaluation considers cognitive processes as essential to the persistence of this disorder, which prevents effective engagement with internal and environmental corrective information. Therefore, this therapeutic approach helps individuals overcome states such as isolation, loneliness, shyness, and fear of evaluation by others.

The most significant limitation of this study pertains to its external validity, as it was conducted only on undergraduate students with social anxiety at the Islamic Azad University, Sari branch. Therefore, the generalization of these results to other populations is limited. Additionally, the study did not control for variables such as marital status, employment, and socioeconomic status, which could be seen as further limitations. Another important limitation in field research, particularly studies conducted using questionnaires, is the constraint of the questionnaire tool in measuring the relevant variables. This study is no exception.

It is recommended that CBT programs and emotional management training be implemented to help students improve their shyness. Inviting counselors and psychologists to conduct psychological seminars and utilizing cognitive-behavioral therapy techniques to promote mental health in universities is encouraged. Creating self-care and stress management training courses for students should be offered at no cost. Workshops on emotional management and processing, as well as stress-coping techniques, could be beneficial for students. It is suggested that CBT be introduced to therapists and counselors in the educational field at universities so that they can use this therapy to help students reduce their fear of negative evaluation. Future research could extend the follow-up period and employ alternative methods, such as interviews and observations, in conjunction with self-report tools. In future studies, it would be beneficial to address the limitations in this study and conduct research in other cities and on different sample populations.

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Declaration of Interest

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The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Declaration of Helsinki, which provides guidelines for ethical research involving human participants. Ethical considerations in this study were that participation was entirely optional.

Transparency of Data

By 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 contribute to this study.

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