

Effectiveness of Cognitive Restructuring on Depressed Mood in Girls with Self-Injury

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ABSTRACT

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Objective: The primary objective of this investigation was to examine the efficacy of cognitive restructuring training on alleviating depressive symptoms in adolescent females exhibiting self-injurious behaviors.

Methods: The methodological framework employed was a semi-experimental design incorporating pre-test, post-test, and follow-up assessments alongside a control group. The statistical population for this inquiry comprised all female students aged 15 to 18 years exhibiting self-injurious behaviors within the educational institutions of Baharestan city in 2023. A sample of thirty-six individuals who had engaged in self-injury within the preceding six months and had sought assistance from counseling clinics was selected through convenience sampling and subsequently allocated to experimental and control groups in a random manner. To facilitate data collection, the Beck Depression Inventory (BDI) and the ISAS Self-Injury Test were employed. The experimental group participated in eight sessions of cognitive restructuring training intervention, each lasting 90 minutes, while the control group received no intervention, followed by a one-month follow-up period. Data analysis was conducted utilizing multivariate analysis of covariance.

Results: Following a thorough examination of the assumptions pertinent to multivariate analysis of covariance, the outcomes of paired comparisons among the mean differences across the three assessment stages indicate that within the cognitive restructuring group, the change in mean scores from the pre-test stage to both the post-test and follow-up stages is statistically significant ($p<0.01$). Conversely, the difference in scores between the post-test stage and the follow-up stage did not reach statistical significance ($p<0.05$). In the control group, the differences observed between the pre-test scores and both the post-test and follow-up stages, as well as the differences between the post-test and follow-up scores, were likewise not statistically significant ($p<0.05$).

Conclusions: Consequently, it can be inferred that cognitive restructuring has demonstrated efficacy in mitigating depressive symptoms among adolescent females who engage in self-injury.

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Introduction

One of the high-risk behaviors during adolescence is non-suicidal self-injury (NSSI), which is considered one of the destructive behaviors of this developmental stage and has shown an increasing trend ([Lee & Hyun, 2021](#); [Vafaei et al., 2023](#)). This issue is a significant psychosocial problem with high prevalence in adolescence and is increasingly becoming a serious global public health concern ([Gonzales & Bergstrom, 2013](#); [Vafaei et al., 2023](#)). NSSI has been identified as one of the strongest predictors of suicide attempts in adolescents, with adolescents who engage in self-harming behaviors being at higher risk for suicide compared to their peers ([Khanipour & Bidaki, 2016](#)). NSSI is associated with numerous psychological consequences, including deterioration of mental health, heightened anxiety, depression, and emotional dysregulation. [Ahmadi marvili et al. \(2019\)](#) demonstrated that adolescents who exhibit self-injurious behavior and suicidal ideation often experience a range of psychological problems and show signs of psychological vulnerability in terms of personality traits.

One related construct is depressed mood. Depression is one of the most common clinical disorders, affecting up to 20% of individuals at some point in their lives, and is expected to become the most prevalent illness in high-income countries in the coming years ([Chávez-Flores et al., 2019](#)). Depression can negatively impact academic performance, creativity, apathy, and sleep patterns ([Mohammadbeigi et al., 2023](#)). It also hinders the development of important growth-related factors and, if left untreated, is likely to persist into adulthood ([Asarnow et al., 2011](#)). Due to its prevalence, the management and treatment of depression should be prioritized as a fundamental public health intervention ([Mostafaie & Bashirian, 2012](#)). One of the prominent approaches in the treatment of depression is the cognitive-behavioral perspective, pioneered by Aaron T. Beck. According to Beck, individuals with depression exhibit distorted information processing and engage in maladaptive reasoning, adopting negative schemas that diminish their self-worth. Depressed individuals are often entangled in what Beck calls the "cognitive triad." The goal of cognitive therapy is to identify these distorted thoughts and assist individuals in restructuring them. Cognitive-behavioral therapy (CBT) has been shown to be effective in reducing depression and increasing positive emotions such as happiness and hope ([Ansari et al., 2021](#)).

By definition, depression is a mood disorder that affects an individual's ability to think, reduces motivation, and disrupts physical functions such as eating and sleeping. Despite the widespread

prevalence and severe effects of various depressive disorders, [Watkin \(2014\)](#) argues that there remains a significant treatment gap. While effective treatments such as pharmacotherapy and CBT exist, there is still a need to improve the efficiency of these therapeutic methods. One strategy to enhance the effectiveness of interventions, as emphasized by [Ziv-Beiman et al. \(2017\)](#), is to target the underlying psychopathological mechanisms contributing to psychological disorders. In studies predicting self-harm and suicide, depression has been identified as a strong predictor ([Hu et al., 2021](#)), with other studies confirming a high correlation between depression and self-injurious or suicidal behaviors ([Başgöze et al., 2021](#)).

Cognitive-behavioral therapy is a short-term psychotherapeutic approach that helps individuals understand how their thoughts influence their emotions and behaviors. CBT teaches that our interpretation of events—shaped by our perception of the environment and ourselves—plays a central role in how we feel and act ([Abramowitz et al., 2008](#)).

One particularly effective CBT technique is cognitive restructuring. The core assumption of cognitive restructuring is that emotional and behavioral reactions are not solely the result of events themselves, but rather the individual's interpretation of those events. This technique highlights the role of cognitive processing in shaping emotional responses and behaviors. When individuals perceive threats to their core values, they experience anxiety and distress, and their interpretations of events become rigid, self-centered, and biased. Numerous studies on cognitive methods have demonstrated that CBT significantly reduces anxiety symptoms ([Covin et al., 2008](#); [Hofmann et al., 2014](#)). The cognitive restructuring approach seeks to identify irrational beliefs and expectations that contribute to emotional and interpersonal dysfunction, and then challenge those beliefs through experiential and realistic evidence ([Roshanaei-Moghaddam et al., 2011](#)).

Cognitive restructuring can be effectively integrated with other therapeutic methods. In cognitive restructuring, metaphors and storytelling can be used to convey core therapeutic concepts. Metaphors help individuals internalize logical reasoning by translating abstract ideas into tangible and relatable content. As indirect educational tools, metaphors can influence emotional states, reframe the meaning of problems, challenge maladaptive behaviors, activate the right hemisphere of the brain, create powerful mental associations, and facilitate communication ([Corey, 2020](#)). The foundational premise of cognitive restructuring is that life difficulties stem from the erroneous thoughts, beliefs, and interpretations individuals develop in various contexts.

Despite growing awareness of self-injurious behaviors and their psychological underpinnings, a significant gap remains in understanding and addressing the cognitive mechanisms that contribute to such behaviors among adolescents. While numerous studies have explored the relationship between depression and self-injury, there is still limited research on the effectiveness of structured cognitive interventions—particularly cognitive restructuring—in mitigating these risks in adolescent populations. Furthermore, educational and mental health systems often lack targeted, evidence-based approaches for early intervention, leading to delayed identification and support for at-risk youth. This underscores the urgent need to examine how specific therapeutic techniques, such as cognitive restructuring within the framework of cognitive-behavioral therapy (CBT), can effectively reduce depressive symptoms and subsequently diminish the likelihood of self-harming behaviors in adolescents. Addressing this research gap is essential for developing practical, preventive strategies that can be implemented in schools and clinical settings alike.

Material and Methods

This study employed a quasi-experimental design with pretest-posttest and a control group. The statistical population consisted of all female high school students with a history of self-injury in Baharestan County during the 2022–2023 academic year. A sample of 36 students was selected from among those who had engaged in self-harming behaviors within the past six months and had sought counseling services at local clinics. Participants were selected using purposive clinical sampling and randomly assigned to either the experimental or control group.

After obtaining informed consent and explaining the research objectives, participants completed the Beck Depression Inventory-II (BDI-II) and the Inventory of Statements About Self-Injury (ISAS) by [Glenn and Klonsky \(2011\)](#). The experimental group then received cognitive restructuring therapy in a group format over eight 90-minute sessions, while the control group received no intervention during this period. Following the intervention, both groups completed the same questionnaires again. A follow-up assessment was also conducted one month later, and all data were subjected to statistical analysis.

Instruments

The Beck Depression Inventory-II: This inventory consists of 21 items assessing the severity of depressive symptoms on a 4-point Likert scale ranging from 0 to 3. Cut-off scores have been

reported as follows: 0–13 for minimal depression, 14–19 for mild depression, 20–28 for moderate depression, and 29–63 for severe depression ([Visser et al., 2006](#)). Previous studies have reported a Cronbach's alpha of 0.94 for this instrument, with item-total correlations ranging from 0.47 to 0.70 and a correlation coefficient of 0.66 with the revised Hamilton Rating Scale for Depression, indicating satisfactory construct validity ([Green et al., 2015](#)). In the current study, the Cronbach's alpha for this tool was calculated to be 0.71.

Procedure

The cognitive restructuring intervention was conducted based on the Cognitive Restructuring Therapy Manual by [McMullen \(2013\)](#) across eight 90-minute sessions held twice weekly.

Summary of intervention

First session

Objective: Establishing communication, Method: Explaining the goals of the meetings, explaining the rules for attending the meetings, opportunities, criteria, and conducting a pre-test

Second session

Objective: Irrational thoughts and maladaptive cognitions, Method: Irrational thoughts, explaining cognitive errors, explaining realistic goals and expectations, mutual expectations, and paying attention to positive characteristics

Third session

Objective: Cognitive restructuring, challenging the need to think Method: Explaining irrational beliefs, techniques for questioning irrational beliefs, thought-challenge techniques, examining the need to think problems

Fourth session

Objective: Developing empathetic understanding skills, Method: Assessing communication patterns and barriers, practicing and teaching appropriate communication skills, methods for dealing with negative thoughts

Fifth session

Objective: Communication styles and their feedback, Method: Recognizing the types of communication styles, the difference between aggression

and assertiveness (passive, aggressive, and assertive styles) and self-awareness of these

Sixth session

Goal: The concept of the complete human being, Method: Identifying unmet emotional needs and externalizing blocked emotions

Session 7

Goal: Tracking cognition, Method: Tracking cognitive distortions, exposing cognitive distortions

Session 8

Goal: Teaching problem solving, Method: Teaching problem solving, answering questions, and conducting a post-test

Results

The mean and standard deviation of the pretest, posttest, and follow-up scores for the variable of depressed mood in the experimental and control groups are presented in Table 1.

Table 1. Descriptive Statistics of Depressed Mood Scores Across Three Measurement Points by Group

Variable	Group	Phase	Mean	SD
Depressed mood	Control	Pretest	22.83	6.998
		Posttest	23.61	6.270
		Follow up	22.67	6.651
	Experimental	Pretest	21.11	7.169
		Posttest	16.94	6.292
		Follow up	17.28	6.332

According to the results in Table 1, the mean scores for depressed mood in the cognitive restructuring group decreased in the posttest and follow-up stages compared to the pretest, whereas no such change was observed in the control group. To examine the effectiveness of cognitive restructuring on depressed mood in adolescent girls with a history of self-injury, a between-group repeated measures ANOVA was employed. Prior to conducting the ANOVA, the assumption of normality was assessed using the Shapiro–Wilk test, which tests whether the distribution of the sample differs significantly from a normal distribution. The results indicated that the data for the variable in the pretest, posttest, and follow-up followed a normal distribution.

Table 2. Results of the Shapiro–Wilk Test for Normality

Variable	Pretest		Posttest		Follow up	
	S-W	P	S-W	P	S-W	P
Depressed mood	0.923	0.095	0.872	0.483	0.951	0.113

In addition, Mauchly's Test of Sphericity was used to examine the assumption of homogeneity of covariances (i.e., equality of covariances across time points). If the significance level of this test exceeds 0.05, the assumption of sphericity is met. If violated, the more conservative Greenhouse–Geisser correction is applied. In this study, the results of Mauchly's test were non-significant ($p > 0.05$), indicating that the assumption of sphericity was satisfied. The results of the repeated measures ANOVA comparing the two groups across three time points are presented in Table 3.

Table 3. Repeated Measures ANOVA Results for Differences in Depressed Mood Across Pretest, Posttest, and Follow-up

Variable	Source	MS	DF	MS	F	P	Effect size
Depressed mood	Phase	83.574	1.795	46.550	22.699	0.001	0.400
	Group	569.481	1	569.481	4.445	0.042	0.116
	Group * Time	118.574	1.795	66.045	32.204	0.001	0.486

Based on the findings reported in Table 3, the differences in depressed mood scores across the three stages of the study were statistically significant ($p < 0.01$). The results suggest that approximately 11.6% of the variance in depressed mood can be attributed to group membership (i.e., experimental vs. control). Moreover, the interaction between time and group membership was also significant ($p < 0.01$), indicating that changes in depressed mood scores across the three time points differed between the two groups. These findings support the conclusion that cognitive restructuring had a significant effect on reducing depressed mood in the experimental group. Given the overall significant results, pairwise comparisons of the means across the three stages were conducted using the Bonferroni test, and the results are presented in Table 4.

Table 4. Pairwise Comparison of Mean Scores in Depressed Mood Across the Three Time Points for Experimental and Control Groups

Group	Phase	Mean difference	Std. error	P
Control	Pretest-Posttest	-0.778	0.423	0.225
	Pretest-Follow-up	0.167	0.522	1
	Posttest-Follow-up	0.944	0.402	0.074
Experimental	Pretest-Posttest	4.167*	0.423	0.001
	Pretest-Follow-up	3.833*	0.522	0.001
	Posttest-Follow-up	-0.333	0.402	1

The results of the pairwise comparisons in Table 4 indicate that, in the cognitive restructuring group, there were statistically significant differences between the pretest scores and both the posttest and follow-up scores ($p < 0.01$). However, the difference between posttest and follow-up scores was not significant ($p > 0.05$), suggesting that the effects of the intervention were stable over time. In the control group, no significant differences were observed between any of the three time points ($p > 0.05$). Therefore, it can be concluded that cognitive restructuring was effective in reducing depressed mood in adolescent girls with a history of self-injury.

Discussion

Our results indicated that in the pretest phase, no significant difference was found between the groups, indicating that the experimental and control groups were equivalent at baseline. However, in the posttest, the mean depression score in the cognitive restructuring experimental group was significantly lower than that of the control group. This significant difference persisted at the follow-up stage, where the mean depression score in the experimental group remained significantly lower than in the control group. This suggests that the change observed in the posttest was maintained over time, demonstrating that cognitive restructuring training was effective in reducing depression both in the posttest and at follow-up.

The findings of [Chen et al. \(2023\)](#) indicated that one of the primary predictors of self-injury during adolescence is depressed mood. These findings are consistent with those of [Cook and Gorraiz \(2016\)](#), who demonstrated that Intervention effects for both outcomes were positive, suggesting decreased NSSI and improvement in depressive symptoms for adolescents following a course of DBT. The study by [Samadzade et al. \(2015\)](#) aligns with the current findings, showing that cognitive-behavioral therapy (CBT) led to increased self-care behaviors, reduced depressive symptoms, and a relative decrease in anxiety among women with type 2 diabetes.

Interpretation of these findings suggests that many individuals with depression experience overwhelming feelings of worthlessness and guilt. They tend to ruminate on personal weaknesses or failures while disregarding their strengths and successes. For instance, a depressed adolescent might believe they are unworthy of parental affection, incompetent, and incapable of fulfilling academic responsibilities, leading them to withdraw from favored activities such as sports. In cognitive restructuring, these distressing thoughts are identified and challenged through techniques such as examining evidence, questioning assumptions, and reframing beliefs—ultimately contributing to reduced negative thinking and a shift toward more adaptive perspectives.

Cognitive-behavioral therapy has proven effective in treating depression and enhancing positive emotions such as happiness and hope ([Karwoski et al., 2006](#)). Although pharmacotherapy and CBT have demonstrated efficacy, there remains a pressing need to enhance the effectiveness of existing therapeutic approaches.

Cognitive restructuring has been successfully employed to treat a wide range of psychological conditions, including depression, PTSD, various addictions, anxiety, social phobias, interpersonal

difficulties, and stress. These results are consistent with previous studies ([Asikhia, 2014](#); [Jacobs & Cochran, 1982](#); [Shurick et al., 2012](#)). It can be concluded that clients suffering from depression can, through cognitive restructuring techniques, bring about meaningful changes in their negative attitudes and beliefs, and replace negative emotions with positive ones.

To implement cognitive restructuring effectively, it is necessary first to identify the automatic distressing thoughts that trigger emotional discomfort. Once identified, these thoughts are examined for supporting and contradictory evidence, and clients are guided to generate alternative, more constructive thoughts. Research has consistently demonstrated that cognitive restructuring is effective in reducing depressive symptoms.

The present study, while offering meaningful insights into the effects of cognitive restructuring on depressive mood in adolescent girls with self-injurious behaviors, is subject to several limitations that should be acknowledged. First, the research was limited to female students due to accessibility constraints, which restricts the generalizability of the findings to male populations. Future research should include both genders to determine whether similar results can be observed across a more diverse demographic. Moreover, the study focused solely on a specific age group of adolescents. While this allows for a targeted understanding of cognitive restructuring's effects in this developmental period, it limits the applicability of the results to other age groups, such as younger children or adults, whose cognitive and emotional capacities differ significantly.

Another limitation concerns the methodological approach, particularly in data collection. The study relied exclusively on self-report questionnaires, which are subject to social desirability bias and may not fully capture the complexity of participants' internal experiences or behavioral changes. The absence of qualitative data or behavioral observations limits the depth of interpretation regarding how participants experienced the intervention. Furthermore, the study did not compare cognitive restructuring with other therapeutic approaches; therefore, conclusions about its relative effectiveness remain tentative. It is recommended that future research explore a broader range of therapeutic strategies, incorporate mixed-method designs, and implement long-term follow-up assessments to better understand the durability and comparative impact of the intervention.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving human participants were reviewed and approved by the ethics committee of Islamic Azad University. The patients/participants provided their written informed consent to participate in this study.

Author contributions

All authors contributed to the study conception and design, material preparation, data collection, and analysis. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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