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The Effectiveness of Self-Talk Training on Craving, Mental Health, and Rejection Sensitivity in Individuals with Substance Dependence

Maryam. Beheshti[1], Hossein. Ebrahimi Moghadam[2*], Nasrin. Bagheri[3]

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

*** Corresponding author email address**: h.ebrahimimoghaddam@riau.ac.ir

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A B S T R A C T

Objective: This study aimed to determine the effectiveness of self-talk training on craving, mental health, and rejection sensitivity in individuals with substance use disorders.

Methods and Materials: The research utilized a quasi-experimental design with pre-test, post-test, and follow-up phases. The statistical population included all opioid substance abusers who referred to outpatient treatment centers in Nasim Shahr during 2021–2022, from which 60 participants were selected through purposive sampling based on the inclusion criteria. Data collection instruments included a demographic information checklist (researcher-developed form), the Craving Assessment Questionnaire for Substance Use after Abstinence (Salehi Fedardi et al., 2011), the Mental Health Continuum-Short Form (Keyes, 2002), and the Rejection Sensitivity Questionnaire (Downey & Feldman, 1996). The self-talk training program was conducted over 10 sessions for the experimental groups, while no interventions were implemented for the control group. Data were analyzed using statistical assumption tests and repeated measures analysis of variance with SPSS software version 26.

Findings: Results indicated a significant interaction effect between group membership and time across pre-test, post-test, and follow-up phases in the linear combination of craving, mental health, and rejection sensitivity variables ($p < .05$).

Conclusion: It can be concluded that self-talk training was effective in reducing craving and rejection sensitivity while improving mental health in individuals with substance use disorders.

Keywords: *Self-talk, Mental Health, Rejection Sensitivity, Craving.*

1. Introduction

Substance abuse is a chronic, relapsing disorder characterized by impaired inhibitory control, drug-seeking behavior, maintenance, and consumption despite negative consequences. Substance abuse and its adverse outcomes are among the most distressing social harms, leading to severe health, financial, and social issues, particularly in developing societies such as Iran (Asi Kooshsefahani & Baradaran, 2022). When individuals face high-risk situations without appropriate and effective coping behaviors and responses, their sense of self-efficacy decreases, resulting in positive expectations about craving, relapse, and subsequent substance use or return to use (Dyar et al., 2022; Romm et al., 2022).

One of the variables related to addiction tendencies and craving is mental health (Romm et al., 2022). Mental health is defined as individuals' evaluations of their own lives, including their emotional reactions to events, moods, and judgments about their overall life satisfaction. Another aspect of mental health involves the ability to think, learn, live, manage emotions, and interact with others. Individuals with good mental health are aware of the motives behind their actions and often feel valued and accepted by those around them, confident that they can control their behavior and direct their abilities toward productive activities. They are active and enjoy their lives (Hoskote et al., 2023).

One issue that has a role in the relationship between mental health and substance use tendency is rejection sensitivity (Niu et al., 2022). Rejection sensitivity reduces stability in interpersonal relationships and is prevalent in various mental health disorders. Researchers believe that individuals with high rejection sensitivity are more likely to use drugs because ignoring rejection may be easier, and rejection cues may become neutral in substance-use-prone environments (Dyar et al., 2022). Findings indicate that addicts who use substances less frequently have better and more meaningful relationships with family and friends compared to those who spend more time consuming drugs. These results suggest a potential relationship between the type of social relationships and the level of drug use among addicts. Furthermore, studies on substance use and tendencies in addicted individuals have shown that emotion regulation, loneliness, and feelings of rejection play a role in increased substance use tendencies (Niu et al., 2022).

Many treatments have been introduced for addiction, and in recent years, cognitive-behavioral approaches and associated training methods have received attention from researchers and therapists, especially given their roots in contemporary psychology (Li et al., 2022). Self-talk is a term from the cognitive-behavioral school that focuses on altering individuals' internal dialogues. Through cognitive restructuring, negative thoughts are changed, encouraging individuals to engage in desirable activities. Self-talk is an internal conversation that, when positive, instructs the subconscious mind to marshal resources for success, directing behavior and thoughts accordingly (Dahl-Leonard et al., 2022). Thoughts manifest through words and impact our lives, often occurring unconsciously, and few people focus on their thoughts and statements during thinking (Mark et al., 2022).

Self-talk training reduces state anxiety, increases state confidence, and enhances self-optimization, self-efficacy, and performance. Additionally, long-term training proved more effective than short-term training. Targeted self-talk interventions may improve individuals' mental states and performance. Cognitive techniques help patients recognize thoughts preceding drug use, replacing them with healthier thoughts, and teaching patients to view situations differently (Mark et al., 2022).

Given the above, the necessity of non-pharmacological treatments, such as self-talk training, in improving craving, mental health, and rejection sensitivity among addicts is of significant importance. Considering the critical role of craving control in preventing relapses among individuals with a history of substance dependence, the researcher aims to answer the question: Does self-talk training impact craving, mental health, and rejection sensitivity in individuals with substance dependence?

2. Methods and Materials

2.1. Study Design and Participants

This study is applied research with a semi-experimental design, using a pre-test, post-test, and follow-up design with a control group. A purposive sampling method was employed. The target population consisted of all opioid users in Nasim Shahr in 2021. For this purpose, an addiction treatment center (Nasim Rahai Addiction Treatment Clinic) was selected using a convenience method. Forty individuals who scored highest on the craving and rejection sensitivity tests and lowest on the mental health scale were selected for group therapy and randomly assigned to two groups (experimental and control) of 20 participants each. The self-talk training intervention was applied to the experimental group, while no intervention was conducted for the control

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group. It should be noted that G-Power software was used to determine the sample size, with an effect size of 0.25, an alpha error of 0.05, and a power of 0.95. A sample size of 36 participants for both groups was suggested. However, 18 participants were initially chosen, and to account for potential dropouts, 20 participants were included in each group.

Inclusion criteria were: informed consent, a minimum education level of a high school diploma, at least five years of substance use history, a negative drug test, being aged 18 to 55, no use of antipsychotic drugs, and no physical health problems (as determined by reviewing participants' medical records at the center). Exclusion criteria included: not attending sessions continuously, missing two consecutive sessions, leaving therapy sessions, lack of motivation to continue group therapy, withdrawal from the study, relapse, and simultaneous participation in other counseling or psychotherapy sessions.

Following sampling and random assignment into two groups of 20 (experimental and control), participants in the experimental group completed three questionnaires as a pre-test, while the control group also responded to these questionnaires. The experimental group received self-talk training, and the control group received problem-solving training. The self-talk training was conducted in ten 60-minute sessions. After the intervention, both groups completed the three questionnaires again, and the effectiveness of the intervention on the dependent variables was evaluated, followed by a three-month follow-up to assess the treatment's long-term impact.

2.2. Measures

2.2.1. Craving for Substance Use after Abstinence

Developed by Fedardi, Barerfan, and Ziaei (2008), this 20-item questionnaire measures thoughts and cravings related to substance use. It is scored on a 6-point Likert scale (completely true = 5, not true at all = 0). In Kazemini and Abdokhodayi's (2013) study, internal consistency was used to measure reliability, yielding a Cronbach's alpha of 0.94. The validity of this instrument was reported with a Cronbach's alpha of 0.94 (Golestaneh et al., 2021). In this study, the reliability using Cronbach's alpha was calculated as 0.89.

2.2.2. Mental Health

Mental Health Continuum-Short Form (MHC-SF) by Keyes (2002) is a standard 14-item questionnaire derived from the long-form continuum measures three dimensions of mental health and is rated on a 6-point Likert scale, with items like "feeling that you have something important to offer to society." Keyes (2002) reported a convergent validity of 0.80 and a Cronbach's alpha of 0.73. In Iran, Cronbach's alpha was reported at 0.88 (Ghalami, 2017). In this study, Cronbach's alpha was 0.81.

2.2.3. Rejection Sensitivity

Developed by Downey and Feldman (1996), this 18-item, two-part questionnaire is measured on a 6-point Likert scale. Aydouk et al. (2008) reported a Cronbach's alpha reliability of 0.84. The reliability for Iranian students was also 0.84, with convergent and divergent validity established using measures of anxiety and self-esteem, respectively. The overall rejection sensitivity scale showed a negative relationship with self-esteem and a positive relationship with anxiety (Bahrami, 2019). In this study, Cronbach's alpha was 0.72.

2.3. Intervention

2.3.1. Self-Talk Training

The self-talk training sessions were conducted over ten weekly sessions based on Kiani Nejad's (2008) protocol, spanning two months (Ghalami, 2017; Rizal et al., 2021; Rohmah et al., 2022).

Session 1: Introduction and Goal Setting

Participants are introduced to the concept of self-talk, its significance, and how it influences behavior and emotions. Goals for the training are outlined, and participants are encouraged to share their expectations. An overview of the intervention is provided, and participants are guided in setting personal objectives for the program.

Session 2: Identifying Negative Self-Talk

The session focuses on recognizing and understanding negative self-talk patterns. Participants engage in exercises to become aware of their automatic negative thoughts, learn to identify these patterns in real-life situations, and discuss how such thoughts impact their behaviors and emotions.

Session 3: Cognitive Restructuring

Participants are introduced to cognitive restructuring techniques to transform negative thoughts into constructive ones. The facilitator explains how to challenge and replace

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irrational beliefs with realistic, positive self-statements. Practical examples are used to illustrate the process.

Session 4: Developing Positive Self-Talk

The emphasis is on formulating positive self-talk statements that can be used in stressful or triggering situations. Participants practice creating and verbalizing affirmations that boost confidence and promote healthier emotional responses. Group exercises encourage feedback and refinement of these affirmations.

Session 5: Visualization and Mental Rehearsal

Participants are taught how to use visualization techniques in conjunction with positive self-talk. They practice mentally rehearsing successful outcomes of challenging situations while using empowering statements, reinforcing their ability to handle real-life scenarios.

Session 6: Managing Cravings and Triggers

The session covers strategies for using self-talk to manage cravings and resist triggers related to substance use. Participants develop personalized self-talk scripts to strengthen their resolve and reduce the intensity of cravings, with role-playing activities to simulate high-risk situations.

Session 7: Enhancing Self-Efficacy

Participants learn how to use self-talk to build self-efficacy and reinforce their belief in their ability to succeed in difficult tasks. The session includes exercises that help them reflect on past achievements and utilize affirmations that affirm their capability and strength.

Session 8: Coping with Rejection Sensitivity

This session addresses how self-talk can be used to cope with feelings of rejection. Participants learn to challenge self-defeating thoughts related to rejection and practice self-compassionate statements that promote emotional resilience and strengthen interpersonal relationships.

Session 9: Self-Monitoring and Reflection

Participants are trained in self-monitoring their progress and reflecting on how self-talk has influenced their behaviors and emotional well-being. They keep a journal of their experiences, track their use of self-talk, and discuss challenges and successes with the group.

Session 10: Review and Maintenance

The final session reviews the key concepts covered in the program, emphasizing the importance of consistent practice. Participants create a personal maintenance plan, setting long-term goals and strategies for continued use of self-talk techniques. The session ends with group feedback and a discussion of future support resources.

2.4. Data analysis

Descriptive and inferential statistics were used for data analysis, reporting the mean and standard deviation of the dependent variables in the descriptive section. Repeated measures analysis of variance was used to test the research questions and hypotheses using SPSS-26.

3. Findings and Results

In the present study, 40 male participants with substance use disorder were divided into two groups: experimental (20 participants) and control (20 participants). The mean and standard deviation of participants' ages in the experimental group were 33.15 (4.77) years, and in the control group, they were 32.43 (4.45) years. In the experimental group, 14 participants had a high school diploma, 3 had an associate degree, and 3 held a bachelor's degree. In the control group, 15 participants had a high school diploma, 1 had an associate degree, and 4 held a bachelor's degree. In the experimental group, 5 participants were single, and 15 were married. In the control group, 3 participants were single, 15 were married, and 2 were divorced. Table 1 presents the mean (standard deviation) and the Shapiro-Wilk index (significance level) for the variables of craving, mental health, and rejection sensitivity in the research groups across the pre-test, post-test, and follow-up stages.

Table 1

Mean (Standard Deviation) and Shapiro-Wilk Index (Significance Level) for Research Variables

Variable	Group	Pre-test	Post-test	Follow-up	Shapiro-Wilk (Sig.)
Craving	Experimental	60.05 (11.04)	45.10 (7.23)	42.00 (6.75)	0.954 (0.437)
	Control	62.40 (8.02)	58.10 (8.19)	59.75 (8.30)	0.938 (0.223)
Mental Health	Experimental	30.30 (5.77)	22.40 (3.53)	22.75 (3.40)	0.920 (0.101)
	Control	29.30 (5.09)	28.25 (5.30)	30.85 (4.56)	0.944 (0.288)
Rejection Sensitivity	Experimental	122.30 (12.83)	87.80 (10.12)	91.70 (9.25)	0.911 (0.068)
	Control	120.30 (14.40)	116.60 (13.08)	115.05 (12.12)	0.941 (0.252)

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Table 1 shows that in the experimental group, the mean scores of craving, mental health, and rejection sensitivity decreased in the post-test and follow-up stages compared to the pre-test stage. In contrast, similar changes were not observed in the control group. The Shapiro-Wilk test was used to assess the assumption of normal distribution for the dependent variables in both groups across the three stages. As shown in Table 1, none of the Shapiro-Wilk values were statistically significant, indicating that the variables were normally distributed in both groups across the three stages. Levene's test was used to assess the homogeneity of error variances, and results confirmed that this assumption was met for all three dependent variables. Furthermore, M. Box's test and Mauchly's test for sphericity were used to assess the homogeneity of covariance matrices and the assumption of sphericity, respectively.

Results indicate that the M. Box statistic was not significant for any research variable, confirming the assumption of homogeneity of covariance matrices for each dependent variable. Additionally, the chi-square values from Mauchly's test were not significant for the dependent variables in either group, affirming the sphericity assumption. Multivariate analysis results for the effect of self-talk on craving, mental health, and rejection sensitivity are shown in Table 2.

Table 2

Multivariate Analysis of Variance for the Effect of the Independent Variable on Dependent Variables

Dependent Variable	Wilks' Lambda	F	df	P	η^2	Power
Craving	0.696	8.09	2, 37	0.001	0.304	0.942
Mental Health	0.675	8.86	2, 37	0.001	0.325	0.961
Rejection Sensitivity	0.471	20.78	2, 37	0.001	0.529	1.00

*p<0.05; **p<0.01

Table 2 indicates that the effect of the independent variable on craving (Wilks' Lambda = 0.696, $\eta^2 = 0.304$, P = 0.001, F = 8.09), mental health (Wilks' Lambda = 0.675, $\eta^2 = 0.325$, P = 0.001, F = 8.86), and rejection sensitivity (Wilks' Lambda = 0.471, $\eta^2 = 0.529$, P = 0.001, F = 20.78) was significant. Table 4 presents the results of repeated measures analysis of variance to explain the effect of self-talk on the dependent variables.

Table 3

Repeated Measures ANOVA Results for the Effect of the Independent Variable on Dependent Variables

Variable	Effects	Sum of Squares	Error Sum of Squares	F	P	η^2
Craving	Group Effect	3652.03	2759.43	50.29	0.001	0.570
	Time Effect	2142.45	2807.75	28.99	0.001	0.433
	Group × Time Interaction	1243.82	5221.67	9.05	0.001	0.192
Mental Health	Group Effect	559.01	960.58	22.11	0.001	0.368
	Time Effect	180.00	875.95	7.81	0.008	0.170
	Group × Time Interaction	449.32	1548.67	11.03	0.001	0.225
Rejection Sensitivity	Group Effect	8383.41	7248.05	43.95	0.001	0.536
	Time Effect	6426.11	5731.28	42.61	0.001	0.529
	Group × Time Interaction	5403.22	9937.50	20.66	0.001	0.352

Table 3 shows that, in addition to the effects of the group and time, the group × time interaction effect was significant for craving ($\eta^2 = 0.192$, P = 0.001, F = 9.05), mental health ($\eta^2 = 0.225$, P = 0.001, F = 11.03), and rejection sensitivity ($\eta^2 = 0.352$, P = 0.001, F = 20.66). These findings suggest that self-talk significantly influenced the dependent variables. Table 5 presents Bonferroni post hoc test results for pairwise comparisons of craving, mental health, and rejection sensitivity scores in both groups across the three stages.

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Table 4

Bonferroni Post Hoc Test Results for Pairwise Comparisons

Variable	Comparison 1	Comparison 2	Mean Difference	Standard Error	P Value
Craving	Pre-test	Post-test	9.63	1.86	0.001
	Pre-test	Follow-up	10.36	1.92	0.001
	Post-test	Follow-up	-0.73	1.77	1.00
Mental Health	Pre-test	Post-test	4.48	1.06	0.001
	Pre-test	Follow-up	3.00	1.07	0.024
	Post-test	Follow-up	-1.48	0.88	0.306
Rejection Sensitivity	Pre-test	Post-test	19.10	2.41	0.001
	Pre-test	Follow-up	17.93	2.75	0.001
	Post-test	Follow-up	-1.18	2.50	1.00
Craving	Experimental	Control	-11.03	1.56	0.001
Mental Health	Experimental	Control	-4.32	0.92	0.001
Rejection Sensitivity	Experimental	Control	-16.72	2.52	0.001

The Bonferroni post hoc test results in Table 4 show that the mean differences in craving, mental health, and rejection sensitivity between the pre-test and post-test and between the pre-test and follow-up stages were statistically significant, whereas the mean differences between the post-test and follow-up stages were not significant. Additionally, the Bonferroni test results for group effects show that the mean differences in craving, mental health, and rejection sensitivity between the experimental and control groups were statistically significant, indicating that self-talk led to a reduction in these variables in the experimental group compared to the control group in the post-test and follow-up stages. The trend of mean changes in the dependent variables, shown in Figure 1, indicates that the effects of self-talk on the dependent variables remained stable after the treatment period. Figure 1 displays the graphs of craving, mental health, and rejection sensitivity in the research groups across the pre-test, post-test, and follow-up stages.

4. Discussion and Conclusion

The results of the study indicated that self-talk training led to a reduction in craving symptoms among individuals with substance use disorder. Concerning problem-solving skills training, the findings of this study align with prior studies (Golestaneh et al., 2021; Kross & Ayduk, 2017; Shariati & Jamal, 2013).

In explaining this finding, it can be stated that self-talk refers to what individuals say or think about themselves. Meichenbaum (1977) asserted that individuals' thinking styles can intentionally and relatively directly influence how they feel. Each person uses a form of inner self-talk to influence their thoughts, telling themselves what to think, believe, and even how to think and act. Meichenbaum (1977) described self-talk as a consequence of cognitive functions, playing a crucial role in problem-solving, responding to stressful situations, physiological reactions, and generally creating adaptive behaviors. Repetitive words and thoughts often become powerful, penetrating the subconscious mind and affecting behavior, performance, and responses. The subconscious mind interprets these words and thoughts as representing a real situation and attempts to merge them with reality. Blackburn and Anson (1988), analyzing two hundred types of thoughts collected from fifty depressed patients during therapy, found that systematic errors often occurred during what are called intrusive thoughts or self-whispering. These thoughts are reflective responses that emerge as immediate interpretations of situations (Dahl-Leonard et al., 2022; Ghalami, 2017; Shariati & Jamal, 2013). In essence, one of the factors influencing our attitudes and personality is what we say to ourselves about ourselves. These internal dialogues determine our inner responses to what happens to us and shape our thinking, emotions, and actions. By controlling our inner dialogue, we can begin to establish control over all areas of our lives. Our self-talk shapes the emotional significance of our lives. The words we use to describe what happens to us and how we feel about external events can create the positive or negative feelings we experience in life.

The results of the study demonstrated that self-talk skills training led to a decrease in rejection sensitivity among individuals with substance use disorder. This finding is consistent with the results of previous researchers (Thomaes et al., 2020).

To explain this finding, it can be said that heightened anxiety expectations among addicted individuals and the potential repetition of feedback loops cause rejection sensitivity to act as a vicious cycle, leading the addicted

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person to anticipate rejection internally. The expectation of rejection influences their interactions with family, friends, and even strangers, as well as their selection of activities, hobbies, and interests, driven by the anticipation and fear of rejection. A review of the literature reveals the negative psychological consequences of rejection sensitivity, such as depression, anxiety, and aggression. High levels of catastrophizing, cognitive distortions, and anxiety may partially explain the heightened sensitivity to rejection. These individuals perceive threats in such a way that they evaluate them as rapidly escalating dangers, progressively worsening, and actively accelerating. Thus, this group of patients views their addiction as a threatening factor that quickly progresses, worsens, and heightens their social and life problems. High anxiety and a sense of danger may lead to greater rejection sensitivity.

The findings showed that self-talk training led to improved mental health symptoms in individuals with substance use disorder. One explanation for this finding is that a significant reason for many psychological and emotional disturbances among addicted individuals lies in the negative self-talk and thoughts they repeatedly express to themselves. Negative thoughts and dialogues are deeply ingrained in addicts, and they need training to learn how to think positively. Cognitive therapy based on self-talk helps addicted individuals become aware of the maladaptive ways of thinking embedded in their minds, which negatively affect their functioning and personality. This awareness is instilled through repetition and practice, preparing individuals to eliminate destructive thoughts that are fundamental to psychological and social harm. Cognitive and cognitive-behavioral approaches work on modifying individuals' thought processes and aim to restructure and rebuild their cognitive frameworks. By reconstructing these cognitive systems and thought patterns, the intensity of negative emotional experiences decreases, thereby improving mental health.

5. Limitations & Suggestions

The limitations of the current study include the purposive sampling method. Selecting addicted groups, the heterogeneity of addicts in terms of the type of substance used and the duration of substance use, and differences in marital status and family structure are significant limitations. The sample was limited to individuals with opioid use disorder in Nasim Shahr, Tehran, which restricts the generalizability of the findings. Another limitation was the potential inaccuracy or dishonesty of participants' responses to the questionnaires, as well as the lack of culturally adapted Iranian questionnaires. It is suggested that qualitative research be conducted to convert observations into quantitative data. Practically, given the various benefits of self-talk training, it is recommended that counselors and psychologists working in the field of addiction and family issues use these educational approaches to improve the psychological and behavioral health of individuals recovering from addiction and others with psychological symptoms.

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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. Each participant received an informed consent form to understand the study's objectives. "This article is derived from the doctoral dissertation of the first author at Roudehen Branch, Islamic Azad University, Roudehen, Iran." It has received ethical approval under the code IR.IAU.R.REC.1401.048 from the Ethics Committee of Islamic Azad University, Roudehen Branch.

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 in this article.

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