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Comparison of the Effectiveness of Cognitive-Behavioral Therapy and Schema Therapy on Improving Adaptive Behavior in Individuals with Substance Use Disorder

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A B S T R A C T

Objective: The objective of this study was to compare the effectiveness of Cognitive-Behavioral Therapy (CBT) and Schema Therapy in improving adaptive behavior among individuals with substance use disorder.

Methods and Materials: This quasi-experimental study employed a pretest-posttest-follow-up design with a control group. The study sample consisted of 45 individuals with substance use disorders, who were randomly assigned to three groups: a CBT group, a Schema Therapy group, and a control group. Participants underwent 12 sessions of CBT or 15 sessions of Schema Therapy. Data were collected using the Bell Adjustment Inventory, which assessed various components of adaptive behavior, including family, health (physical), emotional, occupational, and social aspects. Data analysis was conducted using univariate analysis of covariance (ANCOVA) and Bonferroni post-hoc tests to determine the differences between groups at posttest and follow-up stages.

Findings: The results demonstrated that CBT significantly improved adaptive behavior compared to the control group at both the posttest and follow-up stages, with a 1.79-point increase in the posttest and a 2.05-point increase in the follow-up. Schema Therapy did not show a significant difference compared to the control group in either stage. Additionally, CBT was found to be more effective than Schema Therapy in improving adaptive behavior, with a 1.57-point increase at the posttest and a 1.81-point increase at the follow-up. The improvement was significant across various components, including family, emotional, and occupational aspects, particularly in the CBT group.

Conclusion: Cognitive-Behavioral Therapy was more effective than Schema Therapy in enhancing adaptive behavior in individuals with substance use disorders. The study suggests that CBT could be a valuable intervention for improving adaptive behaviors and reducing negative emotional responses in this population.

Keywords: *Cognitive-Behavioral Therapy, Schema Therapy, Adaptive Behavior.*

1. Introduction

Today, substance abuse is considered one of the most critical health issues, given its association with reduced quality of life, increased mortality, a decline in social and moral values, and an uptick in criminal behavior (Porzoor & Hajipour, 2023). Psychiatric disorders associated with substance abuse have devastating effects on physical, psychological, social, familial, and social communication issues, leading to significant costs for governments. Major depression, anxiety, borderline personality disorder, and antisocial personality disorder are among the most common psychiatric diagnoses in individuals with substance use disorders (Honarmand et al., 2008).

Among the social issues faced by individuals with substance use disorders is adaptive behavior. Adaptation is a bilateral and communicative process between the individual and society, continuing throughout life in the dual domains of learning and teaching, within which adaptation occurs (Barghi Irani & Dehghan Saber, 2021; Bateman, 2022). Addiction, both directly and indirectly, undermines moral foundations by binding the individual to substance use, leading to increased crime, violence, and adaptive behavior problems. Undoubtedly, the primary victims of these issues are the family members and close associates of the individuals, who are involuntarily or voluntarily exposed to these consequences (Chavanne & Robinson, 2020; Fadardi & Cox, 2008; Hadian et al., 2023).

Adaptive behavior, as the most important indicator of mental health, has garnered significant attention in recent decades. Social development, in particular, can be considered the most critical indicator of health. Unfortunately, the lack of effective social relationships can lead to negative emotions such as anxiety, depression, loneliness, and a weakened self-concept (Shalchi et al., 2017). The choice of an appropriate strategy can positively influence good adaptation, enhancing the individual's quality of life; otherwise, not only the individual but also the family may face problems such as the inability to resolve conflicts and family disintegration. Emotional adaptation can be understood as encompassing good mental health, satisfaction with personal life, and harmony among feelings, activities, and thoughts. Emotional adaptation includes the mechanisms by which an individual attains emotional stability (Fadardi & Cox, 2008).

Given that addiction is not solely a physical illness but also includes psychological, social, and cultural aspects, and considering that multiple factors contribute to the development of this phenomenon, the treatment of addiction also involves various aspects and is far more complex and challenging than the treatment of other diseases. Consequently, extensive research and studies have been conducted to develop therapeutic methods that can effectively help individuals with addiction and reduce the relapse rate as much as possible (Muhammadi Vand et al., 2021; Proctor et al., 2007). Non-pharmacological treatments include individual psychotherapy, group therapy, family therapy, therapeutic communities, and self-help groups (Gordon et al., 2005). Each treatment has its limitations in terms of duration and the costs imposed on the affected person. Additionally, the follow-up period in these treatments is not always continuous and long-term (Peluso, 2007). Among the psychosocial approaches evaluated for addiction treatment, cognitive-behavioral therapies (CBT) have garnered substantial empirical support (Peluso, 2007).

Cognitive-behavioral therapy is an active, directive, time-limited, and structured approach based on the underlying theoretical premise that an individual's emotions and behaviors are primarily determined by how they perceive the world (Gordon et al., 2005). Beck's cognitive model emphasizes the pivotal role of thought in the motivation and maintenance of depression, anxiety, and anger. Cognitive biases increase vulnerability to negative life events, making it more likely that a loss or obstacle in life will be exaggerated, personalized, and interpreted negatively (Chen et al., 2017; Dumitrescu & Rusu, 2012). Research shows that cognitive-behavioral group therapy and methadone maintenance treatment are effective in treating comorbid depressive and anxiety disorders associated with substance use (Amani & Majzubi, 2013; Chen et al., 2017; Dumitrescu & Rusu, 2012). The foundation of CBT in addiction and relapse prevention is based on the individual's cognitive deficits on the one hand and the lack of appropriate behavioral skills to cope with internal and external pressures and achieve happiness (or escape from negative emotional states) on the other (Chen et al., 2017). This model encompasses a set of behavioral and cognitive intervention techniques that can be used to identify and correct the addict's erroneous and dysfunctional cognitions. By altering coping skills, it can have beneficial effects on the individual, rebuilding and enhancing their existing behavioral repertoire and social skills, so they do not resort to substance abuse when faced with dangerous or critical situations (Gordon et al., 2005).

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Pharmacological treatments for addiction, like non-pharmacological treatments, are diverse and numerous, with methadone treatment being one of the most common (Mozamzadeh et al., 2018; Pinto-Gouveia et al., 2006). In this approach, a schema is defined as deep and pervasive patterns or themes composed of memories, emotions, cognitions, and bodily sensations that are formed during childhood and adolescence and persist throughout life (Young et al., 2006). Schema therapy is a new and integrated treatment that provides a systematic program for assessing and modifying early maladaptive schemas. It is based on classical cognitive-behavioral therapy and combines cognitive, behavioral, interpersonal, attachment, and experiential techniques to assess and modify early maladaptive schemas. Schema therapy emphasizes the developmental roots of psychological problems in childhood and adolescence, the use of evocative techniques, and the concept of maladaptive coping styles (Young et al., 2006). Research findings indicate the effectiveness of schema therapy in improving symptoms of anxiety (Maleki et al., 2015; Pinto-Gouveia et al., 2006) and depression (Chatav & Whisman, 2009; Hashemi & Darvishzadeh, 2016; Maleki et al., 2015; Mozamzadeh et al., 2018).

The reason for choosing these two approaches is that both focus on communication patterns and coping styles. Given the importance of addiction and the harms it causes, there is a need for further research and investigation into psychotherapeutic interventions, including the schema therapy model and cognitive-behavioral therapy, to reduce its negative and destructive impacts. Considering that schema therapy and cognitive-behavioral therapy studies, both in Iran and abroad, have mostly focused on personality and borderline disorders, the lack of studies on the effectiveness of this relatively novel approach on other areas where it can be fruitful is more noticeable. Therefore, the need for psychological interventions to empower individuals with substance use disorders is evident. None of these studies have specifically examined the effectiveness of cognitive-behavioral therapy and schema therapy on adaptive behavior in addicts, nor have they compared these two approaches. This study was conducted in the hope of filling this gap. Therefore, the main objective of this study is to compare the effectiveness of cognitive-behavioral therapy and schema therapy on improving adaptive behavior in individuals with substance use disorders.

2. Methods and Materials

2.1. Study Design and Participants

This study is applied research, and the research method is quasi-experimental, with a pretest-posttest-follow-up design and a control group. The study population included all individuals with substance use disorders who sought treatment for their dependency at public addiction treatment centers in District 5 of Tehran between December 2021 and February 2022. Substance users are defined as individuals who have continuously used one or more substances through various methods such as ingestion, injection, smoking, or inhalation, leading them to seek help from the aforementioned treatment centers. After an initial interview with the addicted individuals who volunteered to participate in the sessions and met the inclusion criteria, 45 individuals were selected through convenience sampling and randomly assigned to two experimental groups and one control group (15 participants in each group). Since it is preferable in psychotherapy groups to have no more than 10 to 15 members (Sanaei, 2004), the group sizes in this study are deemed appropriate. Inclusion criteria included age (between 18 and 35 years), gender (male only), education level (from middle school to a bachelor's degree), relapse history (2 to 5 times), no excessive use of antipsychotic and nervous system suppressant drugs (benzodiazepines), and completing an informed consent form to participate in the research project. Exclusion criteria included severe clinical symptoms (based on the individual's psychiatric file) and missing more than two sessions.

After selecting the study sample and the designated treatment center, participants who met the required conditions for the study were identified through an initial interview and review of their general characteristics. Then, based on a random sampling method from the available population, three groups of 15 individuals were selected. Participants were placed in two experimental groups and one control group. All participants completed the research instruments twice (before and after treatment). For the schema therapy sessions, the intervention was carried out according to Young's therapeutic model, using cognitive, experiential, and behavioral pattern-breaking strategies. The intervention included 15 schema therapy sessions for the experimental group, while the control group received no intervention. The sessions were held once a week for two hours each. Additionally, the experimental group received 12 sessions of group cognitive-behavioral therapy, whereas the control group received no intervention. Before the treatment sessions began, the researcher explained the nature

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and objectives of the sessions to the participants and answered any questions they had. Participants in the control group were also assured that therapeutic sessions would be offered to them after the experimental group sessions were completed. This process included obtaining informed consent, and all participants stated their full willingness to participate in the research. After the adaptive behavior scale was completed by both the experimental and control groups in the pretest stage, cognitive-behavioral therapy and schema therapy sessions were conducted in groups for the experimental group of addicts, while the control group received no intervention and was placed on a waiting list for subsequent treatment sessions.

2.2. Measures

2.2.1. Adaptive Behavior

The research data were collected using Bell's Adjustment Inventory. This questionnaire, developed by Bell (1961), evaluates adaptation in five subscales: family, health (physical), emotional (affective), occupational, and social. A higher score on any subscale indicates greater adaptation. The reliability coefficients for the subscales—home adjustment, health adjustment, social adjustment, emotional adjustment, and occupational adjustment—and the overall test were reported as 0.91, 0.81, 0.88, 0.91, 0.85, and 0.94, respectively. Additionally, this test demonstrated high validity in distinguishing between normal and neurotic groups and correlated well with Eysenck's personality tests. The validity of this questionnaire was initially determined by selecting each section within a range where the differences between the upper and lower 50% of adult scores were evident. Furthermore, with the help of adult counseling specialists, groups were selected based on their very good and poor levels of adaptation, and the extent to which the questionnaire could differentiate between them was determined (Faghiharam, 2019).

2.3. Intervention

2.3.1. Schema Therapy

Schema Therapy is an integrative approach designed to treat individuals with deeply ingrained maladaptive patterns, often stemming from childhood experiences. This therapy aims to identify and modify these schemas, which are persistent and self-defeating, using a combination of cognitive, experiential, and behavioral techniques. In a group setting, the therapy focuses on creating a safe and supportive environment where members can explore their schemas and learn healthier ways of thinking and behaving. The sessions are structured to progressively deepen members' understanding of their schemas and develop strategies to challenge and change these patterns (Young et al., 2006).

Session 1: Introduction and Group Formation

The first session focuses on establishing the structure and rules of the group, fostering trust among members, and introducing key concepts of Schema Therapy. The session includes an overview of schemas, schema therapy, and group therapy, and instructions on completing the Young Schema Questionnaire. This session sets the foundation for therapeutic work by building rapport and creating a supportive environment.

Session 2: Initial Assessments and Cognitive Connections

Participants complete the Young Schema Questionnaire and initial assessments. The session explores the relationship between schema therapy, substance use disorders, cognitive processes, and personality disorders. Continued emphasis is placed on building therapeutic relationships and trust within the group, utilizing guidelines from substance dependency recovery programs, such as the Twelve Steps of NA.

Session 3: Schema and the Inner Child

This session continues the assessment and educational process, focusing on the connection between schemas and the inner child. An example of a maladaptive schema is discussed, along with factors contributing to the development of schemas. The goal is to help members begin to identify and understand their own schemas.

Session 4: Imagery and Schema Activation

In this session, participants engage in imagery exercises to recognize and evoke their schemas, focusing on key relationships and life events that contributed to schema development. The session aims to connect members with the emotions tied to their schemas, setting the stage for deeper therapeutic work.

Session 5: Coping Styles and Schema Strategies

Participants are introduced to different coping styles associated with schemas. The session involves discussing various coping strategies used by group members and providing examples to illustrate these concepts. The aim is to increase awareness of how schemas influence coping behaviors.

Session 6: Schema Validation and Challenge

This session involves testing the validity of schemas by gathering evidence supporting and refuting the schemas

during group discussions. Members are encouraged to reinterpret schema-supporting evidence and consider alternative perspectives, helping to weaken the grip of maladaptive schemas.

Session 7: Coping Responses and Schema Cards

The session evaluates the advantages and disadvantages of coping responses used by group members. Participants are introduced to schema flashcards and the schema log form, tools designed to help them track and challenge their schemas outside of sessions.

Session 8: Imaginary Dialogue Technique

This session introduces the technique of imaginary dialogue, where participants engage in dialogues between their schemas and healthier aspects of themselves. The goal is to empower members to challenge their schemas actively and distance themselves from maladaptive patterns.

Session 9: Dialogue Between Schema and Healthy Self

Participants continue practicing dialogues between their "schema self" and "healthy self," with an emphasis on reviewing and discussing their schema logs. This session aims to reinforce the internalization of healthier thinking patterns.

Session 10: Parental Dialogue

In this session, participants write letters to their parents and engage in imaginary dialogues with them using the empty chair technique. This exercise helps members address unresolved issues from their past, often linked to the development of maladaptive schemas.

Session 11: Target Behaviors and Goals

Participants identify specific behaviors to target for change. The session involves setting achievable goals that align with healthier schema-related behaviors, reinforcing the therapeutic progress made so far.

Session 12: Behavioral Change Strategies

This session explores strategies for changing behaviors that maintain maladaptive schemas. The focus is on enhancing members' ability to regulate their emotions and impulses, critical skills in maintaining long-term change.

Session 13: Altruism and Obedience Schemas

The session examines the schemas of self-sacrifice and obedience within the group, helping participants recognize how these schemas influence their relationships and behaviors.

Session 14: Emotional Deprivation and Inhibition

Participants explore the schemas of emotional deprivation and emotional inhibition, focusing on learning appropriate ways to express anger—a core aspect of treatment. This session addresses the emotional blocks that perpetuate maladaptive schemas.

Session 15: Review and Final Assessment Preparation

The final session reviews exercises and assignments related to anger management and coping with frustration and fatigue, particularly in the context of the self-discipline schema. Participants prepare for final assessments, concluding the group therapy process.

Cognitive-Behavioral Therapy (CBT) Group Intervention Overview

2.3.2. Cognitive-Behavioral Therapy

Cognitive-Behavioral Therapy (CBT) is a structured, time-limited therapy that aims to change patterns of thinking or behavior that are causing individuals' problems. In a group setting, CBT focuses on helping members identify and challenge cognitive distortions and develop healthier ways of thinking and behaving. The sessions are designed to progressively build participants' skills in recognizing and altering negative thought patterns, with a strong emphasis on homework and practice between sessions (Amani & Majzubi, 2013).

Preliminary Session: Preparation and Goal Setting

This session focuses on preparing the group and setting therapy goals. Participants are introduced to each other, and the structure and objectives of the group are discussed, laying the groundwork for the therapeutic process.

Session 1: Introduction to CBT Concepts

The first session reviews pre-treatment assignments and introduces participants to the basic concepts of CBT, including the connection between thoughts and emotions. Participants practice a relaxation technique and receive assignments to deepen their understanding.

Session 2: Cognitive Theory and Automatic Thoughts

This session covers cognitive theory, specifically how thoughts influence emotions and behaviors. Participants learn to identify automatic thoughts and practice categorizing their beliefs. The session also addresses potential resistance to therapy and methods to overcome it.

Session 3: Thought Injection Technique

Participants are introduced to the thought injection technique, which involves actively challenging negative thoughts. The session includes relaxation exercises and further practice in identifying and challenging maladaptive thoughts.

Session 4: Categorizing Beliefs

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The focus of this session is on categorizing and understanding different types of beliefs. Participants work on identifying core beliefs and are given assignments to reinforce the concepts discussed.

Session 5: Creating a Core Beliefs List

Participants begin compiling a list of their core beliefs. The session also introduces cognitive maps, helping participants understand how their beliefs influence their perceptions and behaviors. Assignments continue to build on this foundation.

Session 6: Changing Beliefs

This session emphasizes the possibility of changing beliefs by examining historical and personal examples where beliefs have changed. Participants learn to test their beliefs against reality and practice analyzing their beliefs objectively.

Session 7: Analyzing Beliefs for Utility

The session involves analyzing the usefulness of beliefs, encouraging participants to assess whether their beliefs are helpful or harmful. Exercises focus on identifying and reinforcing helpful beliefs while challenging harmful ones.

Session 8: Logical Analysis of Beliefs

Participants learn to analyze their beliefs logically, using structured exercises to challenge cognitive distortions. This session builds on previous work, deepening participants' ability to engage in logical, rational thinking.

Session 9: Creating Opposing Beliefs

This session introduces the concept of creating and reinforcing opposing beliefs to challenge negative or maladaptive thoughts. Participants practice developing and implementing these new beliefs.

Session 10: Perceptual Change Techniques

Participants explore techniques for altering their perceptions, focusing on completing perceptual change worksheets. The session also introduces voluntary cortical inhibition exercises, which help manage emotional responses.

Session 11: Self-Punishment and Reward Techniques

This session teaches techniques for managing self-punishment and self-reward, helping participants develop healthier self-management strategies. The group also works on creating a maintenance plan to ensure long-term success.

Session 12: Review and Follow-Up Planning

The final session reviews the entire program, emphasizing the importance of continued practice and follow-up after the therapy ends. Participants create a follow-up plan and discuss the progress they have made, concluding the therapy with a sense of accomplishment and preparedness for the future.

2.4. Data analysis

To analyze the research data, univariate and multivariate analysis of variance was used, and the effect size was calculated using Eta squared. Additionally, Bonferroni post-hoc tests were employed to reveal differences between the groups. The above tests were conducted using version 22 of SPSS software.

3. Findings and Results

The demographic analysis of the study participants revealed that among the individuals with substance use disorders, 12 participants (26.7%) were aged 18 to 25 years, 20 participants (44.4%) were aged 25 to 30 years, and 13 participants (28.9%) were aged 30 to 35 years. Regarding education levels, 13 participants (28.9%) had completed lower secondary education, 17 participants (37.8%) had completed upper secondary education, 7 participants (15.6%) had an associate degree, and 8 participants (17.8%) held a bachelor's degree. Additionally, 11 participants (24.4%) had a history of two relapses, 13 participants (28.9%) had a history of three relapses, 12 participants (26.7%) had a history of four relapses, and 9 participants (20%) had a history of five relapses.

Table 1

Means and Standard Deviations of Adaptive Behavior and Its Components

Variable	Group	Mean (Pretest)	Mean (Posttest)	Mean (Follow-up)	SD (Pretest)	SD (Posttest)	SD (Follow-up)
Adaptive Behavior	Control	33.06	32.86	33.40	6.94	6.62	6.80
	CBT Experimental Group	32.73	30.66	31.00	6.82	6.46	6.59
	Schema Therapy Experimental	32.60	32.00	32.46	6.90	7.16	7.01
Family	Control	8.00	8.20	7.73	2.00	2.11	1.79
	CBT Experimental Group	7.73	6.26	6.40	1.79	1.53	1.63

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	Schema Therapy Experimental	7.86	7.00	7.20	1.80	1.55	1.74
Health (Physical)	Control	6.60	6.80	6.86	1.72	1.89	1.84
	CBT Experimental Group	7.06	5.93	6.20	1.70	1.43	1.61
	Schema Therapy Experimental	6.80	6.40	6.60	1.61	1.35	1.35
Emotional	Control	9.00	8.80	9.20	2.07	1.85	2.07
	CBT Experimental Group	9.13	7.66	8.00	2.13	1.87	1.69
	Schema Therapy Experimental	8.80	8.06	8.33	1.85	1.98	1.79
Occupational	Control	9.66	9.86	9.93	2.22	2.19	2.37
	CBT Experimental Group	9.46	7.93	8.20	2.13	1.94	2.04
	Schema Therapy Experimental	9.86	8.33	8.66	2.29	1.98	2.05
Social	Control	10.73	11.00	10.53	2.37	2.17	2.16
	CBT Experimental Group	10.73	9.40	9.73	2.25	2.38	2.57
	Schema Therapy Experimental	10.93	9.53	9.80	2.28	2.35	2.27

The results of the univariate analysis of covariance for posttest and follow-up on adaptive behaviors and their components are presented in Table 2.

Table 2

Univariate Analysis of Covariance for Comparing Experimental Groups on Adaptive Behavior and Its Components

Research Stage	Variable	Sum of Squares	df	Mean Square	F	p	Eta
Posttest	Adaptation	27.16	2	13.58	6.15	.005	.25
	Family	23.34	2	11.67	20.07	.001	.52
	Health	9.44	2	4.72	3.58	.038	.16
	Emotional	8.61	2	4.30	8.07	.001	.31
	Occupational	29.63	2	14.81	39.54	.001	.68
	Social	21.77	2	10.88	5.20	.010	.22
Follow-up	Adaptation	35.82	2	17.91	8.02	.001	.30
	Family	9.40	2	4.70	8.09	.001	.31
	Health	6.41	2	3.20	2.28	.116	.11
	Emotional	10.58	2	5.29	9.23	.001	.33
	Occupational	22.35	2	11.17	11.39	.001	.38
	Social	5.76	2	2.88	1.41	.256	.07

Based on the results in Table 2, after controlling for the pretest scores, the differences in the mean posttest scores for adaptive behaviors and their components between the two experimental groups (Cognitive-Behavioral Therapy and Schema Therapy) and the control group were significant ($p \leq .05$). Specifically, the results indicate that the adjusted mean posttest scores for adaptive behaviors and their components were significantly different across the groups ($p \leq .05$). The impact of these interventions on improving adaptive behaviors was 25% at the posttest stage, with 52% for the family component, 16% for the health (physical) component, 31% for the emotional component, 68% for the occupational component, and 22% for the social component.

Additionally, based on the results in the above table, after controlling for the pretest scores, the differences in the mean follow-up scores for adaptive behaviors and some of their components between the two experimental groups and the control group were significant ($p \leq .01$). Specifically, the differences in the adjusted mean follow-up scores for adaptive behaviors and the family, emotional, and occupational components were significant across the groups ($p \leq .01$). The impact of these interventions on improving adaptive behaviors was 30% at the follow-up stage, with 31% for the family component, 33% for the emotional component, and 38% for the occupational component. However, after controlling for the pretest scores, the differences in the mean follow-up scores for the health (physical) and social components were not significant ($p \geq .01$).

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To further understand the precise differences between the experimental and control groups concerning adaptive behaviors and their components at the posttest and follow-up stages, pairwise comparisons using the Bonferroni test were conducted on the adjusted means, as reported in Table 3.

Table 3

Results of Bonferroni Test on Adjusted Means by Group

Research Stage	Variable	Group 1	Group 2	Mean Difference	p
Posttest	Adaptive Behavior	Control	Cognitive-Behavioral	1.79	.008
			Schema Therapy	.22	.999
		Cognitive-Behavioral	Control	-1.79	.008
			Schema Therapy	-1.57	.024
		Schema Therapy	Control	-.22	.999
			Cognitive-Behavioral	1.57	.024
	Family	Control	Cognitive-Behavioral	1.77	.001
			Schema Therapy	1.12	.001
		Cognitive-Behavioral	Control	-1.77	.001
			Schema Therapy	-.65	.087
		Schema Therapy	Control	-1.12	.001
			Cognitive-Behavioral	.65	.087
	Health (Physical)	Control	Cognitive-Behavioral	1.14	.034
			Schema Therapy	.46	.837
		Cognitive-Behavioral	Control	-1.14	.034
			Schema Therapy	-.67	.378
		Schema Therapy	Control	-.46	.837
			Cognitive-Behavioral	.67	.378
	Emotional	Control	Cognitive-Behavioral	1.08	.001
			Schema Therapy	.65	.062
		Cognitive-Behavioral	Control	-1.08	.001
			Schema Therapy	-.43	.378
		Schema Therapy	Control	-.65	.062
			Cognitive-Behavioral	.43	.378
	Occupational	Control	Cognitive-Behavioral	1.68	.001
			Schema Therapy	1.79	.001
		Cognitive-Behavioral	Control	-1.68	.001
			Schema Therapy	-.10	.999
		Schema Therapy	Control	-1.79	.001
			Cognitive-Behavioral	.10	.999
	Social	Control	Cognitive-Behavioral	1.37	.045
			Schema Therapy	1.58	.016
		Cognitive-Behavioral	Control	-1.37	.045
			Schema Therapy	.20	.999
		Schema Therapy	Control	-1.58	.016
			Cognitive-Behavioral	-.20	.999
Follow-up	Adaptive Behavior	Control	Cognitive-Behavioral	2.05	.002
			Schema Therapy	.24	.999
		Cognitive-Behavioral	Control	-2.05	.002
			Schema Therapy	-1.81	.008
		Schema Therapy	Control	-.24	.999
			Cognitive-Behavioral	1.81	.008
	Family	Control	Cognitive-Behavioral	1.13	.001
			Schema Therapy	.41	.445
		Cognitive-Behavioral	Control	-1.13	.001
			Schema Therapy	-.71	.051
		Schema Therapy	Control	-.41	.445
			Cognitive-Behavioral	.71	.051
	Health (Physical)	Control	Cognitive-Behavioral	.93	.121
			Schema Therapy	.36	.999
		Cognitive-Behavioral	Control	-.93	.121

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	Schema Therapy	-.57	.611	
Schema Therapy	Control	-.36	.999	
	Cognitive-Behavioral	.57	.611	
Emotional	Control	Cognitive-Behavioral	1.17	.001
	Schema Therapy	.84	.014	
Cognitive-Behavioral	Control	-1.17	.001	
	Schema Therapy	-.33	.760	
Schema Therapy	Control	-.84	.014	
	Cognitive-Behavioral	.33	.760	
Occupational	Control	Cognitive-Behavioral	1.51	.001
	Schema Therapy	1.51	.001	
Cognitive-Behavioral	Control	-1.51	.001	
	Schema Therapy	.001	.999	
Schema Therapy	Control	-1.51	.001	
	Cognitive-Behavioral	-.001	.999	
Social	Control	Cognitive-Behavioral	.65	.672
	Schema Therapy	.84	.356	
Cognitive-Behavioral	Control	-.65	.672	
	Schema Therapy	-.18	.999	
Schema Therapy	Control	-.84	.365	
	Cognitive-Behavioral	.18	.999	

Table 3 shows that in the posttest and follow-up stages, Cognitive-Behavioral Therapy (CBT) significantly improved adaptive behaviors compared to the control group ($p \leq .01$), with a 1.79-point increase at posttest and a 2.05-point increase at follow-up. However, Schema Therapy did not produce significant differences in adaptive behaviors compared to the control group, either at posttest or follow-up ($p \geq .05$). Additionally, CBT showed greater effectiveness than Schema Therapy in improving adaptive behaviors at both the posttest (1.57-point increase) and follow-up (1.81-point increase) stages.

In the family component of adaptive behaviors, both CBT and Schema Therapy significantly improved outcomes compared to the control group at the posttest stage ($p \leq .01$), with a 1.77-point increase for CBT and a 1.12-point increase for Schema Therapy. However, there was no significant difference between the two therapies in terms of their impact on the family component at either the posttest or follow-up stages ($p \geq .05$). Only CBT showed significant improvements in the family component at the follow-up stage compared to the control group ($p \leq .01$), with a 1.13-point increase.

In the health (physical) component of adaptive behaviors, only CBT significantly improved outcomes compared to the control group at the posttest stage ($p \leq .01$), with a 1.14-point increase. Neither therapy showed significant differences compared to the control group at the follow-up stage ($p \geq .05$).

In the emotional (affective) component of adaptive behaviors, only CBT significantly improved outcomes compared to the control group at the posttest stage ($p \leq .01$), with a 1.08-point increase. At the follow-up stage, both CBT and Schema Therapy produced significant improvements compared to the control group ($p \leq .05$), with a 1.17-point increase for CBT and a .84-point increase for Schema Therapy. However, no significant differences were observed between the two therapies in their impact on the emotional component at either the posttest or follow-up stages ($p \geq .05$).

In the occupational component of adaptive behaviors, both CBT and Schema Therapy significantly improved outcomes compared to the control group at both the posttest and follow-up stages ($p \leq .01$), with a 1.68-point increase for CBT and a 1.79-point increase for Schema Therapy at the posttest stage, and a 1.51-point increase for both therapies at the follow-up stage. No significant differences were observed between the two therapies in their impact on the occupational component at either stage ($p \geq .05$).

In the social component of adaptive behaviors, both CBT and Schema Therapy significantly improved outcomes compared to the control group at the posttest stage ($p \leq .05$), with a 1.37-point increase for CBT and a 1.58-point increase for Schema Therapy. However, neither therapy showed significant differences compared to the control group at the follow-up stage ($p \geq .05$). Additionally, no significant differences were observed between the two therapies in their impact on the social component at either the posttest or follow-up stages ($p \geq .05$).

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4. Discussion and Conclusion

The present study aimed to compare the effectiveness of Cognitive-Behavioral Therapy (CBT) and Schema Therapy in improving adaptive behavior in individuals with substance use disorder. The results showed that, at both the posttest and follow-up stages, CBT created a significant difference in adaptive behaviors compared to the control group. This difference was marked by an increase of 1.79 points in the posttest and 2.05 points in the follow-up. However, Schema Therapy did not show a significant difference compared to the control group at either the posttest or follow-up stages. In other words, the greater effectiveness of CBT compared to Schema Therapy was evident in the increase of 1.57 points at the posttest and 1.81 points at the follow-up. The results indicated that CBT could be an effective intervention method for improving adaptive behavior in individuals with substance use disorder. These findings are consistent with prior studies (Chitsazha et al., 2019; Nateghi & Sohrabi, 2017; Sugarman et al., 2010), which also highlight the effectiveness of CBT in addressing negative emotions, adaptation, and anxiety.

In recent years, numerous efforts have been made to treat addiction, but unfortunately, despite extensive efforts, the relapse rate among individuals undergoing treatment remains high. The occurrence of unsuccessful attempts to quit and repeated relapses indicates incomplete and one-dimensional treatment approaches. Focusing solely on physical dependence and neglecting individual, psychological, personality, and environmental factors can leave unresolved personality issues and individual weaknesses. These, combined with the problems experienced during substance dependence, such as social withdrawal and rejection, can lead to isolation, potentially causing the individual to relapse (Chitsazha et al., 2019; Nateghi & Sohrabi, 2017; Sugarman et al., 2010). The effectiveness of CBT in improving adaptive behavior can be explained by the fact that emotions and individual moods are socially useful, helping to convey feelings to others, facilitate social interaction, and create or end relationships (Chitsazha et al., 2019). Most individuals with substance use disorders have a negative thought system about themselves, their current experiences, and their future. They interpret negative obstacles as insurmountable, even when more reasonable positive perspectives are available. These individuals tend to adopt the most negative interpretation possible of what happens to them. It is possible that the lack of experience, feelings of loneliness and sadness, hostility, and inability to connect with others, along with the absence of necessary means to experience positive emotions, drive individuals toward substance use. The stimulating effects of substances create a false mood boost and a temporary euphoria, motivating substance use and leading to a positive brain response, ultimately resulting in addiction. Psychological training, such as CBT, can play a crucial role in moderating and regulating these destructive behaviors, as emotions function as solutions for coping with challenges, stressors, and life problems (Chitsazha et al., 2019).

In other words, because emotions play a critical role in life, teaching individuals who use substances, particularly stimulants, how to regulate adaptive behaviors can serve as a therapeutic method for emotional regulation, fostering positive social interactions and acceptance (Nateghi & Sohrabi, 2017). This can lead to effective coping in tempting and stressful situations, increasing activity in response to social situations, and improving adaptive behaviors. Additionally, the greater effectiveness of CBT compared to Schema Therapy can be linked to the fact that individuals with substance use disorders seek to prevent and immediately relieve negative emotions when faced with stress, often using emotion-focused rather than problem-focused coping strategies (Kleck & Blandi, 2008). In CBT, the connection between emotions, thoughts, and behaviors is taught to individuals so that they learn how negative automatic thoughts in response to stress can lead to negative emotions and behaviors. Through cognitive restructuring and replacing negative thoughts with positive ones, individuals can improve their emotions and behaviors (Nateghi & Sohrabi, 2017).

Furthermore, training in effective coping strategies leads to increased use of problem-focused strategies among substance users. Anger management techniques, relaxation exercises, and mental imagery also help individuals gain greater control over their emotions and focus on cognitive processes. The effectiveness of CBT in increasing adaptive behaviors among substance users can also be explained by providing necessary strategies for obtaining social support through expressing feelings and thoughts to others, as well as offering appropriate assertiveness techniques that enhance interpersonal relationships and social adaptation (Nateghi & Sohrabi, 2017; Sugarman et al., 2010).

Moreover, substance users often struggle to effectively use their emotions in various life situations, whether in happiness or sadness, leading to additional problems such as negative self-perception, anxiety about social situations, and inadequate social and familial functioning. These issues can

drive individuals toward substance use as a way to alleviate these psychological pressures. The relatively lower effectiveness of Schema Therapy compared to CBT in improving adaptive behavior among substance users can be explained by the role that schemas play in shaping thought patterns, emotions, behaviors, and relationships with others. Early maladaptive schemas can inevitably lead to tense and debilitating social adaptation. Experiential techniques in Schema Therapy, which focus on modifying negative childhood memories, can alter mental images, bodily sensations, and emotional experiences, helping individuals avoid the destructive impact of recalling painful past memories. However, in improving adaptive behavior among individuals with substance use disorders, experiential techniques focusing on emotions may not have been sufficient to help these individuals become aware of their emotions, accept them, and engage in emotional reorganization. This process involves self-examination, learning new emotional regulation strategies, and self-soothing, ultimately facilitating schema improvement (Ball & Young, 2000).

In essence, experiential techniques like mental imagery may not have enabled individuals to recognize their core schemas, understand their developmental roots, and connect their memories to their current lives. Furthermore, these techniques may not have enhanced the patient's understanding, shifting from cold cognition to hot cognition and fostering emotional experiences rather than just intellectual understanding. Another important aspect of Schema Therapy in improving adaptive behavior among individuals with substance use disorders is the recreation of the appropriate parental role, tailored to each individual's unmet childhood needs. Usually, individuals with substance use disorders have an increased need for understanding, empathy, and affection, which were not fulfilled by key figures in their childhood, such as parents. Experiential techniques should help reconstruct these painful childhood memories so that the unmet needs in those mental images are addressed with the help of the therapist (Ball, 1998).

Regarding the difference in effectiveness between these two therapies, it can be argued that CBT has an advantage in improving adaptive behaviors in individuals with substance use disorders. CBT replaces negative, illogical thoughts and cognitive distortions with positive and logical thoughts. It involves teaching individuals how to challenge these dysfunctional thoughts effectively, replacing them with positive thoughts that, in turn, reinforce positive thinking and behaviors, expanding social relationships and enhancing social adaptation. This can reduce interpersonal problems in individuals with substance use disorders, which is a significant advantage of CBT over Schema Therapy. Additionally, CBT emphasizes that behavioral patterns can be learned. Therefore, through CBT, negative attributions, distorted feedback, unrealistic goals, and dysfunctional behaviors can be adjusted and replaced with adaptive behaviors and realistic goals. By applying CBT techniques, the logic of an individual's thoughts can be reassessed and corrected, reducing interpersonal problems.

This study examined the effectiveness of CBT and Schema Therapy in improving adaptive behavior in individuals with substance use disorders. The findings indicated that adaptive behavior significantly improved following CBT and Schema Therapy sessions. These findings provide useful information for counselors and psychotherapists regarding the effectiveness of CBT and Schema Therapy in improving adaptive behavior in individuals with substance use disorders. The results of this study can be concluded on two levels: theoretical and practical. On the theoretical level, the results of this study can confirm the findings of previous research. On the practical level, the findings of this study can be used to develop educational and therapeutic programs. In this study, efforts were made to reduce confounding variables and potential biases by randomly assigning participants to experimental and control groups.

5. Limitations & Suggestions

This study also faced limitations. One of the limitations was the small sample size, which limits the generalizability of the results to other populations. The lack of long-term follow-up due to time constraints and the use of self-report measures were other limitations. The inability to control certain confounding variables, the limitation of using a single measurement tool, the limited geographical scope of the study to Tehran, and the short duration of the treatment were additional limitations. It is recommended that future studies be conducted with larger sample sizes to confirm or refute the hypotheses more robustly. Since these treatments were administered to individuals with substance use disorders in Tehran, it is recommended that they also be applied to individuals with substance use disorders in different regions. It is suggested that this study be conducted on individuals with substance use disorders who also suffer from psychotic disorders or personality disorders to determine the effectiveness of these treatments.

Psychologists and counselors working in substance abuse treatment centers are encouraged to use CBT and Schema Therapy to improve adaptive behaviors and to implement and apply their therapeutic techniques in group settings. Psychologists should hold weekly sessions on various topics related to addiction and the application of CBT and Schema Therapy to ensure that patients in high-risk situations can receive guidance from psychologists, similar to the support provided in Narcotics Anonymous (NA).

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethics 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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