

# Structural Equation Modeling of Schema with Readiness of Addiction with the Mediator Variables Stress Coping Strategies and Cognitive Regulation of Emotion in Addicts with Drug Rehabilitation

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## ABSTRACT

**Background:** This study aims to model structural relationships of schema with the readiness of addiction with the mediation variables stress coping strategies and cognitive regulation of emotion in addicts with drug rehabilitation.

**Methods:** This study is analytical-cross-sectional. The sample consisted of 300 addicts with drug rehabilitation (18-55 years old) from 4 addiction treatment centers in 1401 in Amol city were selected based on stratified random sampling method. The questionnaire used in this study was Schema, Readiness of Addiction, stress coping strategies and cognitive regulation of emotion questionnaires. Analysis of data was performed based on the structural equations modeling in the software Amos 22. Sobel's test was used to examine mediating variables.

**Results:** Findings showed that the schema affects the readiness for addiction with the mediation variables stress coping strategies and cognitive regulation of emotion in addicts with drug rehabilitation. The schema had a direct relationship with stress coping strategies in addicts with drug rehabilitation. It had a direct relationship with cognitive emotion regulation in addicts with drug rehabilitation. Cognitive emotion regulation had a direct relationship with susceptibility to addiction in drug addicts with drug rehabilitation. Stress coping strategies had a direct relationship with susceptibility for addiction in drug addicts with drug rehabilitation.

**Conclusion:** Considering the predictive power of the variables, the results can be used in interventions and trainings in addiction treatment clinics.

**Keywords:** Schema Therapy, Addiction, Stress, Emotional Regulation

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## Introduction

Susceptibility to addiction is defined as vulnerability to drug abuse whether she/he is currently abusing the drug or not (1). Despite all the efforts made on drug addiction, the statistics of returning to addiction or relapse in drug addicts are very worrying (2). There are different factors related to the initiation and continuation of drug usage. One of these factors is maladaptive schemas. Maladaptive schemas are a type of cognitive infrastructure that lead to maladaptive beliefs and have cognitive, emotional, and behavioral components. These schemas are usually formed in childhood and adolescence and are stable. When the schemas are activated, excitement levels are released, which can directly or indirectly lead to mental distress, inability to do things, interpersonal conflicts, and the tendency to use drugs (3).

Research conducted in this field demonstrated that there is a difference between addicted and normal people in terms of maladaptive schemas, and addicted people have more maladaptive schemas (3, 4). Moreover, studies proved a relationship between maladaptive schemas and the tendency to use drugs and addiction. Maladaptive schemas are considered to be fundamentally dysfunctional beliefs activated by an attack. In fact, they are stored to be activated in certain conditions. In the present study, maladaptive schemas are considered a predictor of addiction risk. The therapy schema founded by Jeffrey Young is one of the new psychotherapy methods and a multidimensional and mixed approach. It is the result of sharing basic features of cognitive behavioral therapy, object relations theory, Gestalt therapy, relationship analysis, mindfulness-based therapy, behavior dialectical therapy and positive psychology. Schema therapy intends to facilitate modification of the "vulnerable" child's emotional experiences and underlying changes in early maladaptive schemas and dysfunctional coping styles (5).

In fact, schemas are deep beliefs which determine how people view issues and are usually the result of not satisfying basic needs, especially

the emotional needs of childhood (6). In other words, in some cases the interaction between the child's temperament and his initial environment leads to failure in his basic emotional needs and creates initial maladaptive schemas (7).

The formation of these patterns can include internalizing experiences of unfulfilled needs, experiences such as toxic family atmosphere, chronic and acute trauma, neglect, extreme support and affection. A schema has different degrees of intrusion and difficulty

People with psychosomatic disorders have more dysfunctional and maladaptive schemas than healthy people. Thus, their inflexible beliefs impose a lot of psychological pressure on them. Psychological stress and reactions from nervous system, digestive system, muscles, heart and blood vessels, and other bodily parts, increase over time; they possibly lead to physical diseases and psychosomatic disorders. A number of maladaptive schemas such as emotional deprivation, rejection and abandonment, obedience, attracting attention, stubborn standards, pessimism, and punishment are more common problems in people suffering from psychosomatic diseases than in healthy people. The schema of emotional deprivation is one of the most common schemas that can be used in clinical work; it is related to the field of rejection and cutting, which is considered the most damaging schema field. So far, three types of emotional deprivation have been known as the deprivation of affection (lack of affection or attention), deprivation of empathy (not being understood by others), deprivation of support, not having a source of power, and not being guided by others. Unfortunately, people with this schema are unaware of having it and often go to a therapist due to depression, hopelessness, and feelings of loneliness (8).

Maladaptive schemas are emotional and cognitive patterns of self-harm formed in mind at the beginning of development and are repeated throughout life; maladaptive behaviors arise in response to these schemas (9); they are the result of unsatisfaction of basic needs, such as secure

attachment to others, self-direction, freedom in expressing healthy needs and emotions, spontaneity, and realistic limitations. According to Young, early maladaptive schemas may be at the core of personality disorder, milder cognitive problems, and many chronic disorders such as substance abuse. In general, early maladaptive schemas are conceptualized as information processing structures, which are formed early in life and are a product of a person's temperament and environment (10).

Another factor closely related to substance abuse is stress coping strategies. Today, stress is an undeniable part of people's daily life, affecting their mental and physical health. Studies have shown that stress is related to many mental and physical diseases, and if it is not dealt with effectively, it can cause unpleasant consequences (11). Stress itself is not the cause of disease, but how people react to it is what causes the disease. Experiencing emotions caused by stressful events is usually very uncomfortable for a person which necessitates coping with stress. People try to deal with it by adopting unique ways. Stress coping styles are behavioral and cognitive efforts people make in order to adapt more to the environment (12).

The two main strategies for dealing with stress are problem-oriented coping strategy and emotion-oriented coping strategy. Problem-oriented coping strategy concerns the person's constructive actions in relation to stressful situations and tries to remove or change the source of stress. In addition, emotion-oriented coping strategy includes efforts to regulate the emotional consequences of the stressful event and maintain emotional balance by controlling emotions resulting from the stressful situation (13).

Some theories suggest that addiction is often related to people's ability to cope with stressful situations. They believe that as a result of weak coping mechanisms, addicts use addiction as an alternative mechanism to overcome stress as a way

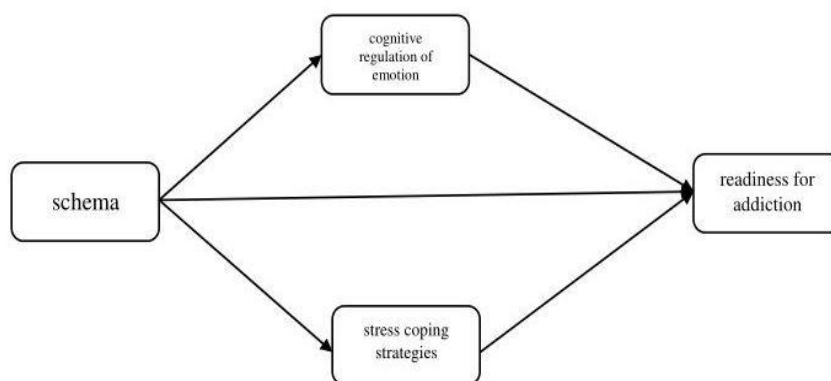
of relaxation. People who cannot overcome their stress and negative emotions are known as a causal factor in addiction theories (14).

Studies proved that when dealing with an environmental stressor, instead of using problem-oriented strategies and solving the problematic situation, addicts use ineffective emotion-oriented strategies such as opioid consumption. It can be said that people's inability to choose a suitable coping strategy may lead to drug abuse and eventually addiction. According to the coping pattern of addicts who choose an unhealthy way to cope with stressful situations, it seems that this pattern increases the tendency to addiction, social and psychological problems of the person and creates a vicious circle (15).

Another essential factor in dealing with stressful factors, associated with coping strategies, is cognitive-emotional regulation (16) (Emotional cognitive regulation implies the use of thoughts and behaviors that affect human emotions, and the meaning of cognitive emotion regulation is the way a person cognitively processes unfortunate and stressful events (17). According to researchers, people use a variety of strategies when facing stressful situations (18).

The results of many studies such as Steiner and Van Waes (2013) show that cognitive regulation of emotions is related to susceptibility to addiction. On the other hand, the psyches of organisms are like software versions of behaviors that change with the help of gaining experience or insight (19). However, the direct and indirect relationship of these factors with readiness for addiction is less common has been studied. However, by studying these researches, more appropriate intervention and treatment programs can be created. Finally, the main question of the current research was whether the research variables in the model have the ability to predict vulnerability for addiction in drug addicts who are quitting?

The theoretical model of the research (Figure 1)



**Figure 1.** The theoretical model of the research

Based on the objectives of the research, the following hypotheses were tested:

The main hypothesis: the schema has a suitable model regarding vulnerability for addiction with the mediation of stress coping strategies, cognitive regulation of emotion in addicts who are quitting.

Sub-hypotheses are:

1. Schema has a direct relationship with addiction susceptibility in recovering addicts.
2. Schema has a direct relationship with stress coping strategies in recovering addicts.
3. The schema has a direct relationship with cognitive regulation of emotion in addicts who are quitting.
4. The cognitive regulation of emotion has a direct relationship with for addiction in recovering addicts.
5. Strategies to cope with stress have a direct relationship with susceptibility for addiction in recovering addicts.

## Methods

This study is analytical-cross-sectional. The statistical population included the addicts in recovery for 1 to 12 months, in the age range of 18 to 55 in 1401. They were selected from 4 addiction treatment centers in Iran, Amol. Sample size was calculated based on Cochran's formula with  $p = q = 0.5$ ,  $d = 0.05$ ,  $\alpha = 5\%$  and  $z = 1.96$ . Using stratified sampling (according to the number of people in 4 addiction treatment centers in Amal city), 300 questionnaires were distributed in person by researchers among addicts with drug rehabilitation.

The data analysis method is based on structural equation modeling, specifically structural regression equations (a combination of path analysis and factor analysis), a covariance-based approach based on Amos 22 software. This approach estimated path coefficients and factor loadings by minimizing the difference between sample-based covariance matrix and model-based covariance matrix. Sobel's test was used to examine mediating variables.

### Measurement tools

#### *Addiction potential scale (IAPS):*

The scale of susceptibility to addiction was created by Wade and Butcher, McKenna, and Ben Poras (1992). The version used is the Iranian Susceptibility Scale created by Zargar et al. It has 36 items and 5 lie detector items. The scoring of each item is from 0 (completely disagree) to 3 (completely agree). The overall score is the sum of individual scores (except for lie detector questions). The score ranges from 0 to 108, and higher scores means that the respondent was more prone to addiction.

#### *Stress coping strategies questionnaire:*

Andler and Parker's Stress Coping Strategies Questionnaire was prepared by Andler and Parker (1990) and translated by Akbarzadeh (1376). It has 48 items and scoring is from never (1) to always (5). It evaluates coping behaviors (problem-oriented, avoidance and emotion-oriented).

#### *Cognitive emotion regulation questionnaire (CERQ):*

The Cognitive emotion regulation questionnaire was developed by Granfsky, Kraij and Spinhaven (2001), which contains 36 items. Scoring is based on a five-point Likert scale from never to always. It has seven subscales of self-blame, other-blame, catastrophizing, rumination, refocusing on planning, acceptance, positive focus, and positive evaluation. The alpha coefficient for the subscales was reported by Granfsky et al. (2002) to be in the range of 0.71 to 0.81.

*Questionnaire of early maladaptive schemas:*

Questionnaire of early incompatible schemas: The early maladaptive schemas questionnaire (short form) was developed by Young and Brown (1994) to assess 15 early maladaptive schemas with 75 questions. The schemas are :

1. letting go of instability
2. Distrust of misbehavior
3. Alienation social isolation
4. Defect/shame
5. Emotional deprivation
6. Adequate water dependence
7. Vulnerability to disease

8. Untransformed self-trapped
9. Failure
10. Eligibility / Grand secretary
11. Insufficient self-control
12. Obedience
13. Sacrifice
14. Emotional inhibition
15. Stubbornness/overcritical criteria

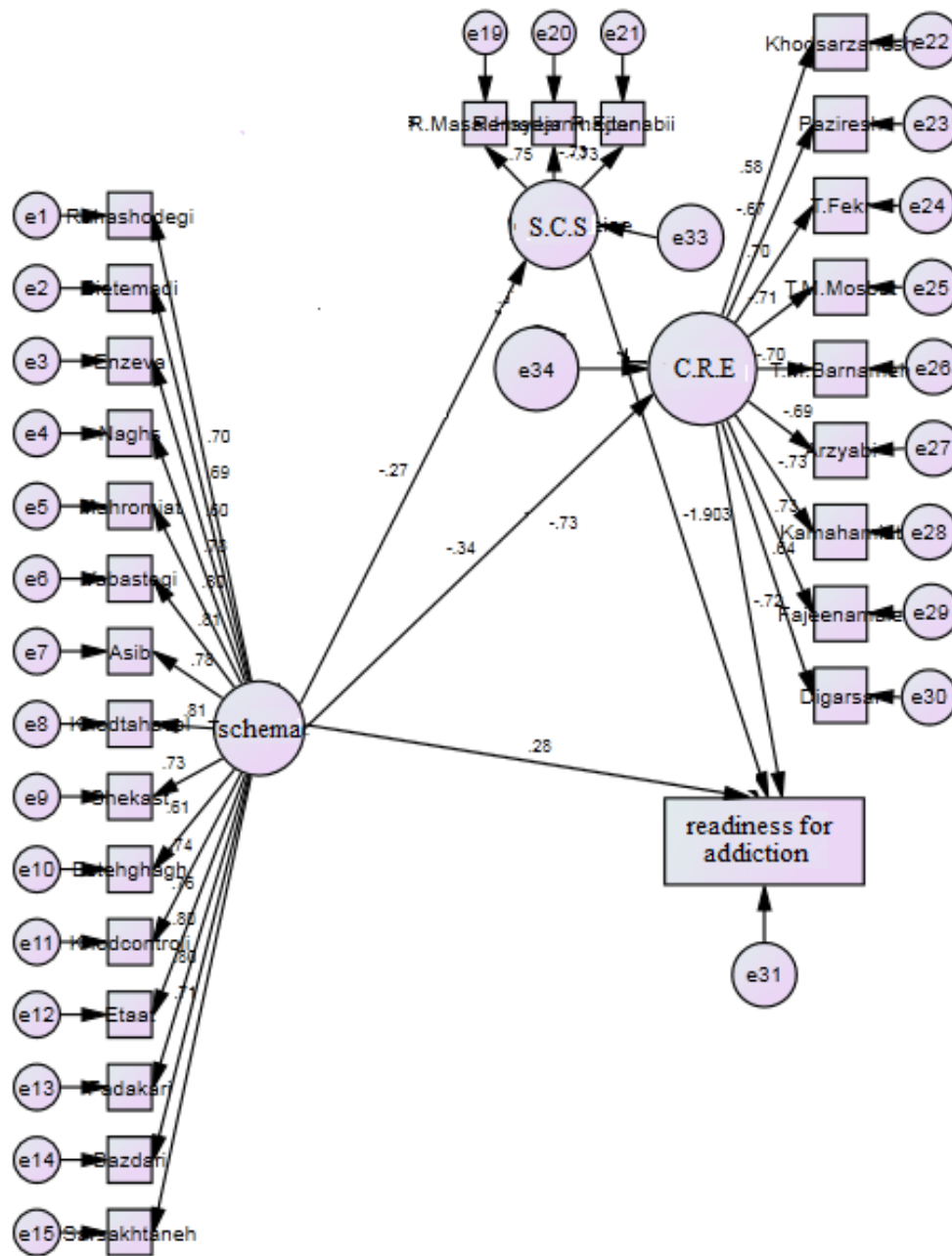
The validity of this questionnaire was reported based on Cronbach's alpha for 15 subscales between 0.79 and 0.93, and the retest results with a 15-day interval were reported between 0.67 and 0.86. It had good face and content validity.

**Results**

The diagram of the structural equation model tested in order to check the research hypotheses for the standard estimation mode and for the significance mode is shown in the figures below.

Figure 2 shows the diagram of the structural equation model in the standard state.

Figure 3 shows the diagram of the structural equation model in the significant state.



**Figure 2.** Structural equation model diagram tested in order to test the research hypotheses in the standard mode

The results of the research hypotheses test

In order to investigate this hypothesis, structural equation model and Sobel test were used. Table 1 shows the results of the fitted model to check the

research hypotheses.

In order to investigate the role of mediator, Sobel's test was used. The relevant test results are shown in Table 2.



**Table 1.** Estimation of the coefficients of the structural equation model related to the research hypotheses

Independent	Dependent	Coefficient t	Coefficient Standard	Estimation error	Test statistics	Sig
Schema	→ Coping strategies with stress	-0.231	-0.278	0.078	-2.961	0.0070
Coping strategies with stress	→ Susceptibility to addiction	-5.635	-1.903	1.451	-5.729	0.0001
Schema	→ Cognitive regulation of emotions	-0.304	-0.343	0.037	-8.218	0.0001
Cognitive regulation of emotions	→ Susceptibility to addiction	-20.492	-0.720	3.185	-6.437	0.0001
Schema	→ Susceptibility to addiction	2.493	0.283	0.425	5.867	0.0110

**Table 2.** The results of the Sobel test regarding the first main hypothesis

Mediator	A	B	S <sub>a</sub>	S <sub>b</sub>	z-value	sig
Coping strategies with stress	-0.231	-5.635	0.078	1.451	2.354	0.018
Cognitive regulation of emotions	-0.304	-20.942	0.037	3.185	5.065	0.000

Sobel test

Based on the results, z-values are lower than 1.96, and the significance level is greater than 0.05, which means that the schema on vulnerability to addiction was mediated by coping strategies. Stress had no effect on addicts who were quitting. However, for the mediating effect of cognitive regulation of emotion in influencing the schema on susceptibility, the z-values were greater than 1.96 and the significance level was less than 0.05. On this basis, schema on susceptibility for addiction was mediated by cognitive regulation of emotions in addicts. Quitting had an effect. Therefore, the first main hypothesis with the mediating role of coping strategies had not been confirmed, and the mediating role of cognitive emotion regulation had been confirmed.

### Discussion

According to the findings of this paper schema affects the readiness for addiction with the mediation variables stress coping strategies and cognitive regulation of emotion in addicts with drug rehabilitation.

The schema that is formed in the mind of a person becomes the basis of many misbehaviors

and tendency towards abnormalities in older ages. People who have the necessary intellectual bases to tend to addiction will tend to it more easily than other people and there will be fewer intellectual barriers for them. The problem of addiction is always considered an abnormality and if this abnormality is imprinted in his schema, he always tends towards it and social norms become less important for the person. In between, various factors such as the level of stress that a person endures and the ability of a person to cope with this stress are always effective. People who look for sedatives and drugs to escape from stress become addicted to these substances and reach a point where they perceive a higher level of stress when they are not using these substances. Also, a person's ability to regulate his emotions and recognize his emotions and perform timely reactions in exciting times can be effective in a person's tendency to abuse drugs.

According to the findings of this paper the schema has a direct relationship with addiction readiness in drug addicts who are quitting. In explaining the results of this hypothesis, it can be stated that if there is a tendency towards drugs in a

person's schema and it was formed during childhood, it will cause the person to be more prepared for the tendency towards drugs. Due to the fact that the schema is very resistant to change, attention should be paid to creating a schema in the mind of a person from childhood. Families who use tobacco and drugs similar to drugs in the presence of their children should not expect that their children will not be attracted to these substances as adults.

According to the findings of this paper the schema has a direct relationship with stress coping strategies in drug addicts who are quitting". In explaining the results of this hypothesis, it can be stated that the strategies that a person adopts to deal with stress always go back to the individual's schema, and the training that a person has received since childhood to control his stress certainly plays a role in adopting a strategy to deal with stress. He influences. In the past, addicts who are quitting always found an easier way to escape from stress, adversity, and bitterness in life by using drugs, and their strategy to deal with stress was to use drugs.

According to the findings of this paper the schema has a direct relationship with the cognitive regulation of emotion in drug addicts who are quitting". In explaining the results of this hypothesis, it can be stated that a person's schema of emotions and how to regulate it in different situations can definitely be related to the cognitive regulation of a person's emotions. The person uses the emotion management methods that he has in his schema in the cognitive regulation of his emotions. In the past, drug addicts in the process of quitting used to react according to their social and physical conditions in different emotional conditions, which require different management of their emotions after quitting addiction and with the change of their psychological and social conditions. When these people were addicted, they might engage in unusual behaviors to express their emotions, but when they quit addiction, the way of cognitive regulation of emotions changes and behaves according to the new conditions.

According to the findings of this paper cognitive regulation of emotion has a direct relationship with

readiness for addiction in drug addicts who are quitting". In explaining the results of this hypothesis, it can be stated that addiction, which is considered as one of the high-risk behaviors, includes a wide range of underdeveloped, pleasure-seeking behaviors, and is generally associated with high levels of risk, which can affect the way of managing one's emotions. Addicted people who are quitting controlling their emotions no longer use the methods they used to control emotions during addiction, and in general, the type of emotions that a person experiences after addiction is different from before. The correct cognitive regulation of emotions after quitting addiction will play an important role in reorienting the person in preparation for addiction.

According to the findings of this paper strategies to cope with stress have a direct relationship with readiness for addiction in drug addicts who are quitting. Stress is associated with most diseases. A person is in a relationship and if it is not managed in a good way, it will lead to the adverse consequences of suffering, illness, and spending exorbitant expenses. Normal people and recovering addicts experience stress in different ways and as a result, they try to deal with it by adopting unique methods. It is obvious that if the correct way to manage stress is not found by the addicted person who is quitting, he will turn to drugs again to deal with stress and the person's readiness to become addicted will increase.

The findings of this research confirm Yang's theory of primary maladaptive schemas and schema-based cognitive behavioral therapy model. In this theory, it is assumed that behaviors such as addiction arise in order to reduce negative emotions caused by the activity of incompatible schemas. Maralat and George (1984) in a study on 311 addicted patients concluded that 32% of relapses were related to negative emotional state. In fact, most of the researches have supported the opinion that in people in the period of abstinence, negative emotion is a strong stimulus to activate the preparation for addiction. A number of studies such as Yarmohammadi Vasil, Alipour, Bastami, Zulfaqarinia and Brarzadeh (2014), Gratz and



Romer (2004), Bashrpour (2012), have shown that difficulty in regulating emotions is related to a wide range of disorders, including substance abuse. According to Orrick (2007), people who have learned poor emotion regulation strategies may be more prone than others to use risky behaviors as a means of relieving negative emotions.

### Conclusion

The results of this research showed that according to the predictive power of cognitive emotion regulation variables and stress coping strategies in the effect of schema on readiness for addiction, it is possible to use the results of the effects of these variables in the interventions and trainings of addiction treatment clinics.

### Suggestions

For increasing stress coping strategies in addicts with drug rehabilitation, it is suggested to teach efficient coping styles, including how to deal with stress and increase life satisfaction) to improve living conditions in addicts with drug rehabilitation.

In order to reduce tendency for addiction in recovering addicts, more attention should be paid to the category of cognitive regulation of emotions. It is possible to prevent the relapse of drug users by training them in the field of managing and

regulating emotions, emotional self-awareness and providing behavioral counseling to people undergoing treatment in addiction treatment centers.

It is suggested to hold prevention program sessions to raise awareness about the compromised strategies and the method of managing the cognitive regulation of emotions in order to prevent people from addiction relapse.

It is suggested to consider preventive measures in the framework of family education and educate couples at the beginning of their life on parenting styles and moral intelligence.

Training in the field of emotion regulation management, emotional self-awareness and behavioral counseling regarding treatment in addiction treatment centers are also suggested.

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Considering that this article was not an intervention, it does not have a code of ethics.

### Conflict of interest

The authors declared no conflict of interest.

### Authors' contributions

H. EB, M. E; contributed to the design and implementation of the research, R. D; contributed to the analysis of the results and to the writing of the manuscript.

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