



## Effects of Mindfulness on Temptation and Emotional Schema with Mediator Role of Substance Craving in Drug Addicts

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### Abstract

**Background & Aims:** Substance abuse is a social disorder that affects the physical, mental, and social health of the victims. It is recognized as a disease whereby the patient loses his control over the behavior-reward system and compulsively insists on repeating an action with adverse effects. In this correlative descriptive study, we have investigated the effect of mindfulness on temptation and emotional schema with a mediator role of substance craving in drug addicts.

**Materials & Methods:** We have studied 253 drug addicts referred to Outpatient Addiction Treatment Center in Urmia, Iran in 2018, among which 150 samples were selected based on Krejcie & Morgan Table and using randomized multistage cluster method. Data collection was performed using Beck's Craving Belief Questionnaire (CBQ), Leahy Emotional Schemas Scale (LESS), Five Facet Mindfulness Questionnaire (FFMQ), and Brief Substance Craving Scale (BSCS) with respective reliabilities of 0.80, 0.82, 0.83, and 0.81, respectively.

**Results:** A sample of 70 subjects (51 men and 19 women) aged 31-45 years participated in the study. Results of the correlation matrix showed a positive and significant relationship between variables at 1% and a confidence level of 99%. The model of temptation and emotional schema with a direct impact of mindfulness and substance craving, and direct effects of the synthetic model of mindfulness and substance craving were fit and significant at 1% and confidence level of 99%. Indirect effects of the synthetic model were acceptable at 1%, implying that mediator role of substance craving in the relationship between mindfulness with temptation and emotional schema in subjects who suffered from substance abuse is effective.

**Conclusion:** We concluded that addiction treatment centers employ friendly staff and provide patients with training services to stimulate their lost sense of masculinity and help ease their return to normal life.

**Keywords:** Mindfulness, Temptation, Emotional Schema, Substance Craving, Substance Abuse

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## Introduction

Substance abuse is recognized as a disease whereby the patient loses his control over the behavior-reward system and compulsively insists on repeating an action with adverse effects. It is a social disorder that silently distresses moral values and jeopardizes social and physical health, leaving annually a considerable number of victims around the world (1). The temptation is a strong yearning or craving to use substances and can be stimulated easily by exposure to risky situations, drugs or environmental codes associated with former addiction, even after a period of avoidance (2). Also, it has been defined as the need to use an illegal substance or drug (3). Several studies have shown that temptation is a strong predictor of relapse (4) and desires during and after treatment significantly undermine the individual's success (5). Substance craving becomes more compelling in highly dependent addicts who find it difficult to suppress their insatiable temptation and are ready to do anything, even selling properties, to find the craved substance (6).

Emotional traits including basic emotions and emotion schemas are also found to influence substance abuse. Emotion schemas are responsible for structuring information, providing meaning, and guiding behavior and can be differentiated by their content (7). Separating basic emotions from emotion schemas is critical to regulate emotional experiences in daily lives (7). Mindfulness is self-awareness at each moment of physical sensations such as heat, cold, pain, thoughts, and feelings such as happiness, anxiety, and sorrow. Mindfulness helps one gain a better perception of emotions and thoughts and interpersonal relations and masterfully adopt proper responses, instead of showing unconscious and habitual reactions. Once the individual acquires mechanisms of mindfulness, he/she gains control over his/her behavior and promotes emotional, physical, and mental well-being (8). Mindfulness training activities combine meditation techniques with the physical examination to promote individual's understanding of feelings, thoughts and automatic and involuntary physical sensations to make them less automatic and more manipulative (9).

Temptation and substance craving seizes the individual's awareness and control and directs all brain pulses towards the substance. Conversely, mindfulness can help the patients in having control over their behaviors. Thus, in the current study, we aimed to investigate the effects of mindfulness on temptation and emotional schema with the mediator role of substance craving in drug addicts.

## Material and Methods

This is a fundamental, correlative, descriptive survey research. The population of the study includes a total number of 253 drug addicts referred to Outpatient Addiction Treatment Center in Urmia, Iran in 2018, among which 150 samples were selected based on Krejcie & Morgan Table and using randomized multistage cluster method.

**Craving Belief Questionnaire (CBQ):** It is a self-assessment scale that measures beliefs related to substance craving (Beck, 1993). It includes 20 items within a scale range of 0-5. Reliability of the questionnaire was established using the internal consistency coefficient based on Cronbach's alpha (0.84) and bisection method (0.81). Here, 30 substance-dependent individuals were evaluated.

**Leahy Emotional Schema Scale (LESS):** The Persian edition of this questionnaire was prepared by Khanzadeh, et al. It includes 37 items structured on a five-point Likert. Its reliability within two weeks was 0.78 and the subscales were reliable at 0.56-0.71. Overall internal consistency coefficient based on Cronbach's alpha was 0.82, and the subscales lied within the range of 0.59-0.73. This scale was reliable(10).

**Five Facet Mindfulness Questionnaire (FFMQ):** It is a 39-item self-assessment scale developed by Baer that measures observing, describing, acting with awareness, nonjudging, and nonreactivity. Baer et al. performed a factorial analysis on college students and reported that they were consistent. The subjects expressed their agreement or disagreement at a 5-point Likert scale. The scores lied within 39-195. Higher subscale scores indicated higher mindfulness(11).

**Brief Substance Craving Scale (BSCS):** It is developed by Somoza et al. (12). It was primarily adopted by Love et al. (1998) as a desire for alcohol questionnaire (DAQ). Later, Franken, et al. revised it for heroin(13). BSCS is an eight-item questionnaire with three major factors structured at a 5-point Likert scale that measures duration, frequency, and intensity of substance craving. Cronbach's alpha for each of the above measures was 0.81, 0.84, and 0.73, respectively. Somoza et al. found the intensity of substance dependence and craving. Cronbach's alpha for craving was reported to be 0.88(12).

Reliability of measurement tool by Cronbach's alpha was 0.80, 0.82, 0.83, and 0.81. Normality of variables was tested using skewness and kurtosis test. Pearson correlation matrix was used to study the relationship between variables. Data analysis was performed using SPSS 24 and Lisrel 8.8.

## Results

A sample of 70 subjects (51 men and 19 women) aged 31-45 years participated in the study. The mean age of participants was  $38.44 \pm 4.15$ .

**Table 1.** Correlation matrix of variables

	Variable	1	2	3	4
1	Mindfulness	1			
2	Temptation	**0.872	1		
3	Emotional schema	**0.772	**0.781	1	
4	Substance craving	**0.957	**0.947	**0.896	1

\*\* $p \leq 0.01$

Results of correlation matrix show a positive and significant relationship between variables at 1% and confidence level of 99%. Temptation and emotional schema in substance abusers were predicted using a conceptual model of path analysis through maximum likelihood. Temptation, emotional schema, and substance craving were endogenous variables, and mindfulness was the exogenous variable (Table 1).

The results of chi-square are insignificant, implying fitness of the proposed model. Moreover, results of t-statistics are significant ( $>1.96$ ). This implies that the model of temptation and emotional schema with direct impact of mindfulness and substance craving, and direct effects of synthetic model of mindfulness and substance craving are fit and significant at 1% and confidence level of 99%.

**Table 2.** Direct effects and variance of variables

Path	Direct effects	Explained variance
Temptation		0.24
mindfulness and substance craving	0.25	
Mindfulness	0.35	
Emotional schema		0.27
mindfulness and substance craving	0.26	
Mindfulness	0.25	
Substance craving		0.36
Mindfulness	0.47	

Table 2 shows that mindfulness explains 36% of variances in substance craving, while mindfulness and

synthetic model of mindfulness and substance craving explain 27% of variances in emotional schema, and mindfulness and synthetic model of mindfulness and

substance craving explain 24% of variances in temptation.

**Table 3.** Direct effects of variables

Path	Path coefficient	t-statistics	Level of significance
Mindfulness to substance craving	0.47	11.84	0.001
Mindfulness to temptation	0.35	5.11	0.001
Mindfulness to emotional schema	0.25	5.40	0.001
Substance craving to temptation	0.53	8.08	0.001
Substance craving to emotional schema	0.55	8.37	0.001

Table 3 shows that direct effects of variables are acceptable at 1% and Table 4 provides results of path analysis on indirect effects of variables.

**Table 4.** Indirect (synthetic) effects of variables

Path	Path coefficient	Estimated standard error	t-statistics	Level of significance
Synthetic model of mindfulness and substance craving to temptation	0.25	0.05	95.67	0.001
Synthetic model of mindfulness and substance craving to emotional schema	0.26	0.05	99.10	0.001

Table 4 shows that indirect effects of synthetic model are acceptable at 1%. Results showed the mediator role of substance craving in the relationship between mindfulness with temptation and also findings suggested that emotional schema in subjects who suffer from substance abuse is effective.

## Discussion

Preclinical and clinical studies emphasize on craving as a serious predictor of relapse in addicts. Relapse is the treatment success indicator that shows imminent return to substance abuse (14). Substance craving is the major stimulus in substance abuse disorder which can be regulated to decrease substance dependence (15). It is positively associated with other stress factors such as smoking, distress, impulsivity, attentional bias, incompatible emotional schemas of ruin, sin, uncontrollability, and reprimand while it is negatively associated with distress tolerance and its subscales (16).

Mokri et al. examined the relationship between substance craving and addiction severity in heroin users. Addiction severity indicators were younger, and had short duration of addiction, high costs of addiction, greater inhibition, and high substance dependency. It was found that age and education had significant and negative relationship with craving intensity, while costs of daily use, addiction duration, legal, and psychological problems were positively correlated with craving intensity. We have not analyzed these variables in our study and we recommend further studies in this field(16).

Bowen et al. performed a mindfulness-based relapse prevention for substance craving following an intensive period of stability including outpatient treatment or clinical treatment of substance abusers. The authors stated that those who received stability treatment with MBRP, compared to those receiving stability treatment with routine care, showed significant reduction in

substance abuse, had less craving, and greater awareness throughout the 2- to 4-month period. Substance craving significantly decreased in MBRP group. The study supports effectiveness of mindfulness integrity and preventive mechanism of substance abuse relapse. We have also demonstrated the significant preventive effect of mindfulness on substance abuse(17).

Kinchla et al. studied mindfulness and sustained recovery from alcoholism and showed that recovery was positively correlated with nonjudgmental thinking from personal experience and participation in alcoholics anonymous. Thus, findings of the current study could also be applicable for alcohol abuse(18).

Bowen et al. studied effects of mindfulness-based instructions on negative affect, urges, and smoking and reported that mindfulness techniques may not necessarily work through reduced urges but rather through manipulating the relationship between urges and smoking. His study provided the basis for future studies that analyze mindfulness-based mechanisms and effectiveness on substance abuse(19).

In conclusion, addiction treatment centers should employ friendly staff and provide patients with training services to stimulate their lost sense of masculinity and help ease their return to normal life.

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## Author's Contribution

All of the authors contributed equally.

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## Ethical Approval

Finally, this study was approved by the Ethics Committee of Karaj Branch of Islamic Azad University.

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