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The relationship between obsession and addiction relapse with the mediation of sensation seeking in methamphetamine dependent patients

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ABSTRACT

Background and Aim: In addition to the direct effect on the body, substance abuse causes psychiatric disorders such as depression, anxiety, social and economic pressures. The present study was conducted with the aim of determining the relationship between obsession and addiction relapse with the mediation of sensation seeking in self-reported addicts. **Methods:** The current research design was descriptive and correlational research design of the structural equation model type. The statistical population of the present study was all the methamphetamine addicted patients who were in the process of withdrawal who referred to the substance abuse treatment centers of Tehran city in 2022, out of which 250 people were selected by available sampling method. And they responded to Wright's (1993) Addiction Recurrence Questionnaire, Hodgson and Rachman's (1977) Thought-Practice Obsession and Marvin Zuckerman's (1978) Sensation Seeking Questionnaires. The data were analyzed using structural equation modeling method and Lisrel 8.80 software. **Results:** The results showed that there is a statistically significant relationship between obsessive thoughts, excitement seeking and addiction relapse ($P<0.01$). Also, sensation seeking plays a mediating role in the relationship between obsessive thoughts and addiction relapse ($P<0.01$). **Conclusion:** It can be concluded that sensation seeking plays a mediating role in the relationship between obsessive thoughts and addiction relapse.

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Introduction

Substance abuse, in addition to its direct impact on the body and causing psychiatric disorders such as depression and anxiety, also leads to social and economic pressures. The consequences of this behavior subtly affect all family members, disrupting the individual's social, occupational, and educational relationships (Farhoudian et al., 2011). The problem of substance abuse and addiction, particularly to methamphetamine, has become a serious and controversial issue in recent years, prompting officials at all levels, from decision-making to implementation, to seek solutions. The abuse of methamphetamine, due to its destructive effects on the brain and the intense cravings it causes, along with significant psychiatric symptoms, has complicated treatment and prevention programs.

Amphetamines are stimulant drugs that, depending on the amount, method, and duration of use, and the specific type of drug consumed, produce different effects. When amphetamines and related drugs are used in moderate amounts, they induce euphoria, increased self-confidence, talkativeness, and energy. If amphetamines are injected intravenously, they have stronger effects. Immediately after injection, users feel a very pleasurable surge or 'rush', which some compare to an orgasm. A type of smokable amphetamine known as 'ice' (due to its crystalline appearance) is highly addictive and toxic. Amphetamines quickly build tolerance in users, leading to rapidly increasing dosages. While there is debate about whether amphetamines cause physical dependence, most researchers believe they cause psychological dependence (Halgin & Krauss Whitbourne, 2007). Among addictive substances, amphetamines, especially methamphetamine, are some of the strongest and carry a higher risk of dependency and mental health problems (Tap, Degenhardt, Kay, & Darke, 2002) and are associated with high rates of psychosis, depression, and cognitive problems (McKetin, Kelly, & McLaren, 2006). Amphetamine addiction can arise from both medical misuse, such as for weight loss or fatigue treatment, and recreational misuse, where users deliberately consume amphetamines to alter their mood or alertness, potentially as a substitute for depressant drugs (Halgin & Krauss Whitbourne, 2007).

Emotions play a significant role in human behavior and are beneficial to humans as they direct activities towards goals that are advantageous for survival and warn against harmful actions. Research in the field of 'affective structure' has consistently identified two dominant dimensions (Pourferj Omran et al., 2016). In this context, a two-factor model of affect has been presented, named 'positive affect' and 'negative affect' (Aaron, 2013). Positive and negative affect refers to the extent to which a person feels pleased and happy, or displeased and unhappy. Positive affect is a state of active energy, high concentration, and engagement in pleasurable activities, encompassing a wide range of positive moods such as joy, a sense of capability, excitement, desire, interest, and self-confidence. On the other hand, negative affect is a general dimension of internal despair and non-engagement in pleasurable activities, followed by avoidant mood states like anger, sadness, disgust, humiliation, guilt, fear, and irritation. Various researches have shown that factors of success and achievement in individuals stem from the positive emotions and feelings they generate. Conversely, unsuccessful individuals are those who cultivate negative emotions and feelings within themselves (Aaron, 2013). Positive affect indicates enjoyable interactions of a person with the environment, leading to feelings of activeness and eagerness. In contrast, negative affect indicates negative interactions with the environment and high mental turmoil. Positive and negative emotions are among the factors that play a significant role in mental health, life satisfaction, happiness, and ultimately the efficiency of individuals. Furthermore, examining positive and negative affect as indicators of positive and negative activation is of great importance and is considered one of the predictors of happiness and life satisfaction. Most people, when judging their level of happiness and life satisfaction, consider their balance of positive and negative emotions, indicating the predominance of their positive feelings over negative ones (Torabi et al., 2017). Obsessive-Compulsive Disorder (OCD) is a mental disorder characterized by obsessive thoughts including recurring and persistent thoughts, impulses, or mental images that are experienced as intrusive and inappropriate, or compulsive actions that manifest as repetitive behaviors (such as washing, checking, organizing) or mental acts (such as praying,

counting, and quietly repeating words). Cognitive theories on OCD emphasize the role of various cognitive beliefs and their interconnections as the main cognitive factors in the manifestation of symptoms of this disorder (Alaei, 2013). Clinical experiences and research findings have repeatedly shown that what is more important in this disorder are the underlying beliefs, cognitive and metacognitive factors, which often mediate between obsessive thoughts and impulses and compulsive actions, playing a significant role in the persistence of the disorder. The growing attention to cognitive and metacognitive constructs in explaining OCD stems from dissatisfaction with previous behavioral explanations, which attribute the occurrence and increase of compulsive actions to the role these actions play in reducing anxiety. The inclination towards cognitive perspectives in explaining OCD began in the 2010s, and experts believed that adding cognitive interventions to the treatment of this disorder would increase treatment effectiveness and reduce relapse, and could significantly help patients who did not respond well to behavior therapy (Menon, 2018). Despite the importance of studying the psychological characteristics of addicts, few researches have examined these characteristics in the Iranian society. Conducting such research will reveal the psychological predictors of addiction and, in addition to prevention officials, health, educational authorities, and parents, other members of the society can also benefit from the results. Awareness of the psychological factors predicting addiction will enable authorities to implement educational, cultural, and therapeutic measures. Furthermore, the necessity of the present research arises from the fact that relapse into substance use is a highly significant issue. Identifying the factors influencing relapse and being aware of the underlying factors that lead individuals to restart addiction can help reduce the high rate of relapse through the implementation of preventive and controlling policies and actions. Therefore, the present research was conducted with the aim of determining the relationship between obsessive thinking and relapse in addiction with the mediation of sensation seeking in patients dependent on methamphetamine.

Method

The design of the present research was descriptive, and the correlational research design was of the structural equation model type. The statistical population of the present study consisted of all patients dependent on methamphetamine seeking treatment in substance abuse treatment centers in Tehran in 2021, numbering 1863, of which 250 were selected using a convenience sampling method.

Materials

1. Addiction Relapse Prediction Scale: This self-assessment scale, comprising 45 questions and developed by Wright and colleagues in 1993, requires respondents to imagine themselves in various situations. It consists of two parts: 1) the intensity of the desire in a specific situation, and 2) the likelihood of substance use in that situation (Wright et al., 1993). Responses are scored on a five-point scale ranging from none=0, weak=1, moderate=2, strong=3, to very strong=4. Scores can range from a minimum of 0 to a maximum of 180. Scores between 0 to 60 indicate a weak prediction of relapse, 60 to 90 indicate a moderate prediction, and scores above 90 indicate a strong prediction. The validity and reliability of the questionnaire have been well evaluated and confirmed using expert opinions. In Wright et al.'s (1993) study, the scale's reliability, as measured by Cronbach's alpha, was 0.92 for the temptation subscale and 0.94 for the desire subscale. In the current study, the Cronbach's alpha coefficient for this scale was 0.79.

2. Maudsley Obsessional-Compulsive Inventory (MOCI): Developed by Hodgson and Rachman in 1977 for research on the type and scope of obsessive-compulsive problems, this questionnaire is quick and easy to administer. It consists of 30 statements with true or false responses (Hodgson & Rachman, 1977). The questionnaire, with half the items keyed true and the other half false, initially differentiated 50 obsessive patients from 50 non-neurotic controls at the Maudsley Hospital. Further content analysis of 100 patients' responses identified four major components reflecting four types of obsessive problems: checking, cleanliness, slowness, and obsessive doubt. A fifth component, named rumination, was also identified but was only prominent in two items. Consequently, four subscales were formed based on the analysis. Using a simple scoring method, one can obtain a total obsessive score and four subscale scores. The MOCI's reliability and validity have been confirmed in studies on

clinical samples in various countries. For example, Sanavio found a correlation of 0.70 between the total scores of MOCI and Padua Inventory. The test-retest reliability was high (0.89) (Ghasemzadeh et al., 2005). In an Iranian study, the average score of the MOCI for obsessive patients was 15.75 (standard deviation 5.63) and 14.67 (standard deviation 5.76) (Ghasemzadeh et al., 2005). The Cronbach's alpha coefficient for this scale in the current study was 0.81.

3. Sensation Seeking Scale: Designed by Zuckerman in 1996, this scale comprises 40 questions across four dimensions (experience seeking, adventure, boredom susceptibility, disinhibition). Scoring involves matching responses to each question against a key; a match (nasty) scores a point, otherwise zero. The higher the total score, the stronger the sensation seeking tendency, and vice versa. The reliability of this scale, as reported by Kajbaf et al. (2005) using a test-retest method, was 0.79. In the current study, the Cronbach's alpha coefficient was 0.76.

Implementation

Participants were selected from substance abuse treatment centers in Tehran in 2021, meeting specific inclusion criteria: minimum education of middle school, willingness to cooperate, no physical or mental illness, and a history of addiction recovery. Exclusion criteria included providing incomplete information or non-cooperation. Ethical considerations were addressed by ensuring confidentiality and anonymity. The data were collected through questionnaires and analyzed using appropriate statistical techniques, including descriptive and inferential statistics. Hypotheses were tested using structural equation modeling in the LISREL 8.80 software.

Results

The mean age of participants was 46.50 years (SD = 12.3). Of the respondents, 189 (75.6%) were male, and 61 (24.4%) were female.

Table 1. Descriptive statistics and correlations with addiction relapse

Variable	Mean	Sd	Skewness	Kurtosis	R
Examining	35.18	5.07	-0.367	0.036	0.327
Washing	39.25	6.14	1.354	1.646	0.322
Slowness - repetition	27.33	3.90	-0.471	0.342	0.319
Hesitation - accuracy	26.86	4.39	-0.462	0.061	0.317
OCD Obsessive Compulsive Disorder	57.15	2.17	-0.320	0.801	0.352
Experience seeking	29.60	6.67	-0.724	0.312	0.659
Adventure	28.80	6.90	-0.210	-0.814	0.462
Boredom	29.94	7.43	-0.489	-0.479	0.531
Avoid inhibition	29.32	8.13	-0.087	0.662	0.568
Sensation seeking	36.20	3.53	-0.375	-0.333	0.787
The intensity of desire for a particular situation	63.56	3.41	-0.321	0.289	0.327
Probability of consumption in that situation	48.56	3.28	-0.411	0.318	0.322
Addiction relapse	156.43	4.78	-0.309	0.289	1

As per Table 1 results, the addiction relapse variable had the highest mean, and the sensation-seeking component (disinhibition) had the highest standard deviation. The study found that with an increase in obsessive thinking (M = 1.57, SD = 2.1), sensation seeking (M = 2.36, SD = 3.5), and addiction relapse (M = 4.156, SD = 4.7), and the Root Mean Square Error of Approximation (RMSEA = 0.039) indicated good model fit.

Table 2. Fit indices

Index	X^2/df	RMSEA	AGFI	GFI	CFI
Model	2.95	0.039	0.93	0.98	0.97

**p<0.01

Table 2 indices supported the good fit of the model with the collected data. Indirect effects were calculated to investigate the mediating role of sensation seeking.

Table 3. Standard estimations of direct, indirect and total effect coefficients of addiction relapse based on obsession with the mediation of sensation seeking

Path	Direct effect	Indirect effect	Total effect	SE	p
OCD to addition relapse	0.34	0.06	0.40	0.25	0.001
Sensation seeking to addiction relapse	0.24	-	0.24	0.16	0.001
OCD to sensation seeking	0.26	-	0.26	0.19	0.001

Using indirect effect calculations, it was found that the direct effect of obsessive thinking on addiction relapse was significant ($\beta = 0.34$, $p < 0.01$), as was its direct effect on sensation seeking ($\beta = 0.26$, $p < 0.01$), and the direct effect of sensation seeking on relapse ($\beta = 0.24$, $p < 0.01$). The indirect effect of obsessive thinking on relapse via sensation seeking was 0.06, with a total effect of 0.40.

Conclusion

This research aimed to determine the relationship between obsessive thinking and addiction relapse, mediated by sensation seeking in self-identified addicts. Results indicated that sensation seeking plays a mediating role between obsessive thinking and relapse. It was found that the presence of the mediating variable of sensation seeking increased the relationship between obsessive thinking and addiction relapse, confirming the mediating role of sensation seeking in this research. This finding aligns with the studies by Seyyedhashemi, Yousefi, Ghasempour, Kolahi (2018); Ghabadizadeh, Yousefi, Ghaderi (2019); Bloom et al. (2011); Mansouri Jalilian, Yazdanbakhsh (2015); Grigoryan et al. (2020); Hoseinian, Farokhjeste, Abdollahi, Nouri Pourliavoli (2014); Vatan Khah, Akbari Shayeh, Delavar, Riahi, Pak (2014).

Obsessive-compulsive disorders and substance misuse are both impulse control disorders. Impulsivity, as a strong urge to act in response to an internal or external stimulus, spans a range of behaviors that are less thought-out and immaturely executed to achieve a reward or pleasure. These behaviors are riskier and have significant unintended consequences, such as substance use or seeking any solution to temporarily reduce anxiety. Theoretical explanations justify the similarities between individuals with obsessive-compulsive disorder and those with substance use disorders based on the nature of these disorders. Anxiety and worry, the main characteristics of these disorders, are aimed at gaining certainty to reduce the consequences of ambiguity and uncertainty. Concerns are a mechanism used to control vague and anxious feelings about future events (Kajbaf et al., 2005). Consequently, individuals with high anxiety tend to resort to compulsive and repetitive behaviors (Ghabadizadeh et al., 2019). They focus on future events, regardless of their likelihood, and cannot tolerate any ambiguity, leading to high levels of anxiety (Mansouri Jalilian & Yazdanbakhsh, 2015). To avoid emotional processing, these individuals resort to worry as an avoidance strategy. Anxiety and worry, alongside strategies like compulsive and repetitive behaviors, operate in individuals with obsessive-compulsive and substance use disorders. Thus, individuals engage in maladaptive behaviors like seeking more information before decision-making in response to a situation, which may lead to obsessive thoughts or behaviors. Studies show that substance use disorder, like obsessive-compulsive disorder, is associated with abnormal habits; individuals choose behaviors that, despite severe and negative consequences, are repeatedly enacted.

A meta-analysis to explain these behaviors suggests decision-making can arise from two distinct systems: a goal-directed system and a habitual system. Since individual choices in these conditions depend on the emotional state elicited by the environment, high anxiety causes individuals to choose a system based on previous habits, explaining repetitive behaviors in obsessive-compulsive and substance use disorders (Hoseinian et al., 2014).

The Compensatory Control Theory posits that individuals perceiving lower control in ambiguous situations are more likely to seek structured environments. In both disorders, as individuals feel less control over their circumstances, they have a strong need for predetermined structures. In response to unpredictable situations and resultant anxiety and worry, both groups are observed to resort to repetitive substance use or resorting to cliché and formal thoughts and behaviors to create an

external, orderly structure where probabilities can be predicted, and control over oneself and others can be achieved (Vatan Khah et al., 2014). As discussed, the fear of unknown future events and the anticipation of a negative outcome are associated with intense emotional psychological reactions. Individuals involved in obsessive-compulsive disorders and addiction, regardless of the consequences, tend to make hasty decisions to end uncertainty and reduce stress-inducing conditions. To alleviate the anxiety caused, individuals often resort to repetitive unhealthy strategies, such as substance abuse or obsessive thoughts. Considering the similarities in high levels of anxiety and its components between individuals with obsessive-compulsive disorder and substance use disorder, awareness of these symptoms in both groups is crucial, regardless of the diagnostic type received, and measures should be taken to reduce them. Emotions play a significant and fundamental role in human life, to the extent that imagining life without them seems challenging. The ability to differentiate and recognize emotions plays a decisive role in individuals' inclination towards substance abuse. Those engaged in substance use behaviors face difficulties in attending to emotional information, accurately perceiving it, and managing optimal interpersonal relationships and emotions. These difficulties cause individuals in stressful life situations to lose the ability to analyze, make decisions, and choose the right behavior, leading to unadapted behaviors, such as a tendency towards substance abuse (Orang et al., 2017).

This finding can be explained as follows: when an individual is pressured to use substances, poor management of emotions and feelings increases the risk of relapse and substance misuse; conversely, effective emotional management reduces this risk. The ability to manage emotions enables individuals in situations with a high risk of addiction relapse to use appropriate coping strategies (Oveyi et al., 2007). Moreover, individuals who have high emotional control and can regulate their emotions are better at predicting others' desires. They understand the unintended pressures of peers, better control their emotions and feelings, and consequently, show more resistance to substance use, which aligns with the findings of this research.

Meaning that individuals who scored higher on thrill-seeking scales were more prone to addiction. Thrill-seekers are curious about internal experiences and the external world, leading a life full of experience. They seek pleasure in new and unconventional theories and, compared to those scoring lower on this index, experience more positive and negative emotions (Furston et al., 1994). Additionally, Reed et al. (2009) examined the role of thrill-seeking in the inclination towards substance use and committing violence in male and female students, finding that both substance use and the tendency towards physical and sexual violence are related to thrill-seeking, especially in the domains of sensitivity to monotony and risk-taking. Another factor that could be related to the recurrence of substance addiction is thrill-seeking. According to Zuckerman's theory, thrill-seeking is a trait that describes the inclination to seek new, fresh, complex, and intense sensations and experiences, and the willingness to take physical and social risks solely for the sake of experience. Thrill-seeking is distributed along a continuum, with most people falling in the middle, and some at the extremes, known as high and low thrill-seekers (Reed et al., 2009). Furthermore, according to Fowles (2000), it can be stated that individuals with substance misuse are likely more vulnerable to drug addiction due to possessing a stronger behavioral activation system. Also, since drugs increase arousal levels, individuals with high sensation-seeking tendencies show more inclination towards substance use.

In explaining this result, it can be said that due to the diversity-seeking, experience-seeking, and risk-taking nature of sensation seekers, if suitable conditions for experiencing excitement and releasing their energy are not provided, their readiness to experience substances and psychoactive drugs increases. Especially when leisure opportunities are not well-provided, high sensation seekers are more exposed to irrational methods of obtaining excitement, including drug use (Zargar et al., 2008), which can also predict relapse. The significant relationship between sensation seeking and addiction relapse, as found in this study, indicates that an individual in the process of quitting substances is inclined to seek thrilling experiences again and satisfy their sensation seeking urge. In fact, high sensation seekers with a history of substance use, when faced with stressful situations, tend to reuse substances to reduce their anxiety levels and satisfy their need for high stimulation, making them more prone to addiction relapse. Therefore,

it can be said that since sensation seekers are always in search of new experiences and drugs can be a means to quickly raise arousal, they are drawn towards risky behaviors. Ultimately, it can be stated that sensation seeking, as a predictive variable for drug addiction dependency, makes individuals with a history of substance misuse potentially more vulnerable to relapse due to a stronger behavioral activation system; thus, due to the arousal-increasing effect of drugs, individuals with high sensation seeking tendencies show more inclination towards reusing substances.

The limitations of the research include the limited scope of the study to Tehran city and its inapplicability to other groups. Another limitation is the potential response bias in self-report questionnaires, with the possibility that the respondents might lack accuracy and motivation in completing them. Conducting similar research using different samples and considering variables such as age and gender is recommended. Given the indirect effect of sensation seeking as a mediator in relation to other variables in this study, it is advised for families to facilitate their children's sensation seeking in positive areas such as travel, music, art, etc.

Conflict of Interest

According to the authors, this article has no financial sponsor or conflict of interest.

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