

Original Article

The Psychometric Properties of the Obsessive Compulsive Drug Use Scale (OCDUS) Among Iranian Methamphetamine Abusers

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Abstract

Background and Aim: Drug craving as a multidimensional subjective experience recently is accepted as a hallmark for addiction. The Obsessive Compulsive Drug Use Scale (OCDUS), measures the overall craving level within a period from a multidimensional perspective. This study aimed to investigate the psychometric properties of the OCDUS among Iranian methamphetamine abusers.

Materials and Methods: OCDUS was translated from English into Farsi by language experts. The questionnaire was then used for evaluation of craving among 50 male methamphetamine abusers. Then, OCDUS questionnaire' scores was subjected to exploratory principal components factor analysis. To assess construct validity of OCDUS, the model was evaluated using confirmatory factor analysis. Internal consistency was examined by calculating Cronbach's alpha.

Results: Exploratory factor analysis identified 2-dimensional components that included, "Desire consumption and mental employment with materials", "The Impact of drug desire and Thoughts on Consumer Work and Life". Finally, the Persian version of OCDUS was verified with 10 items and two factors with high eigenvalues 76.5% of the total variance. Given the relative fit of the confirmatory factor model, the construct validity of the OCDUS was verified.

Conclusion: The Farsi-translated version of OCDUS questionnaires had good psychometric properties. The questionnaire could be considered as a valid and reliable instrument for the assessment of drug craving level in Iranian methamphetamine abusers.

Keywords: OCDUS, Drug craving, Psychometric properties, Methamphetamine

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Introduction

Craving has been recently adapted as one of the hallmarks of addiction by DSM-5 within the past three decades. (1). Importantly, craving is considered as a hallmark in the maintenance of substance abuse and a prominent precursor for relapse (2). The significance of craving in addictive behavior is also recognized by classification systems and is one of the defining criteria for substance use disorders (3). Craving is an important addiction feature and has been included as a diagnostic criterion for substance use disorders in the DSM-5 (1). Generally, it is defined as a subjective experience of wanting to use a drug and is a motivational drive in addictive behaviors (5). For example, Franken and colleagues (6) showed that craving measured over a longer time (i.e. 1 week) appeared a better predictor of attention bias for drug cues as compared to reactive craving measured instantly after being triggered by drug cues.

Because of its subjective nature, trying to find objective methods such as electroencephalographic measurements and physiological reactions such as heart rate, blood pressure, and salivation have not been accepted yet and self-report questionnaires remained unrivaled now (7). Although craving was originally viewed as a unidimensional construct, the conviction is growing that craving is multidimensional (8). The process of craving involves physical, emotional, cognitive, and behavioral characteristics that have been well documented in the literature (9). Support for this line of reasoning was founded by Skinner & Aubin (10) who reviewed 18 theories on craving. They have concluded that it is impossible to describe the complex construct of craving as a unidimensional factor. Craving is viewed as a subjective experience and therefore is assessed with self-report scales. Kraus & Rosenberg (11) provided a comprehensive review of the self-report assessment tools for craving and concluded that single-item rating that focuses on the intensity, frequency, and duration of craving may fail to assess urges and craving if drug users attribute their feelings to another psychological or physiological state. Hence, a single-item rating of subjective craving may not well manifest the nature of craving. Moreover, assessing different dimensions of craving may predict different types of outcomes (12).

Self-reports could measure subjective aspects of drug craving with good reliability and internal consistency. These instruments have high levels of face validity and demonstrated several aspects of construct validity (6). Moreover, they are almost easy to design and utilize. One of the most widely used questionnaires for assessment of craving is Obsessive Compulsive Drug Use Scale (OCDUS) (13). Raymond F. Anton was the first scientist who discovered a strong relationship between addiction and OCD (13). So, he adapted Yale-Brown Obsessive-Compulsive Scale and initiated a 14-items questionnaire in two parts, which measure obsessive thoughts with 6 questions and compulsivity with 8 questions (13). OCDUS was developed by Franken *et al.* (14) to measure the overall craving level for heroin within a period from a multidimensional perspective and consisted of 13 items. Now after about two decades these two tests are widely accepted and retested for many drugs such as Alcohol, (15) Amphetamine (16), Marijuana (17), Caffeine (18) and disordered habits such as eating and gambling (19) in various nations.

However, there are no studies on the validity of the new OCDUS structure for Methamphetamine abusers in Iran. The present study was conducted to evaluate the psychometric properties for the OCDUS in Iranian methamphetamine abusers.

Methods

A total of 50 male methamphetamine abusers participated in the study. Participants were recruited through simple sampling (convenient method) from the pure-methamphetamine abuser at outpatient addiction treatment center in Tehran. Multi drug abusers were excluded from the study. To obtain generalized results, the sampling was made at different clinics in culturally and socioeconomically different areas of Tehran. Also, the study was conducted irrespective of the patients' demographic characteristics and different addiction-related dimensions. First, the OCDUS questionnaire was translated from English into Persian by the psychological evaluation laboratory research team at the National Center for Drug Addiction Studies, then each questionnaire was adapted for methamphetamine abuse. For more affirmation, we translated the

questions two times, by two different translator groups first from English to Persian and then Vice versa, to see if there would not be any ambiguity in the text. Then the participants answered the translated questionnaire. The next process was analyzing the obtained data.

Materials

INCAS Substance Abuse Profile (ISAP)

Iranian National Center for Addiction Studies (INCAS) is a comprehensive drug abuser's profile which is designed to evaluate demographic characteristics and different addiction-related dimensions (20). It consists of 6 sections. First sections includes, basic demographic information such as age, gender, marital status, level of education, etc.. The second section assesses the history of drug abuse, and the third one examines the history of drug abuse treatment. The patient's high-risk behaviors, the medical and psychological information are evaluated in the fourth and fifth segments. The patient's family relations and social status are mentioned in the last part. This Standard profile used in the present study.

Obsessive Compulsive Drug Use Scale (OCDUS)

The OCDUS questionnaire has been designed on drug craving as an obsessive thought, and measures drug craving during a certain period of time such as the previous week (14). The scale used in this study was validated in Persian Methamphetamine Abusers. It is reconstructed by Franken in 12 questions which is divided in three components. The first component named "thoughts and interference" is an opinion survey on drug abuse and its effects on drug abusers' lives (questions 1, 2, 3, 4, 6, and 9). The second one named "desire and control" investigates the intention to drug use and control of drug consumption (questions 7, 8, 11 and 12). The third component labeled as "resistance to thoughts and intention" measures the power of Meth-related thoughts which made them (questions 5 and 10). There is another question, the 10th one, which is eliminated by Franken, himself in order to increase the internal consistency of the group. In the present study this question is re-tested and restored. Subjects answered this questionnaire on a five-scale Likert-type answer sheet from not at all to extremely. A higher total score

indicates a higher craving level.

Data Analysis

Construct validity was assessed through exploratory and confirmatory factor analyses. Exploratory factor analysis was conducted using the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Oblimin rotation. Factors were extracted using principal component analysis with varimax rotation, and the number of factors was determined using a scree plot of eigenvalues. An eigenvalue is an amount that determines the variance explained by a factor throughout a dataset. Therefore, the greater the eigenvalue of a factor has the higher its explanatory power of the variance. The factor analysis method examines the internal relationship between variables and is used to extract categories of items that are most strongly related to each other. In this analysis, items with factor loadings of less than 0.3 were considered candidates for removal. Items with factor loadings of 0.3–0.5 were kept in or removed from the instrument at the research team's discretion. After extracting factors and expressions therein, their consistency with the dimensions of the original questionnaire was examined. We conducted confirmatory factor analysis to investigate the model fitness based on the exploratory factor analysis findings. The goodness of Fit Index (GFI) was used to assess the exploratory model fit. To verify the model, the following indices were determined as follows: Root Mean Square Error of Approximation (RMSEA) < 0.08, the Standardized Root Mean Square Error of Approximation (SRMSEA) < 0.08, Comparative Fit Index (CFI) ≥ 0.90, Tucker-Lewis Index (TLI) ≥ 0.95, and normed chi-square (χ^2 / df) < 5.0. We computed Cronbach's α to assess the internal consistency of the OCDUS.

Results

A total of 50 male methamphetamine abusers entered the study. The mean participant age was 29.3±7.3 years old. Other characteristics are given in Table 1.

Construct validity

KMO and Bartlett's tests indicated that the data were suitable for factor analysis (KMO = .883, $P < 0.001$) (Table 2). We conducted principal component analysis to determine the factor structure of the OCDUS. This two-factor model accounted for 76.50% of the OCDUS-

Table 1: Descriptive indicators of Psychological capital data in type 2 diabetic patients.

Variable	Level	Group	Mean	S.D.
Self-efficacy	Pre-test	Experiment	24.87	3.81
		Control	23.20	3.69
	Post-test	Experiment	28.93	2.15
		Control	22.87	3.44
Hope	Pre-test	Experiment	24.20	2.73
		Control	23.33	3.33
	Post-test	Experiment	28.80	1.70
		Control	23.40	2.80
Resilience	Pre-test	Experiment	19.87	3.48
		Control	20.33	2.89
	Post-test	Experiment	24.53	3.60
		Control	20.67	2.69
Optimism	Pre-test	Experiment	24.93	2.19
		Control	24.20	3.00
	Post-test	Experiment	28.60	1.96
		Control	23.87	2.64
Total psychological capital	Pre-test	Experiment	93.87	8.90
		Control	91.07	7.91
	Post-test	Experiment	110.87	5.93
		Control	90.80	6.81
Stress Symptoms	Pre-test	Experiment	107.30	33.60
		Control	107.7	32.30
	Post-test	Experiment	74.10	31.40
		Control	107.8	27.40

Table 2: KMO and Bartlett's Test.

KMO	Bartlett's Test of Sphericity		
Sampling Adequacy	Chi-Sq. Statistic	df	p
.883	6044.381	121	.001

item variance.

According to Table 3, all items had salient (≥ 0.50) loadings on the two factors (Table 3). The first component labeled as "Desire consumption and mental employment with materials" with 6 items (1, 2, 4, 5, 7 and 11) and the second one is named "The Impact of drug desire and Thoughts on Consumer Work and Life" with 4 questions (3, 8, 9 and, 10).

Given the values of indices in Table 4, the χ^2/df ratio was smaller than 5, and the RMSEA value was smaller than 0.08, verifying the model validity. Moreover, the GFI and AGFI were greater than 0.9, demonstrating the verifiability of their factor structure and the acceptable model fit (Table 4). Given the relative fit of the confirmatory factor model and the significant item-scale relationship, the results of the exploratory factor model were supported by confirmatory patterns, and the construct validity of the scale was verified

(Fig. 1).

Reliability

Cronbach's alpha coefficient of the questionnaire items were calculated 0.30 for first components (Desire consumption and mental employment with materials), 0.36 for the second component (The Impact of drug desire and Thoughts on Consumer Work and Life), which are very low (Table 5).

Discussion

We aimed to examine the psychometric properties of the OCDUS to measure desire and the impulsive dimension of craving among Iranian methamphetamine abusers. To the best of our knowledge, this study is the first study to translate and validate the OCDUS in Farsi language among methamphetamine abusers in Iran. The results showed that the scale had good structure validity

Table 3: Factor loadings of the Obsessive Compulsive Drug Use Scale (OCDUS).

Item	Factor 1	Factor 2
OCDUS 1	0.926	
OCDUS 2	0.521	
OCDUS 3		0.677
OCDUS 4	0.910	
OCDUS 5	1.011	
OCDUS 7	0.543	
OCDUS 8		1.029
OCDUS 9		0.830
OCDUS 10		0.905
OCDUS 11	0.584	

Table 4: Confirmatory factor analyses fit Index of the (OCDUS).

X ²	df	P	X ² /df	RMSEA	GFI	AGFI	CFI	TLI	IFI	NFI
20.62	7	<.01	2.94	0.009	0.90	0.95	0.94	0.91	0.87	0.92

Table 5: Cronbach’s alpha coefficient of OCDUS.

OCDUS	Cronbach’s alpha
1. Desire consumption and mental employment with materials	0.30
2. The Impact of drug desire and Thoughts on Consumer Work and Life	0.36

x²/df: Normed chi-square; *RMSEA* Root Mean Square Error of Approximation, *GFI* Goodness of Fit Index, *AGFI* Adjusted Goodness of Fit Index, *NFI* Normed Fit Index, *IFI* Incremental Fit Index, *TLI* Tucker- Lewis Index, *CFI* Comparative Fit Index

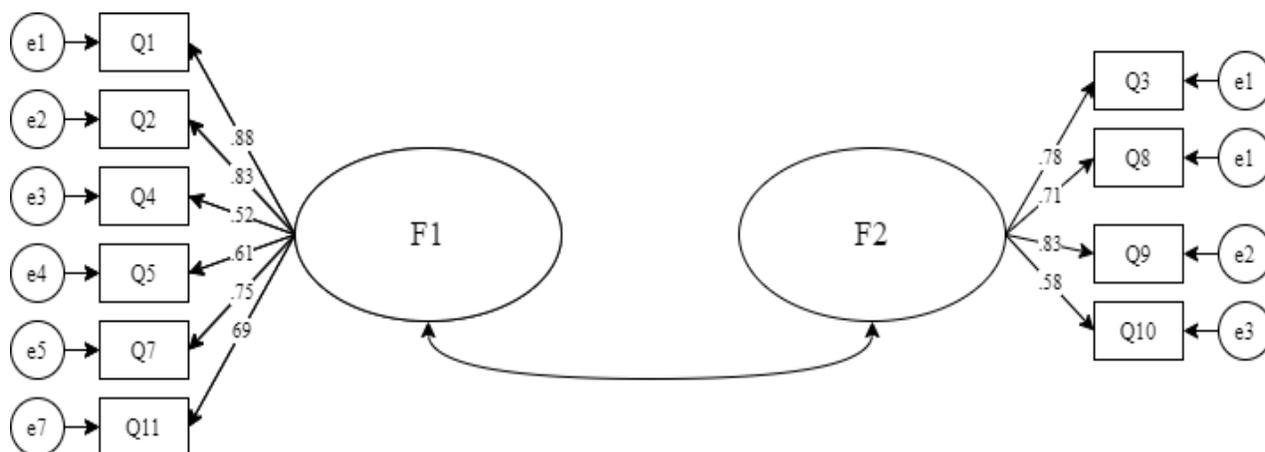


Figure 1. CFA factor loading for Obsessive Compulsive Drug Use Scale (OCDUS).

with the deletion of items 6, 12, and 13; finally, we included 10 items with two subscales, namely, “Desire consumption and mental employment with materials”,

and “The Impact of drug desire and Thoughts on Consumer Work and Life”. The 10-item scale showed acceptable the construct validity and internal

consistency, and adequate item-total correlations. Based on exploratory analysis, Item 7 was removed from the Persian version on account of their low factor loadings. As predicted, 10 questions from 13 original OCDUS's do get the eigenvalues more than .76.5% to their appropriate component.

The main characteristic of OCDUS questions is the combination of craving thoughts with inability of controlling them. This Synergism starts compulsivity which should be considered as higher cognitive skill problem. The results showed that this dimension has at least two subgroups. The first one is "strength/attractivity of craving thoughts". It is a subjective feeling of drug/cues saliency which is handled by phasic dopamine reactivity. Deleting three questions (6, 12, 13) from the original OCDUS made it so purified that we could be divide it into two subgroups. First subgroup obviously indicates subjective non-observable feeling of craving combined with inability to control them. This component directly highlights the amount of attractiveness of Meth thoughts which put him in a tormenting compulsive cycle. This dark cycle has direct influence on his functionality, but our Meth-OCDUS is designed in such a way that could draw a borderline between the obsessive thoughts in first subgroup from compulsive jobs in the second component. So far, our second component with 4 question shows only observable effects of craving thoughts on subject functions. The results showed that four sub-groups for the first component which are "urge frequency", "urge duration", "amount of anxiety", "amount of effort". As mentioned above, these sub-sub groups could be only assessed by self-reporting questionnaires since it has not directed observable symptoms. For the second component, we suggest three sub-groups which are "social/job effects", "Amount of upset" and "Amount of time wasting" Here you see observable effects of compulsive thoughts. This sub-dimension has observable symptoms so it could be more reliable and be re-checked by examiner.

Previous findings on the OCDUS components were inconsistent. Flanker *et al.* (14) conducted an exploratory factor analysis of 102 inpatients and obtained three factors, namely, "heroin thoughts and interference," "desire and control," and "resistance to thoughts and intention." Finally, they obtained a 12-

item scale with deletion of item 10 and modified it to measure cocaine craving in Dutch individuals and acquired a similar factor structure in 101 cocaine-dependent inpatients. Comparing the results to our previous work on Heroin, the Chinese on Heroin-OCDUS and Livaart's on Cocaine (21), some differences between Meth's and the others are visible. Maybe this is because of Meth's special craving timeline comparing with other addictive drugs. So, we could change something in OCDUS to make it more accurate for measurement of Meth general craving. Further, 131 male crystalline heroin abusers were administered with the Persian version of the OCDUS consisting of four components namely, "desire and mental preoccupation with drugs," "the effect of desire for drug and drug-related thoughts on the patient's work and life," "motivation, emotion, and lack of control," and "resistance to drug use" (22). Moreover, the factor structure of the Chinese version of the OCDUS, which was validated by Yang *et al.* (23) and differed from that of versions of other countries, was consistent with our study's components. Therefore, the OCDUS components are consistent within similar countries but differ across different countries, which might be explained by linguistic and cultural differences.

Conclusion

The present study is designed to validate the latest version of OCDUS for Persian Speaking Meth-dependent people, which are the most popular self-report questionnaires for Drug-craving. In this process, we could validate a more balanced OCDUS in two components. We proposed that these differences may be related to its craving timeline that differs from other drugs. Additionally, we suggest new sub-categorization for discovering a new dimension of craving which could be studied in the future.

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Conflict of Interest

The authors declare that they have no conflict of

interest.

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