Original Article

Assessing the Validity and Reliability of the Farsi Version of Inventory Drug-Taking Situations

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Objective: Inventory Drug-Taking Situations (IDTS) is a universal instrument used to determine high-risk situations resulting in drug abuse. The aim of this study was to translate this questionnaire to Farsi, and to assess its validity and reliability by applying it to Iranian drug users.
Methods: As a psychometric study, 300 drug users participated in a treatment program in National Center of Addiction Studies filled in a version of Inventory of Drug Taking Situations. We assessed face and content validity, internal consistency, and reliability based on the completed questionnaires, using test-retest method and confirmatory factor analysis.
Results: Internal consistency analysis confirmed that all subscales of IDTS were reliable (Cronbach alpha was ranging from 0.7 to 0.81). Analyses indicated that each of the subscales was unifactorial; however, unpleasant emotions had a second eigenvalue that was nearly large enough to be a second factor. Confirmatory factor analysis was used to test the fit of the data to the original version of IDTS. Based on goodness of fit indices, we found that all factors were fitted ($\chi 2/df=1.43$, GFI=0.98, RMSEA=0.038). The test-retest reliability was satisfactory($r>0.6$).
Conclusion: The Farsi version of Inventory of Drug Taking Situations was shown to be a valid and reliable instrument to apply in clinical and research settings in Iran.

Key words: *Inventory of Drug Taking Situations (IDTS); Iran; reliability; validity*

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Determining and controlling high risk situations are important components of treating addiction and preventing relapse. Inventory of Drug-Taking Situations (IDTS) (1-3) is one of the best instruments that help researchers and therapists to identify high risk situations related to an individual's drug use. Annis and colleagues (1-3) developed IDTS based on Marlatt's work on relapse risk (4-5) for use as an assessment tool for the treatment of drug and alcohol addiction. This questionnaire is applied in a variety of treatment programs such as "structured relapse prevention" (1-2). This 50-itemself-report questionnaire examines drug use through eight different ranges of situations over the past year (2) These different situations are classified based on relapse determinants introduced by Marlatt and Gordon(4-5). The questionnaire covers a range of

addictive behaviors-related scales including Unpleasant Emotions (10 items), Physical Discomfort (five items), Pleasant Emotions (five items), Testing Personal Control (five items), Urges and Temptations to Use (five items), Conflict with Others (10 items), Social Pressure to Use (five items), and Pleasant Times with Others (five items) (1, 4).Each item consists of a four-point scale. The scoring ranges from 0 to 3 based on Frequency of using drugs, i.e. never, rarely, frequently and almost always, respectively (6).IDTS evaluates drug use, lapse and relapse behaviors in response to high risk situations. As a result, it provides a profile of situations causal of drug use for any individual in the past. IDTS describes high risk situations as cognition, emotion, social and physical sensations (7).

Determining the most important roots of drug use among patients can provide therapists and researchers with a choice to develop an individualized treatment program to manage high risk situations (5).More than 1.2 million drug-dependent individuals live in Iran (8). This huge number of the drug users apparently need treatment as well as relapse prevention services. The translation of IDTS to Farsi will help identify relapse roots which will improve treatment services in Iran. The aim of this study was to translate IDTS to Farsi, and to assess its validity and reliability in treatment centers in Iran.

Material and Methods

This psychometric study was carried out in Iranian Center of Addiction Studies (INCAS) between February and June 2011. We contacted one of the developers of IDTS to obtain the permission to apply the instrument. Then, we ordered the IDTS from the Center for Addiction and Mental Health located in Canada.The initial translation was done by a bilingual translator under the direct supervision of the author. Then, back translation was done by a psychologist and an English language expert. Then, it was compared with the original version. After that, a group of four experts with a background of psychology and health education read the final version to reach a consensus on the ability of the final version of IDTS to depict linguistic and conceptual issues of the original IDTS. In addition, two focus groups each of which included 8 drug-dependent patients were randomly invited and interviewed to express their opinions on the cultural equivalency of IDTS and suitability of the language. During the interviews, one of the researchers read the questions of each category for the participants and asked them if they could easily comprehend and understand the questions. Both groups reached an agreement that most of the questions were fully comprehendible. None suggested items were changed completely or eliminated. However, some wordings were redefined in order to reflect the colloquial language used by drug users. This adapted version of the questionnaire was piloted with a different group of 30 patients in order to examine the data collection method and to have further assurance about the clarity of the questions. Each patient completed the questionnaire in 15 minutes on average. Then, we tried to find whether the questions were easy to comprehend and respond. As the participants did only examine the fluency and comprehensibility of the translated questionnaire and were already on a treatment plan, they were asked tot think as if they were not yet on treatment and to recall their condition at the time of seeking treatment. According to the result of the pilot phase, more corrections were made to the questionnaire and then a post-pilot version of the scale was developed. The main study was set up among a sample of 300 patients selected randomly from three different clinics in INCAS. The sample size provided a minimum of five respondents per each item of IDTS that was necessary for factor analysis estimates (9-10).

In our study, inclusion criteria were (1)being dependent to drugs according to Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV); (2) being able to read and write; (3) being at least 18 years or older at the time of admission.

A re-test was done 2 weeks after the first test with the same group of participants in order to evaluate the test-retest reliability. We did not have any missing data during the follow up period because all patients kept in touch with their treatment program actively.

First, through using confirmative factor analysis, we investigated the possibility of applying factor structure of the original questionnaire to Iranian data. Moreover, we used factor analysis to determine the construct validity of the scale. Second, we estimated Pearson correlation coefficients to examine the relationship between items in test and retest. Finally, we calculated Coronbach' α-coefficients for subscales separately and one for the whole questionnaire to identify internal consistency. We used a cut point of >67 for all subscales which was determined from IDTS manual. All analyses were performed using SPSS 18 and LISREL 8.5.

Result

Descriptive arrangement of data is presented in table 1. Through the total number of 300 clients who completed IDTS, gender distribution was 258(86%) males and 42 (14%) females. The average years of schooling among the participants were 7.71 +/- 4.8. While a proportion of 40.3% of the participants was married at the time of evaluation, 39.7% reported to be single and 20% divorced or separated. Unemployment rate among the participating group was 23.3%.

The distribution of variant drugs used by a sample population is presented in table 2. The introductory drug of abuse for two thirds of the clients had been opium and opium juice. Interestingly, opium remained the main current drug of abuse-dependence. However, 23% and 19% of clients were respectively reported to be dealing with crack-heroin and amphetamine-based stimulants meaning that more than a fifth of participants had switched to more problematic patterns of opioid dependence.

Table 1: Descriptive statistic of continuous variables

Variable	Number (%)
Gender:	
Female	42(14%)
Male	258(86%)
Job	
Full time	109(36.3%)
Part time	131(40.4%)
Jobless	70(23.30%)
Marriage	
Single	119(39.7%)
Marriage	121(40.3%)
Separated or divorced	60(20%)
Age	
20<	15(5%)
20-35	189(63%)
35-50	72(24%)
50>	24(8%)

Table 2: Results of history of drug use

Variable		Number (%)
Drug first	Opium	183(61%)
	Heroin	15(5%)
	Crack	10(3.3%^)
	Amphetamine	26(8.7%)
	Ecstasy	9(3%)
	Tramadol	22(7.3%)
	Cannabis	35(11.7%)
Major problem	Amphetamine	58(19.4 %)
	Heroin	15(5%)
	Crack	56(18.6%)
	Opium	158(52.7)
	Ecstasy	4(1.3%)
	Cannabis	9(3%)
Relapse	Yes	256(85.3)
	No	44(14.7)
Injection	Yes	77(25.7)
	No	223(74.3)

Table 3: Distribution of Scores on IDTS Subscales

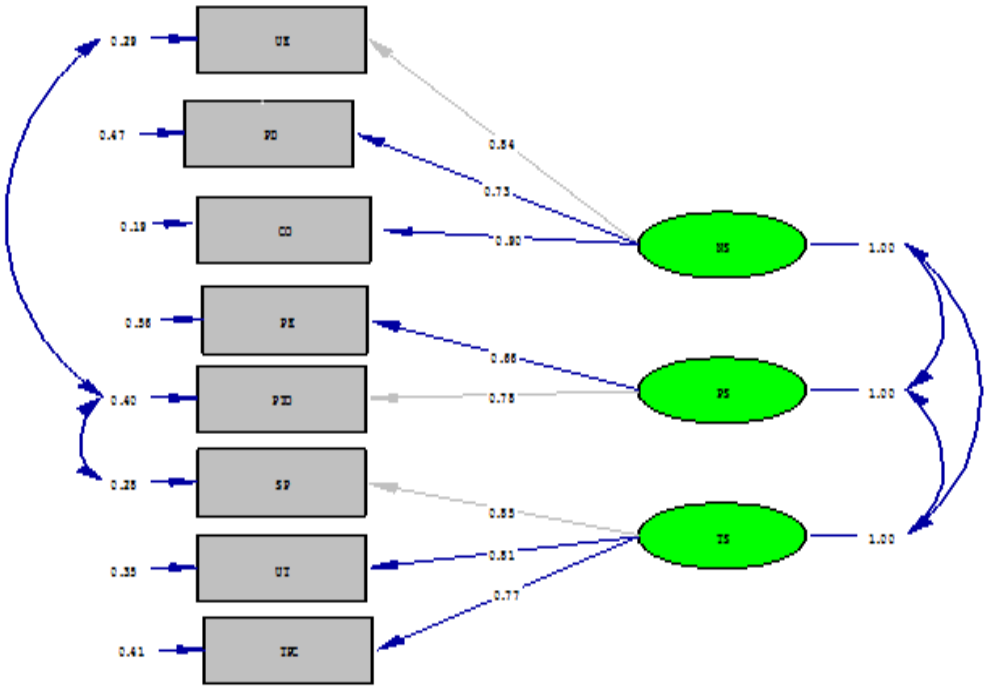
IDTS Subscales	Mean	SD	Median	Skeness	Kurtosis
Unpleasant Emotions	63.14	19.17	63.33	-.521	.713
Physical Discomfort	62.77	22.66	66.66	-.484	.139
Pleasant Emotions	57.08	24.40	60	-.328	-.557
Testing personal control	55.26	24.08	60	-.322	-.398
Urge /Temptations	59.62	23.59	60	-.413	-.123
Conflict with others	60.87	21.16	63.33	-.540	.013
Social Pressure to use	61.4	24.63	66.66	-.767	.104
Pleasant Time with others	63.84	23.67	66.66	-.826	0.297
IDTS Total					

Table 4: Reliability Estimates for IDTS Subscales

IDTS Subscales	Number of items	Range of Inter-Item Total Correlation	Cronbach Alpha
Unpleasant Emotions	10	0.04-0.46	0.76
Physical Discomfort	5	0.27-0.46	0.70
Pleasant Emotion	5	0.27-0.42	0.72
Testing Personal control	5	0.24-0.43	0.71
Urges/Temptations	5	0.23-0.44	0.72
Social Pressure to use	5	0.28-0.48	0.75
Pleasant Times with others	5	0.21-0.48	0.74
Conflict with Others	10	0.16-0.43	0.81
IDTS Total	50	0.01-0.54	0.94

Table 5: Results of confirmatory factor analysis

Model-fit index	Scores	Recommended value
$\chi 2/df$	1.43	$1 > \chi 2/df < 2$
Root mean square error of approximation (RMSEA)	0.038	<0.1
Goodness-of-fit index (GFI)	0.98	>0.9
Adjusted Goodness of Fit Index (AGFI)	0/96	>0.9
Root Mean square Residual(RMR)	10/26	
Non-Normed Fit Index (NNFI)	1	



Chi=Aquare=21.53, df=15, P-value=0.12059, RMSEA= 0.038

Figure 1: Factor Structure of Inventory Drug-Taking Situations (IDTS)

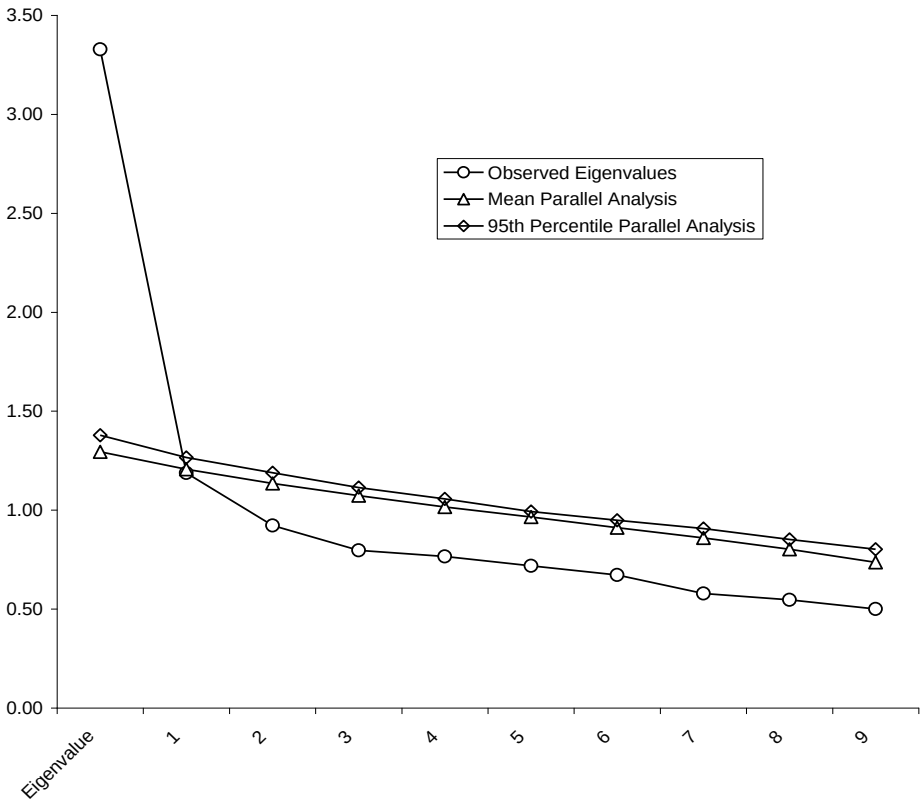


Figure2: Raw eigenvalues, means for parallel analysis, and 95th percentile for parallel analysis.

Another fifth had moved to a stimulant dominant pattern of dependence. Furthermore, a quarter of the sample population had a history of drug injection. Previous relapse rate among the sample population was as high as 85%.

More than two-thirds (71.4%) of clients had not faced legal problems. A half of patients had at least one drug-dependent person in their families.

The statistics of IDTS for its eight subscales in addition to overall average scores is presented in table 3. Most of the subscales approached a normal distribution. The Cronbach alpha coefficient as a measure for internal consistency was used to examine the reliability of the eight subscales. The results verified the reliability of all eight subscales with an alpha range from 0.70 to 0.81. It was also found that all items were positively correlated to their subscale. Test-retest Pearson correlation coefficients between items from time 1 to time 2 were higher than 0.6. To determine the extent to which every subscale was unifactorial, we followed a factor analysis approach for each subscale, using the total sample. High internal consistency does not essentially assure unifactoriality (11).The result of factor analysis revealed that seven out of eight subscales were unifactorial using a eigenvalue greater than 1 rule. Unpleasant Emotions (UE) as the eight subscales, however, had two eigenvalues greater than 1 (3.33 and 1.19 respectively). (scree plot, table 4).However, after conducting a parallel analysis(12)based on the number of items, the sample size suggested that a one factor model was still appropriate for this scale. According to the parallel analysis by pure chance, the 2nd eigenvalue would have a mean of 1.21 and a 95th percentile of 1.27. The observed second eigenvalue was therefore small enough to be considered a random variation.

in addition, a confirmatory factor analysis was performed by LISREL to test the second order factor structure described by Turner et al.(3). Turner reported that the subscales formed three second order factors: Negative Situations, Positive Situations, and Temptations Situations. The results indicated that the Farsi version of IDTS based on the 3 factor second order factor structure of high risk situations classification had a goodness of fit (GFI) with the original version of IDTS(13-14),(table5, Figure1). The ratio of chi-square by degrees of freedom was 1.43 indicating a close fit. The Goodness of Fit Index(GFI) for model was 0.98, the Root Mean Square Residual (RMR) was 0.038. In addition, the Non-Normed fit index (NNFI) score was 1.

This is the result of the parallel analysis, as you can see from the numbers below; the second eigenvalue could be explained by random variation.

This analysis indicated that the data fit the 3 factor second order factor structures described by Turner et al(3).

Discussion

This study verified the Farsi translation of the original version of IDTS developed by Annis and colleagues (1, 3)as a valid and reliable instrument to assess high risk situations that caused drug use. To our knowledge, the only other version that has been developed is a Spanish version which was applied to a sample of Mexican students(15). In the current study, Cronbach's alpha was 0.94 for the total scale and from 0.70 to 0.81for subscales. These figures are quite close to those reported for the original IDTS(3) an alpha of 0.95 for the whole scale and 0.70 to 0.92 for the subscales. Factor analysis on the subscales showed that each subscale was unifactorial. The mean score of the eight IDTS subscales found in the current study was 60.5 which is higher than the mean score of 45.8 reported by Turner et al.(3).This may be a reflection of Iranian drug-dependent patients encountering more high risk situations than the sample reported by Turner et al. It can be also a result of differences in two samples in terms of severity of the disorder or relapse rate. However, the mean score of unpleasant emotion scale in the present study was 63.1 which is very similar to 60.2 reported by Turner. Moreover, confirmatory factor analysis of eight subscales showed that models based on the original 8 categories of drug use situation developed by Marlatt was a good fit for the data. In addition, confirmatory factor analysis of the second order factor structure was a close match to the original IDTS published in English and this demonstrates the appropriateness of the Farsi version structure of IDTS. The other important finding in this study was the positive correlation between first-order factors which ranged from 0.43 to 0.75, meaning that all first-order factors have another correlation. To test the Goodness of Fit of the 3 factor second order factor structure, we estimated several indexes. In this study, the $\chi 2$/df ratio was 1.43, the Goodness of Fit Index (GFI) for model was 0.98, the Root Mean Square Residual (RMR) was 0.038 and Non- Normed fit index (NNFI) was 1. These results indicate that the model had a very good fitness to our data. One prominent issue which deserves attention is that when translating an instrument to another language and test its validity is the role of cultural differences. In other words, researchers need to answer such questions as: Are all items equally relevant in all cultures? Do cultural and social differences impact the scores? In this study, researchers may have wondered whether English speaking patients differ from Iranian patients in terms of emotional trigger. Researchers can achieve quality assurance by taking into account such possible cultural and social differences. Future studies should examine such issues and determine their potential impact with particular groups such as drug users. Hui and Trinpandis have argued if a valid instrument is translated to another language spoken in a different culture, does it show concepts and key words equal to those in original version of that instrument, and will the concepts and

the key words be identical in both cultures(16). The results of the current study indicate that the Farsi version of the IDTS has similar psychometric properties to the original IDTS.

There are some limitations in this study. The major limitation relates to data collection. Only patients participating in treatment programs in INCAS were invited to take part in our study. On the other hand, we applied IDTS to any kind of drug use with no restriction and it was a merit of this study. Consequently, it can be concluded that the IDTS is a self-reported questionnaire that can assess the situation that leads an individual to use drugs. The Farsi version of this scale appears to be a valid and reliable scale for use in clinical and research settings in Iran. We recommend the use of The Farsi version of IDTS as a suitable instrument for identifying high risk situations particularly among patients participating in relapse prevention programs in treatment and research centers.

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References

1. Annis HM, Turner NE, Sklar SM. Inventory of Drug-Taking Situations. Centre for Addiction & Mental Health; 1997.
2. Annis H, Martin G. Inventory of drug-taking situations. Toronto: Addiction Research Foundation; 1985.
3. Turner NE, Annis HM, Sklar SM. Measurement of Antecedents to Drug and Alcohol Use: Psychometric Properties of the Inventory of Drug-Taking Situations (Idts). Behaviour research and therapy 1997; 35: 465-483.
4. Marlatt GA, Gordon JR. Determinants of relapse: Implications for the maintenance of behavior change.
5. Marlatt GA, Gordon JR. Relapse Prevention: Maintenance Strategies in the treatment of addictive behaviors. New York: Guilford; 1985.
6. Waldrop AE, Back SE, Brady KT, Upadhyaya HP, McRae AL, Saladin ME. Daily Stressor Sensitivity, Abuse Effects, and Cocaine Use in Cocaine Dependence. Addictive behaviors 2007; 32: 3015-3025.
7. Starks TJ, Golub SA, Kelly BC, Parsons JT. The Problem of "Just for Fun": Patterns of Use Situations among Active Club Drug Users. Addictive behaviors 2010; 35: 1067-1073.
8. Momtazi S, Rawson R. Substance Abuse among Iranian High School Students. Current opinion in psychiatry 2010; 23: 221-226.
9. Nunnally JC. Psychometric Theory, 3eds. New York: McGraw-Hill; 1978.
10. McDowell I. Measuring health: a guide to rating scales and questionnaires 3eds. USA: Oxford University Press; 2006.
11. Schmitt NW. Uses and abuses of coefficient alpha paper presented at the 1995 Convention of the American Psychological Association. 1995.
12. Patil VH, Singh SN, Mishra S, Donovan T. Parallel Analysis Engine to Aid Determining Number of Factors to Retain (Computer software); 2007.
13. Marlatt GA. Craving for alcohol, loss of control and relapse: A cognitive –behavioral analysis. In: Nathan PE, Marlatt GA, Loberg T. New directions in behavioral research and treatment. New York: Plenum; 1978.
14. Marlatt GA. Alcohol use and problem drinking: A cognitive-behavioral analysis. theory. In: Kendall PC, Hollon SD. Cognitive behavioral interventions: theory research and procedures New York: Academic press; 1979.
15. Victorio A. The Relation between Intake Patterns and Substance Abuse in a Student Sample. Addictive behaviors 2001; 26: 439-445.
16. Hui CH, T.H., Measurement in cross-cultural psychology: A review and comparison of strategies. Journal of Cross-Cultural Psychology 1985; 16: 131-152.