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Psychometric Analysis of the Substance Use Risk Profile Scale (SURPS) among Iranian Medical University Students

[1]Farzad Jalilian, [1]Mehdi Mirzaei Alavijeh, [2]Touraj Ahmadi Jouybari, [1]Behzad Karami Matin, [3]Mohammad Ahmadpanah, [4]Ahmad Ali Eslami and [5]Mohammad Mahboubi
[1]Research Center for Environmental Determinants of Health,
[2]Substance Abuse Prevention Research Center,
Kermanshah University of Medical Sciences, Kermanshah, Iran
[3]Behavioral Disorders and Substances Abuse Research Center,
Hamadan University of Medical Sciences, Hamadan, Iran
[4]Department of Health Education and Promotion, School of Health,
Isfahan University of Medical Sciences, Isfahan, Islamic Republic of Iran
[5]Abadan School of Medical Sciences, Abadan, Iran

Abstract: One of the main factors of tendency to high risk behaviors such as substance use is the personality factors; on the other hand the limited number of available standard scales is among the main barriers ahead of conducting relevant researches. The objective of this study was psychometrics of the Substance Use Risk Profile Scale (SURPS) among Iranian male medical university students. This cross-sectional study was done among 425 male college students in Iran, 2014. The participants were selected using random sampling method with proportional to the size probability. The SURPS is comprised of four factors of anxiety sensitivity, impulsivity, sensation seeking, and hopelessness in order to predict the substance use risk. Data were analyzed by the SPSS Software (ver. 21.0) using CITC, KMO, Bartlett's test and alpha cronbach coefficient. In addition, Amos Software (ver. 21.0) was applied to assess confirmatory factor analysis by using CMIN, CMIN/DF, CFI, NFI, PNFI and RMSEA. All the studied options in analyzing exploratory factor with factorial loadings of >0.4 were confirmed. In explanatory factor analysis, the results of KMO test were calculated at 0.842. Totally, four personality variables described 53.34% of the assumed model changes. The Cronbach's alpha for the measured structures including hopelessness, impulsivity, sensation seeking and anxiety sensitivity were 0.81, 0.80, 0.77 and 0.78, respectively. Factor analyses provided support of SURPS in order to evaluate personality factors among Iranian college students is valid and reliable. SURPS scale can be applied for studies among Iranian college students.

Key words: Personality traits, substance use, psychometric, SURPS, Iran

INTRODUCTION

Personality factors of the individuals are considered as one of the effective factors in indulging in risky behaviors such as drug use, several studies have found connection between these factors (anxiety, impulsivity, depression and sensation seeking) with tendency toward drug use among adolescents and the youth (Wills *et al*., 1998; Grant *et al*., 2007; Ersche *et al*., 2010; Kopstein and Crum, 2001; Botvin *et al*., 2003; Malmberg *et al*., 2013). For example, Wills *et al*. (1998) insists on personality factors particularly sensation seeking in drug abuse. Grant *et al*. (2007) in their study have mentioned the relationship between anxiety and depression with the use of alcoholic beverages. Ersche *et al*. (2010) and Kopstein and Crum (2001) in their studies, showed that high sensation seeking elevates the probability of drug abuse. Other studies have mentioned poor impulse control in tendency towards drug abuse (Botvin *et al*., 2003). Malmberg *et al*. (2013) in their study have indicated that sensation seeking and impulsivity are strong predictors of substance use however, their findings did not confirm the relationship between anxiety and drug abuse. The awareness of the behavioral science experts of the role of each of the personality traits in predicting different drug abuse can guide them in designing appropriate and effective predictive behavioral interventions (Wills *et al*., 1998; Grant *et al*., 2007; Ersche *et al*., 2010; Kopstein and Crum,

Corresponding Author: Ahmad Ali Eslami, Department of Health Education and Promotion, School of Health, Isfahan University of Medical Sciences, Isfahan, Islamic Republic of Iran

2001; Botvin *et al*., 2003; Malmberg *et al*., 2013). The condition awareness and recognition is the prerequisite for any programming in which many scholars believe that the epidemic studies are the first step in designing predictive programs (Jalilian *et al*., 2015). On the other hand, researchers have indicated that the lack of standard scale is one of the main barriers in conducting the researches pertinent with psychology. Removing this barrier can pave the way of progressing in the studies. The existence of such instruments with good psychometric dimensions facilitates on time diagnosis and screening and can be used in epidemiologic studies and prepare the grounds for programming to predict mental disorders and ultimately bring about improvements in social health (Shirazi, 2009). Regarding the importance of utilizing standard scale, Leung *et al*. (2009) emphasizes in his study that having reliable and valid instruments in order to perform effective interventions and design and assessment of theoretical programs of improving health is a necessary.

In this regards, one of the questionnaires used for evaluation of personality traits in predicting drug use proposed by Conrod *et al*. (2000) is the Substance Use Risk Profile Scale (SURPS) that contains four subscales of anxiety sensitivity, hopelessness, impulsivity and sensation seeking. Due to brevity, it can be ideal for evaluating the role of personality in predicting drug abuse behavior. The validity and reliability of this instrument have been confirmed in various studies in predicting drug use outside Iran (Conrod *et al*., 2000; Woicik *et al*., 2009; Castellanos *et al*., 2013; Krank *et al*., 2011). Regarding the high risk groups for drug abuse, the university students, especially freshmen have been mentioned because of many reasons including entering a new phase of life, family detachment, peer pressure, etc., can lead to various physical, social and educational traumas and consequences (Jalilian *et al*., 2015; Alavijeh *et al*., 2011). In addition, numerous studies have shown the high prevalence of drug abuse among males than in females which requires more considerations on them in the studies relevant to the drug abuse (King and Chassin, 2007; Hicks *et al*., 2007).

Regarding the significance of the issue and the necessity of considering personality factors in predicting drug use and on the other hand, the lack of brief and standard scale to predicting personality factors in Iranian society, the present study was done with the objective of psychometric analysis of the SURPS among Iranian medical male university students.

MATERIALS METHODS

Participants and procedure: The present cross-sectional study was done among 425 freshman and sophomore male students of Kermanshah and Isfahan medical universities who were selected using random sample method and proportional to size of each mentioned university. There is debate among scholars over sampling methods and the selection of the required samples and also over conducting factorial analysis in order to determine the validity of the structure. The recommended number of samples for doing factorial analysis is 5-10 samples per instrument clause. Some scholars have suggested even 3 samples per instrument (Knapp and Brown, 1995). Given the number of the studied items (28 item in the first questionnaire), 15 sample were considered for each item in our study. The inclusion criteria included awareness of the objectives of the study, giving consent for study inclusion and also being a male junior university student. The exclusion criteria were composed of having no consent and also incomplete questionnaires filling out. The 83.5% of participants out of 425 signed the consent form and voluntarily agreed to participate in the study which has been approved by the Institutional Review Board at the Isfahan University of Medical Sciences. The participants' age ranged from 18-22 with a mean of 19.9 (±1.19) years.

Measures: The main form of the SURPS has 28 items in which in foreign studies, 5 items were excluded due to overlapping with other items hence, a 23-item form was designed (Woicik *et al*., 2009; Castellanos *et al*., 2013; Krank *et al*., 2011). In order to facilitate the participants' responses to the items, were standardized Likert scale, selecting one of four response options (strongly disagree [1], disagree [2], agree [3], strongly agree [4]); however some items are graded reversely. Obtaining more grades in the subscales indicates higher rates of hopelessness, impulsivity, sensation seeking and anxiety sensitivity. In the present study, the 28 item form of the SURPS was used due to evaluation of the overlapping condition of each item.

Data analysis: To evaluation the reliability and validity following four stages (cross-cultural adaptation, classical item analysis, exploratory factor analysis and confirmatory factor analysis) were done.

First stage; cross-cultural adaptation: Cross-cultural adaptation was done; translation/back-translation process and discussion on each item by the study group to achieve conceptual similarity in this section, the English version of the questionnaire was translated into Persian by two mastered translators and was translated back to English after consulting with some professors and a third person who had full knowledge of both languages.

Having been synchronized with main form and removing the problems, the questionnaire was translated back to English in order to examine the validity and reliability; to finalize the adaptation, item clarity, content validity and length of the questionnaire, a pilot study was carried out with the translated and revised tools that consisted of two steps: tools were submitted by 10 academic experts who were specialist in the substance abuse disorder, psychology and health education and promotion. The experts rated relevance of each question on a Likert type ordinal scale (1 = not relevant to 4 = very relevant). In this section, the minimum value for content validity index and content validity ratio were considered 0.79 and 0.62, respectively (Knapp and Brown, 1995); cognitive debriefing was done with 18 college students who were similar to study population to assess respondent comprehension and the feasibility of the instruments. The measurement of item impact indicator concerning all the sentences was <1.5 and none of the options were excluded.

Second stage; classical item analysis: In this study, mean, standard deviation and Corrected Item-Total Correlation (CITC) all of items was examined; according to our findings six items were excluded from the final questionnaire due to having CITC of <0.4 in a way that one question was omitted in every subscale of hopelessness, impulsivity and sensation seeking and 3 questions were omitted in the subscale of anxiety sensitivity. Finally, 22 finalized questions were used for the explanatory and confirmatory factor analysis.

Third stage; exploratory factor analysis: SPSS Software (Ver. 21.0) was applied for exploratory factor analysis. In this part, we used Kaiser-Meyer-Olkin (for measure of sampling adequacy), Bartlett's test and Scree Plot (to confirm strengths greater number of agents). In addition, estimated reliability was done by using Cronbach alpha coefficient for each constructs questionnaire.

Fourth stage; confirmatory factor analysis: Finally, confirmatory factor analysis was used to test how well the measured factors represent the number of constructs. Confirmatory factor analysis was done using Amos Software (Ver. 21.0) by CMIN, CMIN/DF, CFI, NFI, PNFI and RMSEA.

RESULTS AND DISCUSSION

The explanatory factor analysis was used to determine the factorial structure of the questions. In this analysis, the KMO test which is the efficiency index of the sampling was measured at 0.842. Bartlett's test was also significant ($p<0.001$) which shows the data are appropriate for the factorial analysis. Based on the results taken from statistical analysis, four factors were extracted based on specific values of >1 and factorial loadings of 0.4 or higher. Totally, four factors explained 53.34% of the assumed model changes. Regarding the obtained results, the instrument enjoyed an appropriate structural validity. The detailed results are shown in Table 1.

Based on the obtained results, the instrument enjoys an acceptable internal stability and cronbach's alpha was

Table 1: Obtained findings of the exploratory factor analysis

Items	Hopelessness	Impulsivity	Sensation seeking	Anxiety sensitivity
Hopelessness				
I am content	0.742			
I am happy	0.675			
I have faith that my future holds great promise	0.590			
I feel proud of my accomplishments	0.678			
I feel that I'm a failure	0.564			
I feel pleasant	0.664			
I am optimistic about my future	0.745			
Impulsivity				
I often don't think things through before I speak		0.660		
I often involve myself in situations that I later regret being involved in		0.570		
I usually act without stopping to think		0.768		
Generally, I am an impulsive person		0.757		
I feel I have to be manipulative to get what I want		0.675		
Sensation seeking				
I would like to skydive			0.652	
I enjoy new and exciting experiences even if they are unconventional			0.718	
I like doing things that frighten me a little			0.713	
I would like to learn how to drive a motorcycle			0.662	
I am interested in experience for its own sake even if it is illegal			0.608	
I would enjoy hiking long distances in wild and uninhabited territory			0.555s	
Anxiety sensitivity				
It frightens me when I feel my heart beat change				0.779
I get scared when I'm too nervous				0.747
I get scared when I experience unusual body sensations				0.787

Table 1: Continue

Items	Hopelessness	Impulsivity	Sensation seeking	Anxiety sensitivity
It scares me when I'm unable to focus on a task				0.704
Variance (%)	15.41	13.70	12.83	11.40
Total variance	53.34			
Alpha coefficient of the structures	0.81	0.80	0.77	0.78

Table 2: Goodness of fit index of the confirmatory factor analysis

CMIN	df	CMIN/DF	CFI	NFI	PNFI	RMSEAL0 90-HI 90
506.090	203	2.493	0.878	0.813	0.715	0.065 (0.058-0.072)

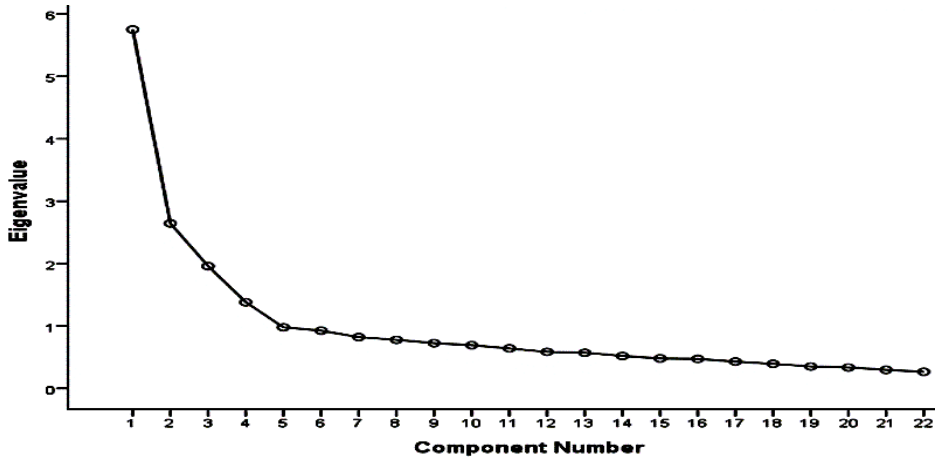

Fig. 1: The scree plot of the structures studied among the participants

in the range of 0.77-0.81 for different structures in which the results are shown in Table 1. The scree plot diagram of the structures is also given in Fig. 1.

The Chi-squared statistical index was used to perform confirmative factorial analysis in which the results of this analysis confirmed a strong equality between data and the model (Table 2). In addition, Fig. 2 shows the final measurement model of the SURPS among participants.

Substance abuse can be followed several complications (Mousaviraja *et al*., 2014; Farnia *et al*., 2014). Then, design of preventive interventions is clear. Our results indicated four personality variables described 53.34% of the assumed model changes. In addition, hopelessness, impulsivity, sensation seeking and anxiety sensitivity predicted the highest variance percentages of the assumed model, respectively.

Hopelessness is a shocking state which appears with the feeling of inability and disinterest to life, it includes the expectation that no good events will happen and ill-fated events are to come that cannot be changed (Jalilian *et al*., 2014). Studies have shown that hopelessness can affect social competence of the individuals and provides the grounds for involving in risky behavior (Jalilian *et al*., 2014; Yip and Cheung, 2006; Nigar *et al*., 2010). Our findings indicated that hopelessness has predicted 15.41% of the assumed model variance. Conducting derivation researches to identify predicting factors of hopelessness among students is deemed necessary. The question of "sometimes I think I am no good at all" was excluded from the form which is also omitted from the 23 item foreign test; this finding is similar to the results reported by other studies (Woicik *et al*., 2009; Castellanos *et al*., 2013; Krank *et al*., 2011).

Impulsivity was another subscale studied in the SURPS test which has predicted 13.70% of the assumed model variance; impulsivity involves a wide range of behaviors which are risky and thought about less that can lead to unwanted consequences. These behaviors are marked by three main characteristics of hasty, lack of programming and thoughtless and prone to error (Gaalen *et al*., 2006; Petry, 2001; Lovic *et al*., 2011). Therefore, considering impulsivity traits in designing predictive behavioral interventions of drug abuse can bring about useful outcomes. The analytic examination showed that the question of "I am stubborn and I do my works against the will of others" was excluded from the form which is also omitted from the 23 item Foreign test, the results of similar to studies confirm these finding (Woicik *et al*., 2009; Castellanos *et al*., 2013;

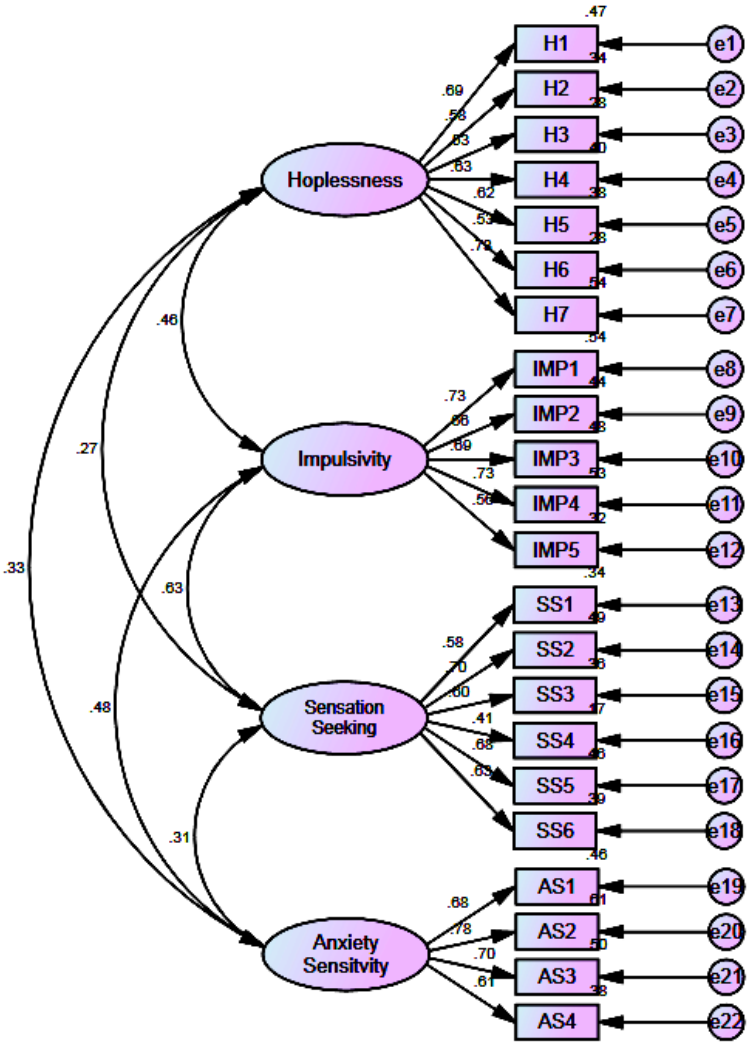

Fig. 2: The final measurement model of the SURPS among participants

Krank *et al*., 2011). On the other hand, comments were added to two questions in this questionnaire to facilitate the understanding of "Generally, I am an impulsive person". Regarding the impulsivity, the question was translated as "generally, I am an impulsive person (at the moment pragmatic that prefers short term profit over long term and more valuable profits". Also regarding "I feel I have to be manipulative to get what I want", it was added and translated as "I feel I have to change everything until I reach what I want. Reaching my goals is an ordeal for me" to facilitate the understanding in Farsi.

Sensation seeking is defined as the need for diverse, new, complicated sensations and experiences and also the inclination for physical and social risks to attain such experiences; sensation seekers search for environments that provide for them the grounds for illegal incitements and joining those perverted groups (Shulman *et al*., 2015), furthermore, several studies have shown that sensation seeking is associated with lots of illegal and risky behaviors such as alcohol drinking, and drug abuse (Charnigo *et al*., 2013; Kaynak *et al*., 2013; Leeman *et al*., 2014). As is cleared from the findings of the present study, sensation seeking has predicted 12.83% of the assumed model variance. As stated in the results section, this part in 28 item inventory includes 7 questions which in the present study, one of the questions (The most interesting and exciting things are usually illegal or immoral) was excluded from the final inventory which is also omitted from the 23 item Foreign test, hence our findings are in concert with findings out of the country (Woicik *et al*., 2009; Castellanos *et al*., 2013; Krank *et al*., 2011). "I would like to skydive" is explained as to jump from a height with rope to facilitate the understanding in Farsi.

Anxiety sensitivity is another subscale under study in the SURPS inventory which has predicted 11.40% of the assumed model variance. It indicates an expectation for stimulant and response which reflects individual differences in inclination toward the experience of pain when responding to the provocation signs of the individual (Boswell *et al*., 2013). This subscale will be examined in the 28 item inventory with 7 questions and in 23 item inventory with 5 questions. However in the current study, in addition to the two questions of "I'm afraid if nobody helps me in difficult situations" and "It scares me when I'm unable to focus on a task" in which are excluded from the 23 item inventory (Woicik *et al*., 2009; Castellanos *et al*., 2013; Krank *et al*., 2011). Another question was removed from the 23 item inventory which was "It is frightening to feel dizzy or faint". Also in "I get scared when I experience unusual body sensations", the following comments were added to facilitate the understanding in Farsi: (unusual body sensations such as sight error, murmur body, etc).

CONCLUSION

The findings of factor analyses provided support of SURPS in order to evaluate personality factors among Iranian college students is valid and reliable. This scale can be applied for studies among Iranian college students.

LIMITITATIONS

This study had a few limitations. First, data collection among sample of Iranian male medical university students and results cannot be generalized to other population of college students in Iran. Second, high rejection rate is another limitation of our study.

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