



Original Article

Factor structure and validity of the substance use motives measure in students

Nasrin Namjoo Baghini¹; *Amanollah Soltani²; Alireza Monzari Tavakoli³;
Hamdollah Monzari Tavakoli³

¹Ph.D. student in educational psychology, Kerman Branch, Islamic Azad University, Kerman, Iran.

²Assistant professor of psychology, Kerman Branch, Islamic Azad University, Kerman, Iran.

³Associate professor of psychology, Kerman Branch, Islamic Azad University, Kerman, Iran.

Abstract

Introduction: Regarding the prevalence of substance abuse among students, this study aimed to validate the Substance Use Motives Measure (SUMM) in this group.

Materials and Methods: The statistical population consisted of all high school students in Kerman city, Iran in 2022. We selected students using the multistage cluster sampling method. Out of 1045 students, 977 answered to the Substance Use Motives Measure (SUMM) and the Farjad's Addiction Tendency Scale. We used content validity indices, Pearson correlation coefficient, exploratory and confirmatory factor analysis, Cronbach's alpha, Guttman coefficient, and split-half coefficient. The data were analyzed through SPSS-22 and LISREL 8.8 software.

Results: The SUMM had high content and concurrent validity. The results of structural validity showed that the eight-factor model of the SUMM had appropriate fit indices, and this model explained 68.84 percent of the total variance. The results of the internal reliability of the SUMM showed that Cronbach's alpha and split-half coefficients for the whole scale and its eight factors were in the range of 0.81 to 0.95.

Conclusion: Based on the findings, the Substance Use Motives Measure (SUMM) has appropriate validity and reliability and can be used to assess addiction motives in students.

Keywords: Factor analysis, Motivation, Psychometric, Students, Substance abuse

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Introduction

Addiction is one of the serious and complex challenges that human societies face around the world (1). Addiction can be defined as the physical or psychological dependence of a person on a specific substance that causes negative changes in behavior, health, and quality of life (2). The consequences of addiction include physical problems such as

heart, liver, and viral diseases; psychological problems such as depression, anxiety, and personality disorders; and social problems such as unemployment, poverty, and crime (3-5). Therefore, identifying the factors affecting addiction and the ways of prevention and treatment of it are among the important goals of psychological research. One of the factors affecting addiction is the motivation for

*Corresponding Author:

Department of Psychology, Kerman Branch, Islamic Azad University, Kerman, Iran.

shsa2011@yahoo.com

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substance use (6). Motivation, as one of the key factors in the process of addiction, plays a central role in understanding, predicting, and treating addiction (7). Addiction motivations refer to the factors that make a person inclined or encouraged to use substances (8). These motivations can stem from personal, social, environmental, and even some biological and genetic factors (9). Some of these motivations include escaping from reality, experiencing pleasure, relieving pain or stress, social pressure to be accepted, and imitating others (10,11). However, the motivations for drug use may vary in different age, gender, cultural and clinical groups. Addiction motivations play an important role in creating, maintaining, and strengthening the patterns of drug use and also in predicting the behaviors related to substances (12). People who have strong motivations for substance use are more likely to be attracted to substance use, and if they use, the likelihood of addiction in them is higher (13,14). Therefore, an accurate and effective assessment of addiction motivations plays an important role in the prevention, diagnosis, treatment, and follow-up of addiction. Therefore, in the study of substance use, identifying and measuring the motivations of users is important (6). In this regard, the Substance Use Motives Measure (SUMM) is a new and comprehensive tool presented by Biolcati and Passini in 2019. This scale includes 32 questions about the reasons and factors for using several types of substances and identifies eight factors. This scale is a comprehensive tool compatible with general psychological processes (6). However, it has only been tested in a non-clinical sample in Italy and needs to be confirmed in clinical samples and other cultures. In contrast, other scales for assessing addiction motivations have limitations. For example, the Reasons for Use (RUM) scale, presented by Simons and Carey in 2006, only includes 11 questions about the reasons for alcohol use and identifies four sub-themes. This scale covers one type of substance in a scale and has been suitable for general questions. However, it has ignored other motivations that may exist for substance use (15). The Alcohol Motives Questionnaire (AMQ), which was presented by Cooper in 1994, is also limited to alcohol use, and some of the questions may not be suitable for a specific person or culture (16).

The issue of the present research is to identify the addiction motivations in students. This issue

is of special importance because substance addiction among young people and students, who are the active and future-making stratum of society, is very dangerous and worrying (17). According to the published statistics, the prevalence of substance use among high school students is increasing (18). In a study that was conducted in 5 provinces of Tehran, Qom, Khuzestan, Mazandaran, and Kermanshah, it was shown that the prevalence of substance use among Iranian male students was 25.50 percent and among Iranian female students was 3.75 percent and 2.91 percent of the participating students reported the use of psychoactive substances (19). Thus, the prevalence of psychoactive substance use among Iranian male students was 5.66 percent, and among Iranian female students was 0.16 percent (20). With this situation, the need for assessing the motivations for substance use in this age group is felt.

However, the existing scales in the field of addiction motivations have yet to be validated in the country. They cannot measure the motivations for drug use in this age group properly. This research gap has made the need for validating the Substance Use Motives Measure (SUMM) in students felt. This scale is a new and comprehensive tool that can identify different motivations that are effective for substance use and help to understand better the factors affecting the tendency to substance use in this age group. It can also provide more effective prevention and treatment programs. Therefore, this research was conducted to determine students' factorial structure and validity of the Substance Use Motives Measure (SUMM).

Materials and Methods

The statistical population of this descriptive and psychometric study consisted of all high school students in Kerman city, Iran in 2022. The sample size for concurrent validity and reliability was 100 people for each one based on the Cochran formula $n = (Z_{\alpha/2} + Z_{\beta})^2 \times (1 - \rho^2) / \rho^2$ (21,22) where n is the number of people in the sample, $Z_{\alpha/2}$ and Z_{β} are the zeta values for the confidence level and power of your choice, and ρ is the expected correlation coefficient between the two scales. Therefore, with a confidence level of 95% and a power of 80%, and an expected correlation coefficient of 0.36, the sample size is equal to 100 people ($n = (1.96 + 0.84)^2 \times (1 - 0.36^2) / 0.36^2 = 100$).

The Cochran formula for simple random sampling was used to calculate the sample size in exploratory factor analysis. The Cochran formula is $n = Z^2 \times p \times q / d^2$ where n is the number of people in the sample, Z is the zeta value for the desired confidence level, p and q are the probabilities of occurrence and non-occurrence of a feature in the population, and d is the sampling error (23). Assuming a confidence level of 95%, $p = 0.5$, $q = 0.5$, and $d = 0.046$, the maximum value of n is 450 ($n = 1.96^2 \times 0.5 \times 0.5 / 0.046^2 = 450$), which with a 10% drop, 495 people were considered as the sample for exploratory factor analysis. Also, based on the existing criteria for the sample size of confirmatory factor analysis, 350 people were considered a suitable sample for this analysis (24,25).

For sampling in concurrent validity and factor analysis, the cluster sampling method was used. It should be noted that first, the concurrent validity samples were selected, and the selected people from the statistical population were set aside for factor analysis. The cluster sampling method in this research was as follows: in this way, among 76 high schools in the dual education areas of Kerman city, 16 schools (eight boys schools and eight girls schools) were randomly selected (the random selection method of schools was as follows: 1- The names of the schools in each area were entered in Excel software. 2- A number was assigned to each school. 3- Using the randbetween function in Excel, 12 numbers were randomly selected. 4 to 16 schools corresponding to these numbers (eight schools for each area) were selected. Among these 16 schools, two schools for concurrent validity, six schools for exploratory factor analysis, six schools for confirmatory factor analysis, and two schools for reliability were considered.

Then, in each stage of sampling, including concurrent validity, exploratory factor analysis, confirmatory factor analysis, and internal reliability, by referring to these schools, among the list of classes, three classes were randomly selected by entering the names of the classes in Excel software, assigning a number to each class and using the Randbetween function in Excel. Then, all the students in these classes were selected as the sample. Finally, by referring to the selected classes, after obtaining the informed consent of the students, the questionnaires were presented by sending the scale link to the students' mobile phones.

Accordingly, the unit of the sample under study was the class itself, and the random method was used to select the clusters and classes.

Of the 1045 students invited to participate in the research, 68 had not willingness. Among the 977 people who completed the questionnaires, 93 people were sampled for concurrent validity, 91 were sampled for reliability, 467 were sampled for exploratory factor analysis, and 326 were sampled for confirmatory factor analysis. These samples were selected independently, and the probability of interference between them was very low. This method was chosen because the research aimed to study the psychometric properties of the scale and needed different samples to perform different tests. Demographic characteristics, including gender, age, parental occupation, and education, were recorded and collected from the samples.

The inclusion criteria included being high school student in Kerman city, willingness to participate, and complete fulfillment of the questionnaires. The exclusion criteria included students who transferred from school or withdrew from the research during the research.

The participants signed informed consent. It was important to note that all the points in the scale will remain confidential so that the subjects choose the most accurate answers. This article is from the Ph.D. thesis of the first author and has the ethics code IR.IAU. KERMAN. REC.019/1401 from Islamic Azad University, Kerman Branch.

Research instruments

A) Substance Use Motives Measure (SUMM): The Substance Use Motives Measure (SUMM) is an assessment tool developed and evaluated by Biolcati and Passini in 2019. This scale consists of 32 questions that are scored with five options from completely disagree to agree. The scale questions are divided into eight subscales, each indicating a different substance use motive. These subscales are enhancement, social, conformity, coping with anxiety, coping with depression, coping with fatigue, self-expansion, and performance. Its validity and reliability have been confirmed by using expert opinions and testing in several non-clinical samples. The total score is obtained by adding the scores of each question and ranges from 32 to 160. A higher score indicates a higher motive for substance use (6). In this research, the scale was translated and validated in Persian.

Translation of the Substance Use Motives Measure (SUMM).

This scale was translated from English to Persian using the forward-backward translation method. In this method, two experts in psychological texts independently translated the scale into Persian. Then, in a joint session, they compared the two translations and produced a consensus version of the Persian scale. In this version, some of the phrases of the English scale that had different meanings or concepts in Persian culture were replaced with equivalent or close phrases. For example, "To get high" was replaced with "To feel good". These changes were made to preserve the meaning and concept of the original scale and adapt it to the culture and language of Persian. This version was given to two other people who needed to be made aware of the original text of the scale to translate it back into English. Then, they compared the back-translations with the original text of the scale and resolved any differences or inconsistencies. These differences were related to the alignment between languages in some cases and to the implementation of the scale in the Persian-speaking environment in some cases. For example, in the back-translation of the phrase "To feel good", the word "feel" may be translated as "high" or "mood" which may have a different meaning from the original phrase. We solved these kinds of differences by examining the meaning and concept of the phrases more carefully and choosing the appropriate words for translation and back-translation (26,27).

B) Farjad's Addiction Tendency Scale: This scale consists of 16 questions answered based on the Likert scale of five options (very low, low, sometimes, high, very high). The scale questions are divided into three dimensions: social (questions 1 to 5), individual (questions 6 to 9), and environmental (questions 10 to 16), which each include several psychological, personal, family, and social factors. The content, face, and criterion validity of this scale have been appropriately evaluated in various studies. Also, Cronbach's alpha coefficient for the reliability of this scale is above 0.70. The scoring of the scale is done by adding the scores of each question, and the score range is between 16 and 80. The higher score indicates the higher tendency to addiction (28,29). This scale was validated in terms of content, face, and criterion validity in Mirhossami's research in 2009 for

adolescents and young adults, and Cronbach's alpha was higher than 0.70 (30).

This research processed the data using SPSS software version 22 and LISREL version 8.8. Described describes the variables. Three methods of content validity, concurrent validity, and construct validity were used to describe the status of the research variables and evaluate the validity of scale.

We used two standardized indices, the Content Validity Ratio (CVR) and the Content Validity Index (CVI) (31). CVR indicates how many experts consider an item necessary for the research purpose. The experts included five psychologists, two psychometricians, and three addiction counselors with Ph.D. degrees who were selected using purposive sampling. To calculate the CVR, the experts had to choose one of the three options (necessary, useful but not necessary, and unnecessary) about the necessity of each item in the scale. Then, the CVR for each item was calculated using the formula $CVR = (N_e - N/2) / (N/2)$. N_e is the number of experts consider an item necessary, and N is the total number of experts (31,32). CVI indicates how many experts consider an item relevant to the research purpose. To calculate the CVI, the experts had to comment on three indicators of simplicity of each item, specificity, and clarity based on a four-part Likert spectrum. The experts indicated the relevance of each item from 1 to 4. The simplicity of the item was also indicated in the same way from 1 to 4, and the clarity of the item was also indicated from 1 to 4. Then, using the formulas $CVI_{simplicity} = (n_1 + n_2) / N$; $CVI_{specificity} = (m_1 + m_2) / N$; $CVI_{clarity} = (z_1 + z_2) / N$ and $CVI = (CVI_{clarity} + CVI_{specificity} + CVI_{simplicity}) / 3$, the CVI for each item was calculated. In these formulas, n_1 is the number of experts consider an item completely relevant, n_2 is the number of experts consider an item relevant, m_1 is the number of experts consider an item completely simple, m_2 is the number of experts consider an item simple, z_1 is the number of experts consider an item completely clear, and z_2 is the number of experts consider an item clear. Also, N is the total number of experts (32,33).

To evaluate the concurrent validity, the Pearson correlation between the scores of the SUMM scale and the Farjad's addiction tendency scale was calculated using the Pearson correlation coefficient. To evaluate the construct validity, the factor structure of the

scale was determined using exploratory and confirmatory factor analysis in the framework of Structural Equation Modeling (SEM). The sample adequacy measure and the Bartlett test were used to determine whether the correlation matrix between the scale questions was enough to fit for factor analysis (34). The principal component analysis method with Varimax rotation was used in exploratory factor analysis. This method was chosen based on the assumption that the factors are independent and that each item is explained by only one factor. This assumption is consistent with the theory of oblimin that the SUMM scale is designed based on it (35). The factors were considered significant based on parallel analysis, scree plots, and factors with eigenvalues greater than 1 (34). In confirmatory factor analysis, the fit indices of the model were evaluated. These indices showed that the exploratory factor model fits well with the data and does not need Promax rotation. Promax rotation is suitable for factor models with interrelated factors operating at the inter-individual level (36). However, in this research, the factors operate at the individual level and each person can belong to one of the factors based on their oblimin level (37). Therefore, Varimax rotation was chosen for independent-factor-factor models (37).

In this research, the internal reliability of the SUMM scale was evaluated using Cronbach's alpha coefficient, Guttman coefficient, and split-half coefficient.

Results

Of the 977 students, 452 (46.26%) were boys and 525 (53.74%) were girls. The mean age of the participants was 16.70 ± 0.796 years. The mean age of girls was 16.73 ± 0.80 years, and the mean age of boys was 16.00 ± 0.79 years. This shows that there is not much difference between the ages of girls and boys. In addition, 447 (45.75%) lived in families with fewer than five members, and 530 (54.25%) lived in families with five or more members. In term of parents' occupation, 142 (14.53%) had retired fathers, 53 (5.42%) had unemployed fathers, 52 (5.32%) had deceased fathers, and 730 (74.72%) had employed fathers. 664 (68%) had housewife mothers, 165 (16.8%) had employed mothers, and 149 (15.2%) had retired mothers. Regarding parents' educational status, 709 (72.57%) had fathers with diplomas and lower, and 268 (27.43%) had fathers with university education. 696 (71.24%) had mothers with a

diploma and lower, and 281 (28.76%) had mothers with a university education.

In the content validity stage, all questions were approved by the experts. According to Table 1, the content validity ratio for 32 questions of the scale ranged from 0.71 to 0.88 (Table 1). Based on the Lawshe table for evaluating ten experts, a content validity ratio higher than 0.62 is required (38). Moreover, the content validity index for 32 questions ranged from 0.87 to 0.93 (Table 1), which are acceptable values. The minimum acceptable value of the content validity index is 0.85 (39).

The results of concurrent validity showed that there was a significant positive correlation between the Substance Use Motives Measure (SUMM) and the Farjad's Addiction Tendency Scale ($r=0.67$, $P < 0.001$, $n= 87$). This result indicates that the SUMM scale has a high concurrent validity (36). The results showed that the sample adequacy measure (Kaiser-Meyer-Olkin (KMO)) for the present research was equal to 0.90, and the Bartlett test was significant at the level of 0.01 ($P= 0.005$, $df= 496$, $\chi^2= 8167.58$), indicating the adequacy of the sample size. Therefore, the sample size was sufficient for this analysis (34,40).

The results related to the factor load analysis of the questions showed that all questions had a factor load higher than 0.5. Therefore, all questions were retained. Also, the results showed that the scale is saturated with eight factors (based on parallel analysis, eight factors had eigenvalues greater than those generated by random data. Also, according to the scree plot, after eight factors, the plot became curved (Figure 1), and eight factors had eigenvalues greater than 1, which, based on the principal component method with Varimax rotation, explains 84.68 percent of the variance in total, respectively. The first dimension, coping with anxiety, includes questions 13 to 16 and explains 8.833 percent of the total variance. The second dimension, enhancement, includes questions 1 to 4 and explains 8.712 percent of the total variance. The third dimension, self-expansion, includes questions 25 to 28 and explains 8.655 percent of the total variance. The fourth dimension, conformity, includes questions 9 to 12 and explains 8.585 percent of the total variance. The fifth dimension, performance, includes questions 29 to 32 and explains 8.558 percent of the total variance. The sixth dimension, coping with depression, includes questions 17 to 20 and explains 8.543

percent of the total variance. The seventh dimension, coping with fatigue, includes questions 21 to 24 and explains 8.536 percent of the total variance.

Finally, the eighth dimension, social, includes questions 5 to 8 and explains 8.421 percent of the total variance (Table 1).

Table 1. Rotated component matrix of the SUMM in students

Item	Dimensions								Content validity ratio	Content validity index	Corrected correlation of question with total score
	1	2	3	4	5	6	7	8			
Because it is entertaining		0.78							0.90	0.87	0.54
Because it is exciting		0.76							0.70	0.87	0.49
To feel good		0.78							0.80	0.87	0.52
Because it gives me a good feeling		0.76							0.80	0.87	0.51
To have fun								0.75	0.80	0.87	0.48
As a way of celebrating								0.74	0.80	0.93	0.53
Because it is a habit in special occasions								0.76	0.80	0.87	0.55
Because it helps me enjoy the party								0.77	0.80	0.87	0.51
To not feel left out				0.74					0.90	0.87	0.57
To be loved				0.75					0.90	0.87	0.58
Because my friends pressure me to use				0.77					0.70	0.87	0.54
To fit in with the group I like				0.76					0.80	0.87	0.56
For relaxation	0.77								0.70	0.97	0.53
Because it gives me more self-confidence and self-assurance	0.79								0.80	0.9	0.56
Because it helps me when I am angry	0.78								0.70	0.9	0.49
To reduce anxiety	0.77								0.90	0.87	0.52
To be happy when my daily mood is bad							0.73		0.90	0.9	0.54
Because it helps me when I am depressed							0.76		0.80	0.93	0.56
To silence my negative thoughts about myself							0.76		0.90	0.87	0.57
To stop thinking about things							0.76		0.80	0.9	0.56
Because I wanted to have something to do								0.76	0.90	0.87	0.51
To relieve fatigue								0.75	0.90	0.9	0.54
Because I had nothing better to do								0.76	0.80	0.87	0.51
To spend time								0.76	0.80	0.87	0.51
To know myself better			0.76						0.90	0.87	0.57
Because it helps me to be more creative and original			0.76						0.80	0.87	0.57
To understand things in different ways			0.76						0.80	0.87	0.56
To be more open to experiences			0.76						0.80	0.9	0.55
To improve my performance					0.76				0.90	0.9	0.49
To have more energy					0.77				0.70	0.87	0.51
To study and focus					0.76				0.90	0.93	0.52
For sexual reasons					0.77				0.80	0.9	0.5

After determining the eight factors, confirmatory factor analysis was performed to confirm the eight-factor model. Examining the fit indices of the measurement model of the SUMM showed that the model had a desirable fit. The ratio of Chi-Square to degrees of freedom (χ^2/df) equal to 1.53, Goodness of Fit Index (GFI) 0.92, Adjusted Goodness of Fit Index (AGFI) 0.92, Normed Fit Index (NFI) 0.96, Non-Normed Fit Index (NNFI) 0.98,

Comparative Fit Index (CFI) 0.96, Incremental Fit Index (IFI) 0.98, Parsimony Normed Fit Index (PNFI) 0.84, Standardized Root Mean Square Residual (SRMR) 0.026 and Root Mean Square Error of Approximation (RMSEA) 0.040 indicated the appropriate fit of the measurement model with the data (41). Therefore, evidence confirms the eight-factor model (Figure 2). The model of standardized coefficients is presented in Figure 2.

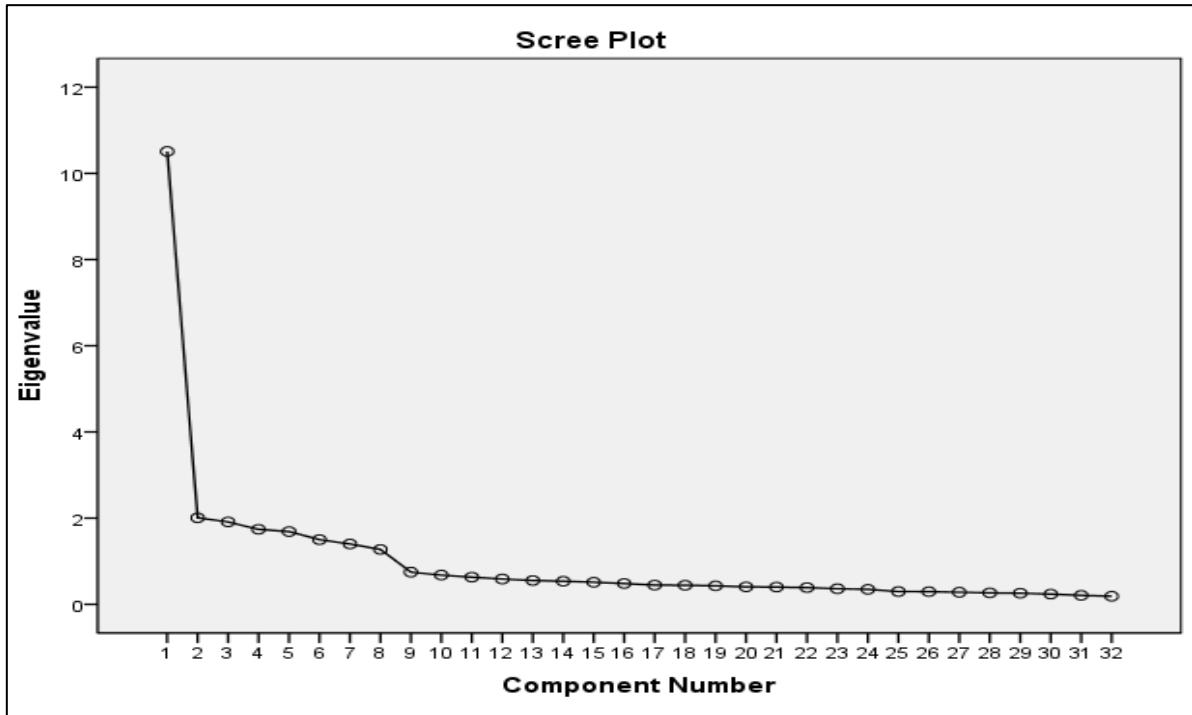


Figure 1. Scree plot of the SUMM in students

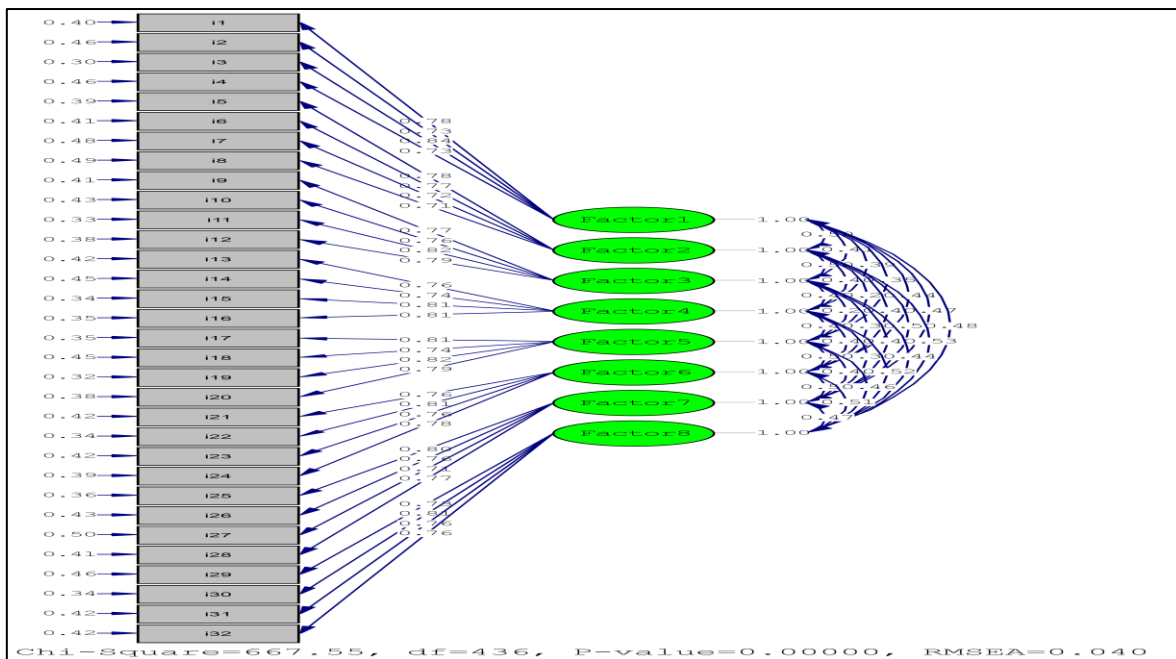


Figure 2. Standardized coefficients model in the SUMM in students

The results of the reliability assessment are shown in Table 2. The reliability results showed that Cronbach's alpha and split-half coefficients for the whole scale and its eight factors were higher than the acceptable level (0.7) (42).

Based on Table 2, Cronbach's alpha coefficients for the whole scale and its eight factors ranged from 0.91 to 0.94. Also, the split-half coefficients for the first and second halves for the whole scale and its eight factors ranged from 0.81 to 0.90. The correlation coefficients between the two halves for the whole scale and

its eight factors ranged from 0.76 to 0.96 (Table 2). The Guttman coefficient for the whole scale was equal to 0.99, indicating high scale reliability (43) (Table 2).

Also, the Guttman coefficient for each dimension of the scale was higher than 0.85, which indicates their acceptable reliability (43) (Table 2). Therefore, the SUMM is suitable and reliable tool based on the Guttman method. These findings indicate a desirable internal consistency for the 32-item SUMM.

Table 2. Internal consistency calculations of the SUMM in students

	Cronbach's alpha coefficient	Split-half coefficient (alpha) first half (odd questions)	Split-half coefficient (alpha) second half (even questions)	Correlation coefficient between the two halves	Guttman coefficient					
					1	2	3	4	5	6
Whole scale	0.93	0.90	0.89	0.76	0.90	0.93	0.93	0.76	0.91	0.99
Enhancement	0.91	0.81	0.87	0.90	0.70	0.94	0.94	0.95	0.91	0.92
Social	0.91	0.85	0.84	0.90	0.68	0.91	0.91	0.90	0.89	0.89
Conformity	0.94	0.87	0.85	0.96	0.70	0.94	0.94	0.96	0.91	0.92
Coping with anxiety	0.94	0.82	0.90	0.96	0.68	0.91	0.91	0.88	0.89	0.89
Coping with depression	0.92	0.85	0.86	0.90	0.68	0.92	0.92	0.90	0.89	0.89
Coping with fatigue	0.92	0.89	0.90	0.87	0.68	0.91	0.91	0.90	0.89	0.89
Self-expansion	0.91	0.88	0.79	0.90	0.68	0.91	0.91	0.88	0.89	0.89
Performance	0.91	0.85	0.88	0.88	0.68	0.91	0.91	0.90	0.89	0.89

Discussion

The results showed that all the questions of Substance Use Motives Measure (SUMM) had CVR and CVI higher than the acceptable level (0.62 and 0.85). These findings confirm the content validity of the scale. These results are consistent with Biolcati and Passini, who confirmed the content validity of the SUMM using the same methods and the opinions of five experts (6). This consistency shows that the SUMM is suitable for measuring addiction motives in different populations. The reason for this consistency may be that the SUMM is designed based on a strong theoretical model that divides addiction motives into eight factors: enhancement, social, conformity, coping with anxiety, coping with depression, coping with fatigue, self-expansion, and performance. This theoretical model is based on valid psychological theories such as self-determination, achievement, academic, and social motivation theories. These theories can explain addiction motives at the individual, group, and societal levels. The content of the SUMM is also ensures consistency with

different cultures. The items of the scale are written in a simple and fluent language, avoiding specific or local expressions and phrases. The items are self-reported and answered using a five-point Likert scale, a common method in many psychological and psychometric research studies. The items on the scale directly refer to addiction motives and avoid questions that may face resistance, distortion, or cheating (6).

The results showed that the scale had concurrent validity and a high correlation with the Fajad's addiction tendency scale. This means that the SUMM can measure the level of addiction tendency in individuals well and is consistent with the Fajad's scale, a valid and common scale in addiction. These findings are consistent with Biolcati and Passini, who confirmed the concurrent validity of the SUMM using the same method (6).

This consistency shows that the SUMM is suitable for measuring addiction motives in different populations. To explain the reason for the consistency of the SUMM with the Fajad's addiction tendency scale, one can use the

theoretical perspective of the motivational theory of addiction. This theory, proposed by Ryan and Deci, is based on self-determination theory. According to this theory, people who do not meet their psychological needs in their daily lives may turn to activities such as substance use or computer games that give them a sense of value, belonging, and ability. These activities can act as a way of escaping from reality and a source of short-term reward. However, in the long run, these activities can lead to addiction and impairment in life functioning (44).

According to this theory, one can say that the SUMM scale measures the motives that may arise in people with unmet psychological needs. These motives include positive motives such as recreation, excitement, and communication and negative motives such as escape, relief, and avoidance. These motives can correlate with psychological, personal, family, and social factors examined in Fajad's addiction tendency scale. For example, people who have low levels of self-efficacy, self-esteem, and self-control may have more negative motives for substance use. Alternatively, people who have high levels of stress, anxiety, and depression may use substances as a way of relief. Alternatively, people who have unsatisfactory family and social relationships may seek positive motives such as recreation and communication in substance use (45). The results of exploratory and confirmatory factor analysis showed that the eight-factor model of the substance use motives scale had a suitable fit with the present data. These results are consistent with the results of the original authors and confirm that the substance use motives scale has 32 questions divided into eight dimensions. These eight dimensions are coping with anxiety, enhancement, self-expansion, conformity, performance, coping with depression, coping with fatigue, and social. This scale is a suitable tool for measuring substance use motives in students (6). Also, the enhancement dimension of this scale is consistent with the enhancement dimension in the Drinking Motives Questionnaire (DMQ), Marijuana Motives Measure (MMM), and Cocaine Expectancy Questionnaire (CEQ). The social dimension of the scale is consistent with the social dimension in the DMQ, MMM, and CEQ (46-48). The conformity dimension is consistent with the peer group theory, according to which the behavior and attitude of the individual are strongly influenced by friends and peers (49).

The coping with anxiety dimension is consistent with the coping with anxiety dimension in the DMQ, MMM, and CEQ. The coping with depression dimension is consistent with the coping with depression dimension in the DMQ, MMM, and CEQ. The coping with fatigue dimension is consistent with the coping with fatigue dimension in the DMQ, MMM, and CEQ (46-48). The self-expansion dimension is consistent with the reinforcement theory of Allport, according to which people can change the behavior of others by reinforcing desirable behaviors and punishing undesirable behaviors. The performance dimension is consistent with the performance dimensions in Cannabidiol Outcome Expectancies Questionnaire (CBD-OEQ) (50).

These consistent results show that SUMM has high validity and reliability in Iranian culture and can be used to measure different motives for substance use in Iranian society. This consistency may be due to the similarity of some cultural, social, and psychological factors between Iranian society and the society in which the scale was made. For example, some motives for substance use, such as enhancement, social, conformity, and self-expansion, may be related to basic human needs such as belonging, respect, self-improvement, and self-expression in both cultures (51). Also, some of the motives for substance use, such as coping with anxiety, depression, and fatigue, may be related to stressors and pressures of life that are common in both cultures (52).

However, these consistent results should only mean that the substance use motives scale can be used to assess the specific characteristics of Iranian culture. Rather, some of the motives for substance use may be associated with different meanings, intensities, and effects in Iranian culture. For example, the social dimension of the scale may be associated with more negative effects in Iranian culture because substance use in Iran faces more severe legal and moral consequences and may lead to losing the trust and respect of family and friends. Also, the performance dimension of the scale may have less intensity in Iranian culture because substance use in Iran is associated with negative perceptions about the individual's occupational and educational abilities and may lead to a decrease in motivation and performance (53). The reliability results showed that SUMM has high internal reliability. Internal reliability means the ability of a scale or questionnaire to

measure a concept or variable with high consistency and correlation between its items (42). This scale also has reliability based on the Guttman method, which indicates its ability to measure the same concept at different difficulty levels. This method shows how much the items on the scale can measure the same concept at different difficulty levels (43). This result is consistent with the original authors, who reported Cronbach's alpha and split-half coefficients for the whole scale and its eight factors in the range of 0.88 to 0.95 (6).

One of the strengths of this research is that it has provided a new scale for measuring addiction motives among Iranian students as a useful and practical tool for future research in this field. Also, this scale has fewer questions, and its new and attractive subscales persuade the respondents to evaluate different aspects of family functioning. Another strength of this research is the use of different methods of validity and reliability, as well as the validity and reliability of the scale. This research also tried to eliminate the limitations of time and place by using the electronic data collection method and being in contact with the students online and electronically. Therefore, it is suggested to use SUMM in future research in the field of family functioning assessment among students and also to conduct this research among students and other people for more generalization. One of the limitations of this research is that this research is limited to secondary school students in Kerman city and is only representative of some students or families in Iran. Therefore, the generalizability of the results to other societies is limited. Also, another limitation can be said that this research has only used the students' perspective on their addiction motives and has ignored the perspectives of other family members such as

parents, brothers, or sisters, which may lead to consistency or contradiction in the perception of addiction motives. Therefore, it is suggested that this research be repeated on more diverse samples of students or Iranian families in different social, cultural, and economic conditions to examine the generalizability of the results. Another area for improvement is related to the method of translating the scale. Although common and acceptable in psychological research, this translation method may have limitations. One limitation is that translation and back translation of the scale may change or lose its original meaning and concept (26,27). To overcome the limitation of translation, one can use other methods, such as consensual translation or translation with the author's approval of the original scale.

Conclusion

This research has provided and validated a new tool for measuring addiction motives among Iranian students by presenting and validating Substance Use Motives Measure (SUMM). This scale has high validity and reliability and can identify the factors affecting substance use in individuals. Therefore, SUMM is a suitable tool for measuring addiction motives among Iranian students, which can be used in research, evaluation, and interventions related to addiction.

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