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Psychometric evaluation of beliefs and attitudes of drug use scale in youth

Behice Erci [a], Esra Yıldız[b], and Sibel Öztürk[c]

[a]Nursing Faculty, İnönü University, Malatya, Turkey; [b]Nursing Faculty, Atatürk University, Erzurum, Turkey; [c]Midwifery Department, Health Science Institute, Atatürk University, Erzurum, Turkey

ABSTRACT

Purpose: The aim of this study was to adapt the beliefs and attitudes of substance abuse scale, and to assess the validity and reliability of the scale in Turkish adolescents.
Methods: A convenience sample of 436 undergraduate students was recruited from a university in Turkey. Item analysis, principal component analysis, internal consistency reliability and Cronbach's alpha were used to measure the psychometric properties of the items of the scale.
Results: There were identified two factors with eigenvalues greater than 1 explained 54.1% of the total variance (beliefs and attitudes of substance abuse scale). Factor analysis yielded that all of factor loadings were above 0.40 and factor loadings of the items ranged from 0.47 to 0.66 in the scales. Internal reliability coefficients were 0.81 and 0.76 for the two dimensions.
Conclusion: The present study provides evidence of the beliefs and attitudes of substance abuse scale's validity, reliability and acceptability in Turkish adolescents.

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Attitudes; beliefs; instrument development; nursing; drug use

Introduction

Adolescence is a period of rapid development. This period presents not only opportunities for progress but also risks to health (Irwin et al., 2002). One of the health risks is drug use (Kulbok & Cox, 2002). Drug use and addiction is a problem with serious consequences concerning social, economic and health aspects, and awaiting for solution for many countries nowadays (Ames & Cunradi, 2004; Flory et al., 2004; White et al., 2005). Every day, almost 100,000 young people start smoking, more than two-thirds of them in low- and middle-income countries (World Health Organization, 2006).

Many researchers have pointed out that the first experience for these drugs is especially encountered with the ages of adolescence. The widest spread use of addictive materials includes alcohol and tobacco. A study determined that the level of alcohol use was associated with illicit drug use in 2013 (Substance Abuse and Mental Health Services Administration, 2014). Another study determined that among young adults, the rate was 30.6% for cigarettes, the rate of current illicit drug use was 21.5% for those aged 18 to 25 in 2013 (Substance Abuse and Mental Health Services Administration, 2014).

When the studies that have been carried out so far are considered it draws attention that prevalence of the use of drugs dramatically increased. On the other hand, it is observed that the prevalence of drug use in Turkey seems to be lower in comparison to other European countries and the United States of America (The White House Office, 2010). However, there has recently been a growing trend of substance abuse among adolescents in Turkey. A study found that tobacco use increased in rate by 72.7%, alcohol use increased by 17.6%, marijuana use increased by 75%, volatile use increased by 40.5%, drug abuse increased by 184.6%, synthetic drug abuse increased by 287.5%, and heroin use increased by 100%. Substance use increase was shown in female adolescents in recent years however substance use is more common in male adolescents (International Narcotics Control Board, 2009). Another study conducted on 26,009 students in 261 schools in 60 Provinces selected by the Turkish Statistical Institute determined that the average of drug use prevalence was higher for specific groups such as children living outdoors or adults motivated to crime (Turkish Grand National Assembly, 2007).

In order for health professionals to better understand the beliefs and attitudes toward substance abuse of adolescents, adaptation of a scale such as is important to prevention initiatives. Healthcare researchers who work with culturally diverse communities need to be aware that the measurement of beliefs and attitudes toward drug use may vary in different cultural groups. This scale may be used as a global assessment of an individual's drug avoidance self-efficacy and values related to drug use behavior, yet without being specific to any particular type of drug used. Although an instrument evaluating beliefs and attitudes toward drug use is necessary for use with Turkish adolescents, no such tool has been developed or adapted so far. The author decided to use beliefs and attitudes toward drug use developed by Fok and Tsang in 2005 Fok and Tsang (2005).

The items of this scale are likely to be commonly understood by Turkish adolescents, making the scale appropriate for Turkish culture.

The aim of this study was to adapt the beliefs and attitudes toward the substance abuse scale to the Turkish adolescents and to assess the validity and reliability of Turkish version.

CONTACT Behice Erci behice.erci@inonu.edu.tr Hemşirelik Fakültesi, İnönü Üniversitesi, Malatya, Turkey

Methods

This research is a psychometric study. The phases of the study were: (1) translation into the Turkish language from the English version and back-translation into English; (2) content analysis by a panel of specialists; and (3) pretest and psychometric testing (factor analysis, a reliability coefficient and inter-item correlations).

Participants

Convenience sample of 436 undergraduate students, ranging in age from 18 to 25 years were recruited from a university in Turkey. The number of students recruited was 18 times of that of the scale items, and sample size was adequate for examining validity and reliability in this study (DeVellis, 2012). It was considered to be appropriate for this measure tool procedure for this sample group because participant students were late adolescents. So, the eligibility criterion was not necessary for the participants.

Procedures

The researchers visited departments of the university on five working days in every week and conducted interviews with the students in June 2014. The questionnaire was explained to the participants, who then read it and marked their answers on the sheets. The questionnaire took approximately 15–20 min to complete and could be understood by people with minimal reading ability. Students were asked to complete the surveys in their class. Thus, 436 undergraduate students completed the questionnaire.

Measurement

Beliefs and attitudes of substance abuse inventory. Name of original tool is the beliefs and attitudes of substance abuse inventory developed by Fok and Tsang (2005). The original scale was written in English language. This is a 24-item questionnaire measuring individual's beliefs and values relating to drug use. Items contained in the scale are attitudinal statements and the responses are ranked in a 4-point Likert-type format, i.e. from "strongly agree" to "strongly disagree." Evaluation of the inventory score was made by totaling the sum points (Fok & Tsang, 2005).

The inventory measures the problems associated with drug use including physical and social problems. The validated instruments have demonstrated their clinical usefulness in relation to substance abuse. The three principal components reflected three major themes underlying the instrument, namely "belief about the substances," "attitude towards substance abuse" and "anti-drug information." The first principal component accounted for the largest amount of the total variance, i.e. 46%, the second principal component accounted for 14% and the third principal component accounted for 9%. The labels assigned to the three principal components were in accordance with the characteristics of the items, which were grouped under the principal components. Given the negative sign of the component coefficients of the items 16, 6, 8, 9, 18 and 10 to which the three principal components belonged, respectively, some late adolescents who participated in the principal component analysis did not hold "false beliefs" or adopt a "negative attitude" toward substance abuse (Fok & Tsang, 2005). The alpha coefficient for the entire original beliefs and attitudes of substance abuse inventory was 0.82. The internal consistency of the subscales of the beliefs and attitudes of substance abuse inventory, i.e. the three subscales, ranged from 0.78 to 0.92. The corrected item-total correlation was.53, and accounting for nearly 40% of the variance in the criterion groups (Fok & Tsang, 2005).

Instrument development

Translation procedures. In the first instance, the beliefs and attitudes of substance abuse inventory were translated into Turkish. The Turkish version was then translated into English by two Turkish lecturers, who worked independently on the translation (Brislin, 1986). The two translated versions were compared by the author and analyzed until there was a consensus about the initial translation. Their initial translation into Turkish was back-translated into English. The versions were evaluated by the authors and a final version was formed.

To test item clarity and content validity, the translated version was submitted to a panel of five specialists. They were informed about the measures and concepts involved. This multidisciplinary panel comprised three public health specialists who were nursing professors and pursued doctoral studies in public health area, two experts who were nursing professors and had conducted research on beliefs and attitudes. Each of the panel members was asked to evaluate the content of the final translated version of the beliefs and attitudes of substance abuse inventory compared to the original instrument. The experts were asked to evaluate each item at the scale using a 4-point Likert Scale: from 4 (strongly agree) to 3 (agree), 2 (disagree), 1 (strongly disagree). The final version of the translated instrument was pretested with a pilot group of 32 students from the university (Netemeyer et al., 2003). These participants were not the same persons included in the field test. To simplify the recording of doubts and suggestions about the scale, a questionnaire was used, requesting general information from the interview, such as gender, age, marital status and monthly income. An open-ended question to record doubts and suggestions was provided for each of the items.

Internal consistency and homogeneity. Cronbach's alpha was calculated to determine internal consistency. Westen (2005) indicates that internal consistency may be a necessary condition for homogeneity or unidimensionality of a scale and Cronbach's alpha should be 0.70 and more. Furthermore, the item-total correlations were included in the analysis. Westen (2005) recommended using the inter-item correlation as a criterion for internal consistency. This should be greater than or equal to 0.15. Corrected item-total correlation is the correlation of the item designated with the summated score for all other items (Giliem & Giliem, 2003).

Stability. The stability of the scale was established by measuring the test–retest reliability. In this study the respondents completed the same instrument again after four weeks. Based

on a code each respondent received, the respondent's data of the first and second measurements could be matched, allowing the test–retest reliability to be calculated.

Construct validity

The data were analyzed using principal component analysis with varimax rotation. Varimax method was selected that is an orthogonal rotation method that minimizes the number of variables that have high loadings on each factor. This method simplifies the interpretation of the factors (Brown, 2009). To attain the best fitting structure and the correct number of factors, the following criteria were used: eigenvalues higher than 1.0, factor loadings higher than 0.40 and the so-called "elbow criterion" regarding the eigenvalues (DeVellis, 2012). Before conducting the principal component of the beliefs and attitudes of the substance abuse scale, the Kaiser–Meyer–Olkin measure of sampling adequacy (KMO) and Bartlett's test were calculated to evaluate whether the sample was large enough to perform a principal component analysis.

Ethical considerations

The study was approved by IRB of the university which included the collection and use of data with reporting of findings, and informed consent was obtained from each participant. Also, the permission was obtained from Fok and Tsang for adaptation of the scale to Turkish adolescents.

Results

Demographic characteristics of participants

The demographic characteristics of the participants are shown in Table 1. The mean age was 21.12 (SD: 3.0) years. The majority of the sample was single, 59.9% were female. Their mean monthly income was 369.82 (SD: 253.91) $ (Table 1).

Content validity

The translated scale, consisting of 24 items, was judged by the expert panel for relevance and phrasing of the items. For each item, the experts could suggest possible improvements in phrasing. Subsequent revision of the Turkish version of the scale was made and discussed again by the panel members until agreement on content was reached.

Construct validity

The calculated KMO was 0.87 with a p value <.001, indicating that the sample was large enough to perform a satisfactory principal component analysis with varimax rotation. The first step of the factor analysis was a principal component analysis.

Table 1. Distribution of demographic characteristics (n: 436).

Characteristics	N	%
Gender		
Female	261	59.9
Male	175	40.1
Marital status		
Married	10	2.3
Single	426	97.7
	Mean	SD
Age (year) mean	21.12	3.0
Monthly income	369.82	253.91

Eigenvalues greater than one were used to determine the number of factors. There were not any cross-loadings. The analysis revealed two factors with an eigenvalue of higher than one (Table 2). Factor loadings of 24 items were above 0.40 and ranged 0.47–0.66. Principal components analysis was used to explain the variations in the total scale and its factors. The two factors together explained 54.1% of the variance. Then, alphas for the items were calculated. This showed that an internal consistency was 0.78 for the whole scale. For the first factor, Cronbach's alpha was 0.81 and factor loadings were found to be related to the belief about the substances

Table 2. Principal components analysis followed by varimax rotation factor loadings and inter-item correlations of items of the scale (n: 436).

Items of beliefs and attitudes of substance abuse scale	Factor loading	Inter-item correlation	Alpha	Variance/ Eigenvalue
Belief about the substances			.81	41.6%/5.2
2. I think that these drugs will reduce anxiety	.477	.412**		
3. I believe that these drugs will not be harmful to one's health	.603	.558**		
4. Using these drugs will help people relieve stress	.598	.640**		
5. It will not affect other people if I use these drugs on my own	.359	.213*		
7. Using these drugs will affect my daily activities	.501	.587**		
12. I will use these drugs if I am bored	.514	.575**		
13. If I use these drugs, I will have the confidence to stop using them at any time	.505	.354**		
14. Using these drugs will not affect one's thought and behavior	.583	.150**		
15. I do not believe that these drugs will lead to dependence	.664	.226**		
16. Using these drugs occasionally will not be harmful to me	.618	.253**		
19. Using these drugs will not affect my memory	.585	.382**		
21. I believe that these drugs will only affect my mental state for a short period of time	.475	.364**		
22. Using these drugs will affect the quality of my sleep	.588	.310**		
23. I believe that these drugs have many adverse effects	.595	.243**		
24. Using these drugs will affect my judgment	.655	.349**		
Attitude toward substance abuse and Anti-drug information			.76	12.5%/1.8
1. I think that substance abuse is common among young people	.576	.667**		
6. It should not be harmful if I just use these drugs just once	.518	.648**		
8. I will try to use these drugs under the influence of my good friends	.533	.746**		
9. If I use these drugs, it would be just for fun	.310	.617**		
10. I think that substance abuse is not a serious youth health problem	.661	.750**		
11. The use of or abuse of these drugs is my personal choice	.573	.723**		
17. I think I have acquired sufficient knowledge of these drugs from various sources	.500	.682**		
18. I am curious about these drugs	.531	.583**		
20. I think that the anti-drug campaigns are not effective	.470	.716**		
Total			.78	54.1%

**p<.01

subscale. This factor explained 41.6% of the total variance. Item loadings of the second factor with an alpha of 0.76 were found to be related to the attitude toward substance abuse and anti-drug information subscale. This factor explained 12.5% of the total variance (Table 2).

Reliability

Internal consistency. The instruments completed by 436 students were used for the analyses. The Turkish beliefs and attitudes toward substance abuse scale had an overall coefficient alpha of 0.78 (Table 2). The inter-item correlations ranged from 0.15 to 0.75, and the corrected item-total correlations were acceptable level (DeVellis, 2012; Yang & Green, 2011).

Stability. The stability of the scale was established by measuring the test–retest reliability, which was 0.71.

Discussion

The results of this study showed that the psychometric characteristics of the Turkish version of the beliefs and attitudes of the substance abuse scale are promising.

Content validity

The panel review regarding the content of the Turkish version of the scale indicated that there was a need to modify wording and phrasing its translation and content. The modifications were made in the context of cultural influences. Looking specifically at the items in the Turkish scale compared with the original scale, cultural characteristics may have been an influencing factor. However, when the items in the Turkish scale were compared to the original scale they were found to be the same in terms of linguistic equivalence. The expression of underlying cultural beliefs and values which may lead to specific attitudes of substance abuse varies with differing levels of acculturation, socio-demographic and economic status. We merely present an adaptation of a standardized instrument based on data obtained from Turkish adolescents, and have attempted to relate the results to commonly noted underlying core beliefs and values in order to increase the content validity of the subscales.

Construct validity

The principal component analysis with varimax rotation indicated that, with regard to the content, two factors could be discerned: beliefs about the substances and the attitudes and anti-drug information of substance abuse. The original scale (Fok & Tsang, 2005) reported that three dimensions that were belief about the substances, the attitude of substance abuse and anti-drug information. The findings of the current study were not consistent with the results of Fok and Tsang's study. Looking specifically at the items in the Turkish scale compared with the original scale, cultural characteristics may have been an influencing factor. In the study, Cronbach's alphas were 0.81 and 0.76 for the two dimensions. Fok and Tsang (2005) found Cronbach's alphas ranged from 0.76 to 0.92 for three dimensions. It was stated that a reliability of 0.80 was considered the lowest acceptable coefficient for a well-developed measurement tool. For a newly developed instrument, a reliability of 0.70 was considered acceptable (DeVellis, 2012; Yang & Green, 2011). Cronbach's alphas were very good level in this study. In relation to these results, the instrument was reliable in this sample. In the present study, the two subscales together explained 54.1% of the total variance; the explained total variance had adequate criteria. Fok and Tsang (2005) reported 70% of the variance for three factors combined. Explained variance should be 30% and above (Erefe, 2011; Kimberlin & Winterstein, 2008). Principal component analysis yielded that all of the factor loadings were above 0.40 and the factor loading of the items in the scale ranged from 0.47 to 0.66. Fok and Tsang (2005) found that factor loadings of the items were above 0.40 in the original scale. The acceptable minimum point of 0.40 for factor loading was achieved in the current scale (DeVellis, 2012). In this study, all items met these criteria and factor loadings were high. Therefore, the construct validity of the scale was obtained. The statistical results showed that the beliefs and attitudes of substance abuse scale were valid in this sample.

Reliability

The range of individual inter-item correlations (ranged from 0.15 to 0.75) and the homogeneity of the scale seemed to be sufficient. The original scale did not stress individual inter-item correlations (Fok & Tsang, 2005). The literature suggests that the acceptable minimum point for individual inter-item correlations is 0.15 (DeVellis, 2012; Yang & Green, 2011). Minimum point for individual inter-item correlation in the current study was 0.15. The results of the analysis strongly recommend that the beliefs and attitudes of substance abuse scale were reliable and valid.

Stability

Test–retest reliability of the scale was 0.71. According to the results of this study, the construct validity of the scale was obtained. It is usual to state that measurements of repeatability for group comparisons should be at least 0.70 (DeVellis, 2012; Yang & Green, 2011). The test–retest reliability was adequate for the scale and its subscales. According to the results of the analysis, the beliefs and attitudes of substance abuse scale were reliable and valid.

Conclusion

This study confirmed the reliability and validity of the scale in this sample of Turkish adolescent. The scale is important because it provides standardized data in adolescent substance abuse behaviors. The application of a methodology accepted by the scientific literature makes available the comparison of the data obtained in different languages.

It is recommended that this scale should be further evaluated both in different regions of Turkey and in diverse populations. Once a valid and reliable scale is ready to be

used, it can be used to measure outcomes in an intervention study and, as mentioned above, be tested in different cultures.

To promote the healthy development of children and adolescents, child health professionals need to implement effective health promotion strategies including anti-drug programs. The instrument that was adapted in this study will hopefully contribute to the development of more effective and evidence-based anti-drug programs for youths.

Disclosure of potential conflicts of interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the article.

ORCID

Behice Erci http://orcid.org/0000-0002-1527-2207

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