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ABSTRACT

Purpose: The aim of this study was to adapt the Drug Avoidance Efficacy Scale, and to assess the validity and reliability of the scale in Turkish adolescents.
Methods: This is a psychometric study. The number of students who were recruited was twenty times the number of scale items. A convenience sample of 320 undergraduate students was recruited from a university in Turkey.
Result: Principal component analysis identified one factor. The factor loadings of the items were ranged 0.41–0.91. The internal reliability coefficient was 0.70 for the scale. It was also found that the scale explained 73.1% of the total variance.
Conclusion: According to the results of this study, it may be statedthat this study provides evidence for the Drug Avoidance Self-Efficacy Scale's validity and reliability.

Introduction

Drug use and addiction is a problem with serious consequences concerning social, economic and health aspects and awaiting solution in many countries nowadays. (Ames & Cunradi, 2004; Flory, Lynam, Milich, Leukefeld, & Clayton, 2004; White, Labouvie, & Papadaratsakis, 2005). Every day, almost 100,000 young people start smoking, and more than two-thirds of these people are in low- and middle-income countries (World Health Organization, 2017).

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). was 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). Researchers have reported that approximately 63% of Western European university students and 70% of Eastern European university students categorised themselves as occasional and/or regular drinkers (Health & Social Care Information Centre, 2015).

When the studies that have been carried out so far are considered it draws attention that prevalence of 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 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 26009 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).

Self-efficacy is the belief that one has the ability to implement the behaviours needed to produce a desired effect. There has been growing interest in the role of self-efficacy as a predictor and/or mediator of treatment outcome in a number of domains. In numerous studies on substance abuse treatment, self-efficacy has emerged as an important predictor of outcome, or as a mediator of treatment effects. Despite these repeated findings on positive relationships the concept of self-efficacy has had little impact on the design of treatments (Kadden & Litt, 2011).

In order for health professionals to better understand the drug avoidance self-efficacy and health prevention of adolescents, adaptation of a scale such as the Drug Avoidance Self-Efficacy Scale (DASES) is important to prevention initiatives. Healthcare researchers who work with culturally diverse communities need to be aware that the measurement of DASES 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 behaviour, yet without being specific to any particular type of drug abused. Although an instrument evaluating DASES is necessary for use with Turkish adolescents, no such tool has been developed or adapted so far. The author decided to use DASES developed by Martin et al. in 1995 (Martin, Wilkinson, & Poulos, 1995).

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 Drug Avoidance Self-Efficacy Scale to the Turkish adolescents, and to assess the validity and reliability of the Turkish version.

Methods

Design

This 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) pre-test and psychometric testing (factor analysis, reliability coefficient and inter-item correlations). The study was carried out in 2015.

Sample

A convenience sample of 320 undergraduate students, ranging in age from 18 to 25 years was recruited from a university in Turkey. The number of students who were recruited was twenty times the number of the scale items, and the sample size was adequate for examining validity and reliability in this study (DeVellis, 2012). It was considered to be appropriate for this measurement instrument procedure for this sample because the participating students were late adolescents. So, eligibility criteria were not necessary for the participants.

The researcher visited the departments of the university on five working days every week and conducted interviews with the students in May 2015. The researcher explained the questionnaire to the participants, who then read and marked their answers on the sheets. The questionnaire took approximately 20 minutes to complete and could be understood by people with minimal reading ability. The students were asked to complete the forms in their classrooms. Thus, 320 undergraduate students completed the questionnaire.

Ethical considerations

The study was approved by IRB of the university which included the collection and use of data or reporting of findings, and informed consent was obtained from each participant. The students were informed about the purpose of the research and assured of their right to refuse to participate or withdraw from the study at any stage. Permission was also obtained from Martin et al. for adaptation of the scale to Turkish adolescents.

Measurement

The Drug Avoidance Self-Efficacy Scale (DASES)

Name of the original tool is DASES developed by Martin et al. (Martin et al., 1995). The original scale was created in the English language. This is a 16-item questionnaire measuring abstinence self-efficacy across different high-risk situations. For each item, participants are asked to imagine themselves in a particular situation and rate their level of confidence (self-efficacy) to resist drug use in that situation on a 7-point Likert type scoring format (1 = certainly no to 7 = certainly yes). Items 2, 4, 7, 8, 10, 11, 12 and 16 are recoded (7 = 1; 6 = 2; 5 = 3; 3 = 5; 2 = 6; 1 = 7) prior to scoring. The total score is obtained by summing across the 16 items. DASES is a self-report instrument and each participant completed it individually with no assistance from the researcher.

The alpha coefficient for the scale was 0.91. The corrected item-total correlation was in the range of 0.25–0.66, and it accounted for nearly 44.4% of the variance in the criterion groups (Martin et al., 1995).

Translation procedures

In the first instance, DASES was translated into Turkish. The Turkish version was then translated into English by two Turkish lecturers, who worked independently on the translation. The two translated versions were compared by the author and analysed until there was a consensus about the initial translation. Their initial translation into Turkish was back-translated into English. The translation phase had the purpose of checking for discrepancies between the content and meaning of the original and translated versions. All of the versions were evaluated by the author, 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 measurements and concepts involved. This multidisciplinary panel comprised three public health specialists who were nursing professors and pursued doctoral studies in the field of public healthand two experts who were nursing professors and had conducted research on self-efficacy and substance use. Each panel member was asked to evaluate the content of the final translated version of DASES in comparison to the original instrument. The experts were asked to evaluate each item at the scale using a 7-point Likert type Scale: from 7 (certainly yes) to 6 (very likely yes), 5 (probably yes), 4 (really can not say), 3 (probably no), 2 (very likely no), 1 (certainly no). The final version of the translated instrument was pre-tested with a pilot group of 30 students from the university. In pre testing, it is preferable to use a relevant population, as doing so can determine how well the item behaves in the target population – either well or poorly- and can provide an increased confidence of including the item for future developmental samples (Netemeyer, Bearden, & Sharma, 2003). These participants were not the same persons who were included in the field test. To simplify the recording of doubts and suggestions about the scale, a questionnaire was used to request general information from the interviewees, 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.

Psychometric testing

Internal consistency and homogeneity

Cronbach's alpha was calculated to determine internal consistency. Westen (2005) stated that internal consistency may be a necessary condition for the homogeneity or unidimensionality of a scale, and it should be 0.70 and higher.

Furthermore, the item-total correlations and the mean inter-item correlations were included in the analysis. Westen and Rosenthal (2005) recommended using the inter-item correlation as a criterion for internal consistency. This should be greater than or equal to 0.15. They pointed out that all individual inter-item correlations should be within these limits. One can only be ensured of unidimensionality if all individual inter-item correlations are clustered closely around the mean inter-item correlation. The corrected item-total correlation is the correlation of the item designated with the summated score for all other items (Giliem & Giliem, 2003). So, the corrected item-total correlation was used.

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 scale's test-retest reliability to be calculated.

Construct validity

The data were analysed using principal component analysis with varimax rotation. Principal component analysis is used to obtain the initial factor solution. The varimax rotation method was selected as an orthogonal rotation method that minimises 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 analysis of DASES, the Kaiser–Meyer–Olkin measure of sampling adequacy (KMO) and Bartlett's test were carried out to evaluate whether or not the sample was large enough to perform a principal component analysis. The KMO measures the sampling adequacy, and it should be greater than 0.50 for a satisfactory principal component analysis with varimax rotation to proceed.

Results

Demographics characteristics of participants

The demographic characteristics of the participants are shown in Table 1.

Table 1. Distribution of Demographic Characteristics (n: 320)

The mean age was 21.42 ± 2.0 years. The majority of the sample were single, 55.3% were female. Their mean monthly income was 363.77 ± 250.41$. Most of the participants' perceived that general health levels to be were good.

Content validity

The translated scale, consisting of 16 items, was judged by the expert panel for relevance and phrasing of the items. For each item, the experts could recommend possible improvements in phrasing. Subsequent to this, 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

Table 2. Results of the Kaiser–Meyer–Olkin measure of sampling adequacy and Bartlett's test of sphericity

Table 3. Principal Component Analysis Followed by Varimax Rotation Factor Loadings and Item-Total Correlations of Items of the Scale (n: 320)

The calculated KMO coefficient was 0.86 with a p value of <0.001, indicating that the sample was large enough to perform a satisfactory principal component analysis with varimax rotation (Tablo 2). The first step of the factor analysis was a principal component analysis. Eigenvalues greater than one were used to determine the number of factors. The analysis

Table 1. Distribution of demographic characteristics (n: 320).

Characteristics	N	%
Gender		
Female	177	55.3
Male	143	44.7
Marital status		
Married	5	1.6
Single	315	98.4
Perceived generally health		
Very good	52	16.2
Good	219	68.5
Some bad	41	12.8
Bad	8	2.5
	Mean	SD
Age (year) (mean	21.42	2.0
Monthly income	363.77	250.41

Table 2. Principal components analysis followed by Varimax rotation factor loadings and item-total correlations of items of the scale (n: 320).

Items	Factor Loading	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Q1	.413	770.801	.332	.710
Q2	.637	722.483	.447	.687
Q3	.630	756.313	.353	.704
Q4	.679	724.756	.507	.686
Q5	.654	764.159	.309	.707
Q6	.653	774.209	.305	.711
Q7	.835	712.267	.596	.680
Q8	.834	703.806	.614	.677
Q9	.909	765.779	.387	.707
Q10	.833	719.113	.543	.684
Q11	.448	715.336	.457	.684
Q12	.847	711.780	.604	.680
Q13	.834	703.806	.614	.677
Q14	.911	765.845	.380	.707
Q15	.823	719.279	.537	.684
Q16	.448	715.467	.456	.685
Total		194.633	1.000	.705

Table 3. Results of the Kaiser–Meyer–Olkin measure of sampling adequacy and Bartlett's test of sphericity.

Test	Results	
Kaiser–Meyer–Olkin measure of sampling adequacy	1.226	p < .001
Bartlett's test Approx. Chi-square	120	
df	0.001	
Sig.		

revealed one factor with an eigenvalue of higher than one (Table 3). The factor loadings of the 16 items were above 0.40 and ranged from 0.41to 0.91. Principal component analysis was used to explain the variation in the scale. Then it was found that the scale explained 73.1% of the variance.

Reliability

Internal consistency

The questionnaire forms completed by the 320 students were used for the analyses. The DASES had an overall Cronbach's coefficient alpha of 0.70. The inter-item correlations ranged from 0.30 to 0.61 (Table 3). The corrected item-total correlations were on an acceptable level (DeVellis, 2012; Yang & Green, 2011). Subsequently, the alpha coefficient values for the items were calculated. This showed that the internal consistency level was 0.70 for the scale.

Stability

The stability of the scale was established by measuring its test-retest reliability, and it was 0.70.

Discussion

Main finding of this study

The results of this study showed that the psychometric characteristics of the Turkish version of the Drug Avoidance Self-Efficacy 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 rephrase its translation and content. The modifications were made in the context of cultural influences. When the items in the Turkish scale were compared to those in 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 drug avoidance self-efficacy varies with differing levels of acculturation, socio-demographic status and economic status. The authors merely presents an adaptation of a standardised instrument based on data obtained from Turkish adolescents, and attempted to relate the results to commonly noted underlying core beliefs and values in order to increase the content validity of the subscale.

Construct validity

The principal component analysis with varimax rotation indicated that, with regard to the content, one factor could be discerned: drug avoidance self-efficacy. The original scale also reported one dimension which was drug avoidance self-efficacy (Martin et al., 1995). The findings of this study were in parallel with the results of the study by Martin, Wilkinson and Poulos' (1995). Principal component analysis also yielded that all of the factor loadings were above 0.40 and the factor loading of the

items in the scale ranged from 0.41 to 0.91. The acceptable minimum point of 0.40 for factor loading was achieved in the adapted scale (DeVellis, 2012). In this study, all items met these criteria and factor loadings were high. The scale explained 73.1% of the total variance, which was adequate. Martin et al. (1995) reported 44.4% of the variance explained for the original scale. Explained variance should be 30% or above to be acceptable (Erefe, 2011; Kimberlin & Winterstein, 2008). Therefore, construct validity of the scale was obtained. The statistical analysis results showed that the Drug Avoidance Self-Efficacy Scale valid in this sample was valid.

Internal consistency

The range of the individual inter-item correlations (from 0.30 to 0.61) and the homogeneity of the scale seemed to be sufficient. In the original scale that was reported, the inter-item correlations ranged from 0.25 to 0.66 (Martin et al., 1995). The finding of this study was similar to finding of the original study. The literature suggests that the acceptable minimum point for individual inter-item correlations is 0.15 (DeVellis, 2012; Yang & Green, 2011). The minimum point for the individual inter-item correlation in this study was 0.15. The results of the analysis strongly suggested that the Drug Avoidance Self-Efficacy Scale is reliable. In the study, the Cronbach's alpha coefficient as of the scale was 0.70. Martin et al. (1995) found the Cronbach's alpha coefficient as 0.91 for the original scale. It was stated that a reliability level of 0.80 was considered the lowest acceptable coefficient for a well-developed measurement tool. For a newly developed instrument, a reliability level of 0.70 was considered acceptable (DeVellis, 2012; Yang & Green, 2011). The Cronbach's alpha coefficient was on an acceptable level in this study. In relation to these results, the instrument was reliable in this sample.

Stability

The test-retest reliability coefficient of the scale was 0.71. According to the results of this study, the construct validity of the scale was obtained. It is usually stated 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. According to the results of the analysis, stability of DASES was provided.

What is already known on this topic

Considering studies that have been carried out until today, it is worth noting that prevalence of use of drugs dramatically increased in the world (The White House Office, 2010). There has been a growing interest in the role of self-efficacy as a predictor and/or mediator of treatment outcome in a number of domains. In numerous studies on substance abuse treatment, self-efficacy has emerged as an important predictor of outcome, or as a mediator of treatment effects (Kadden & Litt, 2011). So, the Drug Avoidance Self-Efficacy Scale regarding this issue is important for prevention initiatives (Martin et al., 1995).

What this study adds

The Drug Avoidance Self-Efficacy Scale may be a valid measure for Turkish patients with adolescents with drug abuse problems. The scale shows statistically acceptable levels of reliability and validity. Further research is needed to evaluate the scale with larger populations and in other regions of Turkey.

Limitations

Even though the sample size was large, the findings in this study must be interpreted with caution, because a non-random sample was used. The findings were also limited by age and the fact that these were college students. Additionally, the study participants were not questioned on whether or not they were current or former substance users or not.

Implications for nursing practice

This study confirmed the reliability, content and construct validity of the scale in this sample of Turkish adolescents. The Turkish version of the Drug Avoidance Self-Efficacy Scale has shown statistically acceptable levels of reliability and validity. The scale is important because it provides standardised data in adolescent substance abuse self-efficacy behaviours. 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 may be used to measure the outcomes in an intervention study, and as mentioned above, be tested in different cultures. The instrument that was adapted in this study will hopefully contribute to the development of more effective and evidence-based anti-drug programmes for youths.

Disclosure of potential conflicts of interest

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