Spanish version of the Substance Use Risk Profile Scale: Factor structure, reliability, and validity in Mexican adolescents

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ABSTRACT

To validate the Substance Use Risk Profile Scale (SURPS) in a sample of Mexican adolescents, this brief 23-item self-report questionnaire has been developed to screen four high-risk personality traits for substance misuse, to guide targeted approaches to prevention of addictions in adolescents. The scale has been previously validated in United Kingdom, Canada, Sri Lanka and China. A sample of 671 adolescents aged 11–17 completed a Spanish translation of the SURPS as well as other measures of personality and substance use. The Spanish translation of the SURPS has moderate internal consistency, and demonstrated a four-factor structure very similar to the original scale. The four subscales show good concurrent validity and three of the subscales were found to correlate with measures of substance use. The Spanish translation of the SURPS seems to be a valid and sensitive scale that can be used in a Mexican adolescent population.

1. Introduction

There are several reasons for implementing measures aimed at drug prevention in childhood and adolescence. First, many behavioral risk factors are formed during this period of life. For example, most smokers indicate taking up smoking in their youth, with the highest rates of smoking reported amongst youth aged 16–24 (Department of Health Report, 2000). In Mexico, almost 5.8% of adolescents aged between 12 and 14 years and 26.4% of those aged 15–17 are current smokers (Bustos et al., 2013). Second, there is recent evidence that adolescents may be more sensitive to the physiologic and neurotoxic effects of alcohol and drugs, and that adolescent onset substance use is associated with a more severe course of illness and higher risk of mortality than adult onset (National Institute on Alcohol Abuse and Alcoholism, 2005). For the specific case of Mexico, 22.5% of adolescents aged 12–17 reported alcohol abuse with an early age of alcohol consumption (approximately at age of 12) (Fregoso et al., 2013). Third, young people are more accessible than adults and are easier to target in broad public health initiatives through school-based programs, which present fewer barriers to treatment for underprivileged and minority groups. Finally, there are several commonalties across risk factors for adolescent onset substance use and behavior problems, suggesting that each intervention could potentially impact a variety of problems. Despite clinical demand for preventive interventions to address alcohol use problems among teenagers, of those programs that have been evaluated, few have been shown to be truly preventive.

Brief, school-based coping skills interventions targeting personality risk factors for adolescent substance misuse have been shown to delay onset of early substance use (Conrod et al., 2006, 2008, 2010; O'Leary-Barrett et al., 2010), effects which have been shown to last for up to 2 years in two separate randomized trials (Conrod et al., 2010). This intervention approach has also been shown to be effective in reducing other emotional and behavioral problems in youth (Castellanos and Conrod, 2006), problems that often co-occur with substance use problems.

Unlike universal programs that tend to universally promote generic coping skills and balance normative attitudes around substance use, this selected personality-targeted approach is based on an etiologic model of addiction outlined and validated by Conrod et al. (2000) and Woicik et al. (2009), and targets four

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personality-specific motivational pathways to substance misuse: Hopelessness (H), Anxiety Sensitivity (AS), Impulsivity (IMP) and Sensation Seeking (SS), each associated with different motivations for substance use (Woicik et al., 2009), drug use profiles (Conrod et al., 2000; Woicik et al., 2009) and patterns of non-addictive psychopathology (Castellanos-Ryan and Conrod, 2011).

The *Substance Use Risk Profile Scale* (*SURPS*) was developed to evaluate these four personality traits among adolescents and adults (Woicik et al., 2009). The SURPS is a self-administered questionnaire of 23 items rated on a Likert scale (1=strongly disagree to 4=strongly agree). It has shown good internal consistency, test re-test reliability, as well as concurrent and predictive validity when used in both in adult and adolescent samples with respect to identifying future substance misuse (Castellanos-Ryan et al., 2013; Woicik et al., 2009).

The SURPS has been validated in the United Kingdom (Castellanos-Ryan et al., 2013), Canada (both English and French versions) (Castonguay-Jolin et al., 2013; Krank et al., 2011), Sri Lanka (Chandrika et al., 2009) and China (Siu, 2011). As substance and alcohol use among Mexican adolescents is a focus of interest in the field of public health, the need of a validated instrument for Mexican adolescents useful to determine personality traits as risk factors that predict future substance abuse is needed. Therefore, the aim of the present study was to evaluate the psychometric properties of the SURPS-Spanish version in Mexican adolescents.

2. Method

2.1. Participants

Six hundred and seventy one adolescents were recruited, using a convenience sampling approach from public schools located in Mexico City and Jalisco, Mexico. The sample is made up of 314 (46.8%) boys and 357 girls (53.2%) attending high-school, aged between 11 and 17 years (mean age=14.09, S.D.=1.2 years) whom agreed to participate voluntarily and anonymously previous school authorities' approval of the study. The Ethics Review Board of the INPRFM approved the study. The study was conducted according to the Good Clinical Practices.

2.2. Measures and procedures

The translation of the SURPS was based on recommendations of the American research teams (U.S. Census Bureau, 2010). First, the instrument was translated from English into Spanish by two independent translators and back-translation was performed. The translations were reviewed by one of the authors and by two independent mental health professionals and consensus was reached for language adaptation for each item. The recruitment for the study began after the translation procedure of the SURPS was completed.

After students completed the SURPS, five additional self-administered instruments were provided, all of which have been previously validated for a Spanish-speaking population. The first three instruments were used to determine convergent validity of the SURPS subscales: the Beck Hopelessness Scale (BHS) which comprises 20 items of true–false response (Beck et al., 1974) and has shown adequate internal consistency in Mexican population (α=0.78) (Córdova and Rosales, 2011); the Beck Anxiety Inventory (BAI) composed of 21 items rated on a Likert scale (0–3 points) (Beck et al., 1988; Osman et al., 2002) with an internal consistency of 0.84 in Mexican students (Robles et al., 2001) and the Impulsiveness, Venturesomeness and Empathy-Junior version (IVE-J) which has 77 items each one rated as true or false (Eysenck et al., 1984) with alpha values > 0.70 in Mexican population (Martorell and Silva, 1993).

The last two instruments were used to assess drug use and to determine predictive validity of the SUPRS. As a screening test, the Drug Abuse Screening Test (DAS-T), a 20-item instrument rated on a "yes" or "no" response, was used (Gavin et al., 1989; Yudko et al., 2007). The DAS-T has been previously tested in Mexican population with high values of internal consistency (Kuder Richardson=0.96) (De las Fuentes and Villalpando, 2001). Students who answered "yes" to any question of the DAS-T also completed the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) (Humeniuk et al., 2008; WHO ASSIST Working Group, 2002), which was used for the present study to obtain information about lifetime use and use of substances in the past 3 months. Also, the ASSIST has already been used with young population in Mexico with adequate psychometric properties (Rivadeneyra and Gómez-Maqueo, 2011)

2.3. Statistical analyses

The analyses were carried out with version 20.0 of the SPSS statistical software. First, skewness and kurtosis were used in order to test normal distribution of the SURPS items. Second, a principal-component analysis with varimax rotation was performed to obtain construct validity of the proposed subscales of the SURPS. The criterion of threshold for factor extraction was *eigen* values greater-than-one. Items whose communality was greater than 0.40 were retained and allocated to factors while those with communality less than 0.40 were excluded. Third, internal consistency of the SUPRS subscales was determined by Cronbach's alpha. Fourth, convergent validity of the SURPS subscales was obtained by determining their association with the total scores of the BHS (for the H subscale), BAI (for the AS subscale), IVE-J Impulsiveness (for IMP subscale) and IVE-J Venturesomeness (for the SS subscale) with Pearson correlation coefficients.

For the present study a cut-off point of six (intermediate to severe risk for substance abuse) in the total score of the DAS-T was used as the "gold standard" to determine the predictive validity of the SURPS subscales used (Gavin et al., 1989). For this, a Receiver Operating Characteristic (ROC) curve for each SURPS subscale was plotted and the area under each ROC curve (AUC) was estimated. The optimal cut-off point for each subscale, according to sensitivity and specificity values, was obtained. With the use of these cut-off values, a logistic regression analysis was performed to determine the odds ratios (OR) conferred by the SURPS subscales for an increased risk for substance abuse according to the DAS-T (score $\geq$ 6). Finally, chi square tests (χ^2) and independent samples *T* tests were used to compare the ASSIST parameters (lifetime use and use of substances in the past 3 months) and the SURPS subscales scores between subjects with an increased risk for substance abuse (DAS-T score $\geq$ 6) and those with a low risk (DAS-T between 1 and 5 points).

3. Results

All items of the SURPS showed acceptable values of skewness (range: − 0.65 to 1.38) and kurtosis (range − 1.17 to 1.63), where none of the values were excessively out of range.

3.1. Factor structure and reliability of the SURPS

Four factors were identified for the SURPS accounting for 44.57% of the variance (Table 1), and corresponding to the original defined dimensions. Mean scores of the dimensions were as follows: Introversion/Hopelessness scale 10.8, S.D.=3.4 points; Anxiety Sensitivity scale 11.9, S.D.=2.8 points; Impulsivity scale 11.5, S.D.=2.7 points; and Sensation Seeking scale 15.8, S.D.=3.5 points. All items loaded on one factor only, with the exception of item 22 which showed communality less than 0.40 on all factors and was excluded from analysis. All subscales showed nearly not adequate internal consistency values (alpha values from 0.61 to 0.66) with the exception of the Introversion/Hopelessness scale which exhibited strong Cronbach's alpha value (> 0.80). No improvement was observed in the internal consistency of the scales by removing any of the items that compose them.

3.2. Concurrent validity

Significant correlations of the SURPS subscales were observed with the instruments selected to obtain concurrent validity. The association of the BHS with the Hopelessness/Introversion subscale was 0.59 ($p < 0.001$); for the IVEJ-Impulsiveness with the Impulsivity subscale of 0.60 ($p < 0.001$) and for the IVE-J Venturesomeness with the Sensation Seeking subscale of 0.60 ($p < 0.001$). The lowest correlation value was found with the BAI and the Anxiety Sensitivity subscale ($r=0.26$, $p < 0.001$).

3.3. Cut-off points and conferred risk for substance abuse of the SURPS subscales

According to the DAS-T, 35 (5.2%) students met criteria for being at intermediate/severe risk for substance abuse. The overall discriminability of each SURPS subscale against the criterion of the DAS-T was determined by ROC curves and the area under the