Adaptation to the Spanish population of the Substance Use Risk Profile Scale (SURPS) and psychometric properties

Adaptación a la población española de la Escala de Perfil de Riesgo de Consumo de Drogas (EPRCD) y estudio de sus propiedades psicométricas

Fermín Fernández-Calderón*, Carmen Díaz-Batanero*, Antonio J. Rojas-Tejada**, Natalie Castellanos-Ryan***, Óscar M. Lozano-Rojas*.

* Department of Clinical and Experimental Psychology, University of Huelva. Campus de «El Carmen». Avenida de las Fuerzas Armadas, S/N. 21071, Huelva, Spain. ** Psychology Department, University of Almeria, La Cañada de San Urbano, 04120 Almería, Spain. *** University of Montreal, Canada.

Abstract

The identification of different personality risk profiles for substance misuse is useful in preventing substance-related problems. This study aims to test the psychometric properties of a new version of the Substance Use Risk Profile Scale (SURPS) for Spanish college students. Cross-sectional study with 455 undergraduate students from four Spanish universities. A new version of the SURPS, adapted to the Spanish population, was administered with the Beck Hopelessness Scale, the UPPS-P Impulsive Behavior Scale, the State-Trait Anxiety Inventory (STAI) and the Alcohol Use Disorders Identification Test (AUDIT). Internal consistency reliability ranged between 0.652 and 0.806 for the four SURPS subscales, while reliability estimated by split-half coefficients varied from 0.686 to 0.829. The estimated test-retest reliability ranged between 0.733 and 0.868. The expected four-factor structure of the original scale was replicated. As evidence of convergent validity, we found that the SURPS subscales were significantly associated with other conceptually-relevant personality scales and significantly associated with alcohol use measures in theoretically-expected ways. This SURPS version may be a useful instrument for measuring personality traits related to vulnerability to substance use and misuse when targeting personality with preventive interventions.

Keywords: Substance Use Risk Profile Scale; Spanish version; psychometric properties; personality.

Resumen

La identificación de diferentes perfiles de personalidad de riesgo para el consumo problemático de drogas es útil para prevenir problemas relacionados con las drogas. Este estudio tiene como objetivo analizar las propiedades psicométricas de una nueva versión de la Substance Use Risk Profile Scale (SURPS) en estudiantes universitarios españoles. Estudio de diseño transversal en el que participaron 455 estudiantes de cuatro universidades españolas. La nueva versión de la SURPS adaptada a la población española fue administrada junto a la Escala de Desesperanza de Beck, la UPPS-P, el inventario de ansiedad-estado (STAI) y el test AUDIT. La consistencia interna de las cuatro subescalas de la SURPS osciló entre 0,652 y 0,806. Los coeficientes de fiabilidad por el procedimiento de dos mitades oscilaron entre 0,686 y 0,829. La estimación test-retest osciló entre 0,733 y 0,868. Se replicó la estructura factorial esperada de cuatro dimensiones. Como evidencias de validez convergente, se encontró que las subescalas de la SURPS se relacionaron significativamente con las medidas teóricamente esperadas de otras escalas de personalidad y con el consumo de alcohol. Esta versión de la SURPS constituye un instrumento útil para la medición de rasgos de personalidad relacionados con la vulnerabilidad al consumo de drogas y sus problemas relacionados, pudiendo ser utilizada para estrategias de prevención del consumo de drogas.

Palabras clave: Substance Use Risk Profile Scale; versión española; propiedades psicométricas; personalidad.

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Send correspondence to:
Fermín Fernández-Calderón. Departamento de Psicología Clínica y Experimental, Universidad de Huelva. Oficina PB 2-28. Campus de El Carmen. Avenida de las Fuerzas Armadas, s/n. 21071, Huelva, España. Email: fermin.fernandez@dpces.uhu.es

Introduction

Personality traits, such as impulsivity and sensation seeking, have been demonstrated to be strongly associated with substance use (Mitchell and Potenza, 2014) and substance use disorders (Anderson, Tapert, Moabad, Crowley, and Brown, 2007; Ávila et al., 2016; Hicks, Durbin, Blonigen, Iacono, and McGue, 2012; Kotov, Gamez, Schmidt, and Watson 2010; Sher, Bartholow, and Wood, 2000). Moreover, personality traits, assessed in adolescence and young adulthood, have been shown to predict substance use initiation and transition of substance use problems (Cho et al., 2015; Gonzálvez, Espada, Guillén-Riquelme, Secades and Orgilés, 2016; Nees et al., 2012).

To prevent substance misuse it is useful to have appropriated instruments that permit the identification of different personality risk profiles for substance misuse. The Substance Use Risk Profile Scale (SURPS) (Woicik, Stewart, Pihl, and Conrod, 2009) identifies four personality traits that have been shown to relate to vulnerability to substance misuse (Castellanos-Ryan and Conrod, 2012): hopelessness (H), anxiety sensitivity (AS), impulsiveness (IMP), and sensation-seeking (SS). As Malmberg et al. (2010) noted, H and AS are traits associated with negative reinforcement processes of substance use (e.g., substances relieving negative affective states), while SS and IMP are linked to positive reinforcement effects of drugs (e.g., hedonistic effects of substances). From a selective prevention approach, a number of studies have shown the effectiveness of personality-targeted interventions to prevent substance misuse when the SURPS is used, both in adolescents (Conrod, Castellanos-Ryan, and Mackie, 2011; Conrod, Castellanos-Ryan, and Strang, 2010; Mahu, Doucet, O'Leary-Barrett, and Conrod, 2015; O´Leary-Barrett, Castellanos-Ryan, Pihl, and Conrod, 2016) and college students (Kazemi, Levine, Dmochowski, Van Horn, and Qi, 2015).

The SURPS count on some advantages over the use of other instruments that assess personality traits. First, it assesses four personality dimensions independently, with minimal overlapping variance (Woicik et al, 2009). This characteristic allows its users to avoid the administration of different scales that were no designed to assess these constructs independent of one another (Krank et al., 2011). Second, its brevity allows its use in large epidemiological and longitudinal studies (Woicik et al., 2009). And third, it allows identifying individuals at risk for substance use and related problems without asking about drug use, which is particularly useful when delivering preventive interventions to adolescents (Castellanos-Ryan, O'Leary-Barrett, and Conrod, 2013).

The SURPS was developed and first validated in a community-recruited samples, mainly made up of adolescents and college students (Woicik et al., 2009). Since then, numerous studies have shown adequate psychometric properties for its proposed score interpretations. These studies have been conducted in different sub-populations, mainly adolescents (Ali et al., 2016; Castellanos-Ryan et al., 2013; Castonguay-Jolin et al., 2013; Chandrika, Seneviratne, Newcombe, and Wanigaratne, 2009; Jurk et al., 2015; Krank et al., 2011; Malmberg et al., 2010; Memetovic, Ratner, Gotay, y Richardson, 2016; Newton et al., 2016; Robles-García et al., 2014; Siu, 2010; Woicik et al., 2009) but also, college students (Omiya, Kobori, Tomoto, Igarashi, and Iyo, 2015), adults (Candfield, Gilvarry, and Koller, 2015; Saliba, Moran, and Yoo, 2014), incarcerated (Anthony and Brunelle, 2016) and inpatients (Schlauch, Crane, Houston, and Lang, 2015) samples. In these studies, the 4-factor structure of the SURPS has been replicated (e.g. Krank et al., 2011; Saliba et al., 2014; Schlauch et al., 2015) and evidence of both convergent and discriminant validity has been provided (e.g. Castellanos-Ryan et al., 2013; Newton et al., 2015; Robles-García et al., 2014).

The practicality of the SURPS can be evidence by the fact that it has been translated into different languages such as: Sinhala (Chandrika et al., 2009), Dutch (Malmberg et al., 2010), Chinese (Siu, 2010), Korean (Saliba et al., 2014), French (Castonguay-Jolin et al., 2013; Jurk et al., 2015), German (Jurk et al., 2015), Portuguese (Candfield et al., 2015) and Japanese (Omiya et al., 2015). The validation of the Spanish version of the SURPS (Robles-García et al., 2014) was carried out with 671 Spanish-speaking Mexican adolescents (11-18 years old). This Spanish translation of the SURPS showed moderate internal consistency and good evidence of concurrent validity for the four subscales. The IMP, SS, and H subscales also predicted future substance use, but evidence for the predictive validity of AS was not found. In terms of evidence of structural validity, this Spanish-Mexican version of the SURPS replicated the 4-factor structure of the original version (Woicik et al., 2009), with the exception of item 22 ("I feel I have to be manipulative to get what I want") which had a communality lesser than .40 on all factors and was excluded from analysis. This problematic factor loading of item 22 has also been found in the English-Canadian version with young adolescents (Krank et al., 2011), the Japanese version (Omiya et al., 2015), the Dutch version (Malmberg et al., 2010), and the English-Australian and Korean versions (Saliba et al., 2014).

In the process of adapting a measure to a new language and population it is not enough to conduct a forward and back translation to guarantee its equivalence. It is also necessary to conduct theoretical studies on the equivalence of the construct as well as to consider the linguistic and cultural particularities of the target population (Muñiz, Elosua, and Hambleton, 2013). Moreo-

ver, in the validation of instruments it is necessary to provide evidence on how test scores can be interpreted in the different subpopulations and contexts where the instrument is used (AERA, APA, NCME, 2014). For example, the psychometric properties of the French version of the SURPS have been examined in a Canadian sample (Castonguay-Jolin et al., 2013) and also in a French sample (Jurk et al., 2015). Thus, although cross-cultural or cross-language comparisons of the SURPS have been reported (see, e.g. Candfield et al., 2015; Jurk et al., 2015), the reliability and evidence of validity of the Spanish version in a sample recruited in Spain has yet to be examined.

Considering the wide cultural and language differences between Spain and Mexico, the aim of this study was to test the psychometric properties of a new version of the SURPS for Spanish college students. Specifically, we aimed to provide i) reliability estimates for the SURPS, ii) evidence of its structural validity, iii) evidence for its concurrent validity based on its associations with other personality measures and iv) evidence for the relationship between the SURPS and alcohol consumption. Considering previous research we hypothesize that:

1. Considering previous research on the psychometric properties of the SURPS (Chandrika et al., 2009; Jurk et al., 2015; Malmberg et al., 2010; Robles-García et al., 2014; Saliba et al., 2014), we hypothesize that estimation of reliability will show values from moderate to good.
2. The four-factor structure of the SURPS will be replicated.
3. The subscales of the SURPS will be associated with other measures of the same construct, specifically: AS will correlate with the State-Trait Anxiety Inventory (Spielberger, Gorsuch, and Lushene, 1970; Spielberger, Gorsuch, and Lushene, 2008); H will correlate with the Beck Hopelessness Scale (Beck, Weissman, Lester, and Trxier, 1974); SS will correlate with the sensation seeking subscale of the UPPS-P Impulsive Behavior Scale (Lynam, Smith, Whiteside, and Cyders, 2006); IMP will correlate with all subscales scores of the UPPS-P Impulsive Behavior Scale (Lynam et al., 2006).
4. In previous studies, Krank et al. (2011) found that the IMP, SS and H subscales were the most consistent and strongest predictors of substance use/misuse, while Woicik et al. (2009) detected that these three subscales were associated with severity of alcohol related problems in a sample of college students. Considering this, we hypothesize that the IMP, SS and H subscales will be related to problematic use of alcohol, measured using the Alcohol Use Disorders Identification Test –AUDIT– (Saunders, Aasland, Babor, de la Fuente, and Grant., 1993).

Method

Participants

The participants were 455 undergraduate students from four Spanish universities: 62.2% from the University of Huelva, 16% from the University of Almería, 13.4% from the University of Cádiz and 8.4% from the University of Granada. The sample was recruited using a convenience sampling approach. Age ranged between 18 and 55 years old (mean= 21.53; sd=5.146) and 78.9% of the sample were women. There were no statistically significant differences in age according to sex.

In terms of substance use, 89.5% of participants reported using alcohol during the month prior to the administration of the questionnaire. With regard to the consumption of cannabis, 28.9% used this substance in the year prior to the interview, and 23% in the last month.

Instruments

The Substance Use Risk Profile (Woicik et al., 2009) is a 23 item scale with four dimensions: Hopelessness (items 1, 4, 7, 13, 17, 20 and 23), Anxiety Sensitivity (items 8, 10, 14, 18, 21); Impulsivity (items 2, 5, 11, 15, 22) and Sensation Seeking (items 3, 6, 9, 12, 16, 19). These items are expressed on a 4 point Likert-type scale ranging 1-4 (1=strongly disagree, 2=Disagree, 3=agree, 4=strongly agree) and are added to obtain the total score in each subscale (items 1, 4, 7, 13, 20 and 23 are reverse scored).

The SURPS was linguistically adapted to the Spanish context with a sample of undergraduate students by the research team. To do this, we followed the guidelines for the quality control in the test adaptation proposed by Muñiz, Elosua, y Hambleton (2013) and the International Test Commission Guidelines on Adapting a Test (http://www.intestcom.org). A panel of three experts considered the equivalence of four constructs but the cultural aspects expressed by the items, their grammatical aspects and the writing of most of them were not appropriated for the Spanish context.

Two of the experts who participated in the adaptation, had psychometric training and research expertise in substance use disorders. The other expert has extensive professional and research experience in the field of drug consumption in recreational contexts. These experts, by considering the original version (Woicik et al., 2009) and the Spanish-Mexican version (Robles-García et al., 2014) of the SURPS, independently adapted the items to the cultural aspects of the Spanish population.

Each expert initially translated the English version into Spanish. Then the concordance of each of the items of the three translations was analyzed. The statements of the items matching among the three experts were directly taken for the adapted version. Differences between experts translations were observed on those statements with a contextual framework (e.g. 'I would like to parachute'). In

these items, the experts decided an equivalent framework for the Spanish population and the final statement that was part of the item was decided. Thereafter the research team members evaluated the equivalence of the proposed item. In this sense, this study follows the guidelines established by some authors (Carretero-Dios and Pérez, 2007) and international standards (International Test Commission, 2010)

The UPPS-P Impulsive Behavior Scale (Lynam et al., 2006) is a 59-item inventory that measures five distinct personality dimensions of impulsive behavior: (lack of) premeditation, (lack of) perseverance, negative urgency, sensation seeking, and positive urgency. The original version of the UPPS consisted of the first four dimensions (Whiteside and Lynam, 2001); considering the work by Smith and colleagues, the fifth dimension was included (e.g., Cyders et al., 2007). The items of the UPPS-P are rated on a 4-point scale (from strongly agree to strongly disagree). We used the Spanish version developed by Verdejo-García, Lozano, Moya, Alcázar, and Pérez-García (2010).

State-Trait Anxiety Inventory (Spielberger et al., 1970; Spielberger et al., 2008). The state anxiety subscale was administered. It is made up of 20 items, scored on a four-point Likert scale, in which a higher score indicates higher anxiety.

Beck Hopelessness Scale (Beck et al., 1974). We used the Spanish version of Aguilar et al. (1995). This scale consists of 20 items in a true-false response format. The maximum score, that indicates higher hopelessness, is 20 and the minimum is 0.

Alcohol Use Disorders Identification Test –AUDIT- (Saunders et al., 1993). The AUDIT is a screening instrument made up for 10 items developed by the World Health Organization to identify hazardous and harmful alcohol consumption. Scores higher than seven indicate problematic alcohol use, with values of sensitivity and specificity higher than 0.9 and 0.8 respectively (Babor, Biddle-Higgins, Saunders, and Monteiro, 2001).

Procedure

The test administration was carried out with groups of students that varied from 38 to 45 people. An anonymous code was assigned to the participants that were going to participate in the retest (n=60). The time interval between the test-retest administrations was one week. The participants were informed about the duration of the questionnaire (around 20 minutes) and that is was anonymous. All participants agreed to participate voluntarily and gave their informed consent to participate in the study. The study protocol was approved by the bioethics committee on human research of the University of Huelva.

Data analysis

Seven participants (1.5%) had missing values in any of the items of the SURPS and were eliminated for the posterior analyses. First, skewness and kurtosis were used in order to test normal distribution of the SURPS items. All of SURPS items showed acceptable values of Asymmetry (-.76, -1.35) and Kurtosis (-1.37, 1.24).

Reliability of the SURPS subscales was determined by Cronbach's alpha internal consistency coefficient, omega coefficient (McDonald, 1999), split-half coefficient and test–retest coefficient. Evidence of convergent validity of the SURPS subscales was obtained by determining their association with the total scores of the Beck Hopelessness Scale, Trait Anxiety Scale (STAI) and UPPS-P Impulsive Behavior Scale with Pearson correlation coefficients. Composite scores were computed for each of the subscales of the SURPS. Bivariate correlations were obtained between the different SURPS scales and other theoretically relevant measures administered in this study

Participants were classified on problematic vs. non-problematic alcohol use using the AUDIT total scores cutoff of 8 (Babor et al., 2001). Independent t-tests were performed to analyze differences between groups on each SUPRS subscale. Spearman's correlations were computed between SURPS subscales and AUDIT items 1 to 8.

Factor structure was tested by Confirmatory Factor Analysis (CFA) using the variance–covariance matrix. Traditional criteria (CFI, NNFI > .90 and RMSEA < .08) were used to indicate adequate fit. Interpretations of the factor loadings suggest that loading greater than .71 should be considered excellent, .63 very good, .55 good, .45 fair and .32 poor. Lagrange Multiplier (LM test) and Wald test were used as modification indexes of each model. Two models were tested: Model 1 tested a four-factor structured, all factors correlated. Alternative model 2 (also tested on Woicik et al., 2009) included two correlated second order factors: neurotic dimension of personality (including items on the H and AS factors) and disinhibited personality (with items predicted to load on the SS and IMP factors).

Prior to performing the CFA with 22 items of the scale (excluding item 22), examination of the data revealed lack of multivariate normality (Mardia's standardized coefficient=40.840). Accordingly, the maximum likelihood estimator with robust standard errors was used to conduct the factor analyses.

Statistical analysis was performed with SPSS 21.0 (IBM SPSS Statistics, 2012) and EQS 6.2 (Bentler, 1995).

Results

Item analysis and reliability

Mean scores, standard deviations and discrimination indexes of items on each subscale are reported in Table 1. The lowest average scores were observed in the subscale of Hopelessness (mean scores ranged from 1.36 to 1.90). In the other subscales, most items are rated around their scale mean values. All items showed adequate values of skewness and kurtosis. Discrimination indexes of all items are acceptable (corrected item-total correlations from .30 to .62) except for item 22 ("I feel I have to be manipulative to get what I want") of the impulsivity subscale (r = .13). This problematic functioning of item 22 has been found in previous psychometric studies on the SURPS. Consequently it was removed for the rest of the analysis. Item-total correlations of each item with the other subscales showed lower values than with their own subscale.

The estimated internal consistency reliability Cronbach values ranged between .652 and .806, while omega's coefficient values ranged .654 - .807. Reliability estimated by split-half coefficients varied from .686 to .829. The estimation of test-retest reliability ranged between .733 y .868.

Reliability of the other instruments administered in our study was determined by Cronbach's alpha internal consistency coefficient and split-half coefficient. The results were:

UPPS-P: Alpha coefficients of internal consistency were: (lack of) premeditation, .808: negative urgency, .841: (lack of) perseverance, .770: sensation seeking, .863: positive urgency, .923. The split-half coefficients were: (lack of) premeditation, .859: negative urgency, .780: (lack of) perseverance, .716: sensation seeking, .863: positive urgency, .874.

State-Trait Anxiety Inventory: The internal consistency estimated as Cronbach´s Alpha was .888 and the split-half coefficient was .897.

Beck Hopelessness Scale: The internal consistency estimated as Cronbach´s Alpha was .717 and the split-half coefficient was .724.

AUDIT: the internal consistency estimated as Cronbach's Alpha was .786 while the split-half coefficient was .737.

Evidence of validity based on the internal structure

The four-factor model did not fit the data adequately according to the chi-square and RMSEA, but not CFI or NCFI ($\chi^2$203=429.99; CFI=.87, NCFI = .856; RMSEA=.05 [95% CI=.04, .05].

Wald Test results suggested including covariances between error terms of items 23 and 7, and between items 4 and 1, so that the estimates for these two parameters in a second model were included. The correlated errors were attributable to the similar wording of the items. This modified model obtained an adequate fit ($\chi^2$203=340.32; CFI=.92, NCFI = .91; RMSEA=.04 [95% CI=.03, .04] and, as expected, the four factor structure of the SURPS was replicated. Standardized factor loadings of items in each fac-

Table 1. *Analysis of the SURPS items*

	M	DT	Skewness	Kurtosis	Item - total correlation
Hopelessness					
Item 1 (R)	1.90	0.54	0.11	0.99	0.47
Item 4 (I)	1.75	0.62	0.38	0.19	0.59
Item 7 (I)	1.76	0.61	0.37	0.22	0.50
Item 13 (I)	1.51	0.61	1.00	1.09	0.50
Item 17	1.36	0.56	1.35	1.25	0.56
Item 20 (I)	1.83	0.65	0.38	0.05	0.62
Item 23 (I)	1.66	0.64	0.66	0.33	0.52
Cronbach' alpha			.806		
Omega coefficient			.807		
Split-half reliability			.829		
Test-retest reliability			.755		
Anxiety Sensivity					
Item 8	2.24	0.87	0.24	-0.65	0.44
Item 10	2.19	0.80	0.25	-0.42	0.40
Item 14	2.32	0.76	0.15	-0.33	0.42
Item 18	2.30	0.73	-0.06	-0.47	0.47
Item 21	2.18	0.78	0.29	-0.29	0.30
Cronbach' alpha			0.652		
Omega coefficient			0.654		
Split-half reliability			0.686		
Test-retest reliability			0.793		
Impulsivity					
Item 2	2.00	0.71	0.49	0.35	0.48
Item 5	2.55	0.75	-0.20	-0.29	0.32
Item 11	1.97	0.69	0.42	0.26	0.59
Item 15	2.39	0.84	0.12	-0.56	0.43
Item 22	1.65	0.73	0.82	-0.11	0.13
Cronbach' alpha[1]			.685		
Omega coefficient			.654		
Split-half reliability[1]			.710		
Test-retest reliability[1]			.733		
Sensation seeking					
Item 3	2.64	1.15	-0.25	-1.38	0.50
Item 6	3.39	0.64	-0.76	0.20	0.39
Item 9	2.51	0.78	-0.22	-0.40	0.39
Item 12	2.22	1.08	0.29	-1.24	0.39
Item 16	2.26	0.87	0.29	-0.59	0.46
Item 19	2.83	0.90	-0.39	-0.63	0.54
Cronbach' alpha			.706		
Omega coefficient			.722		
Split-half reliability			.716		
Test-retest reliability			.868		

Note. (R) Reverse scored.
[1] This value has been calculated without including the item 22.

tor ranged from .359 to .831. All loadings and correlations greater than .13 were significantly different from zero at $p <$ .001, except for the correlation between Hopelessness and Sensation Seeking. The alternate model (model 2) with two second order factor obtained a poorer fit ($\chi^2$203=373.32; CFI=.90, NCFI = .89; RMSEA=.04 [95% CI=.03, .05].

Evidence of convergent validity: Evidence based on the relationship with other personality measures

As seen in Table 2, the scores in the different subscales of the SURPS were associated with other measures of the same construct. The Hopelessness SURPS scale was moderately and significantly correlated with the Beck Hopelessness Scale (r = .58, p <.001) and the STAI (r = .61, p <.001). Anxiety Sensitivity scores correlated with the STAI (r = .40, p <.001). The Impulsiveness scale was significantly associated with all other personality measures, except for the Beck hopelessness scale, and correlated the strongest with Lack of Premeditation (r = .52, p <.001) and Negative Urgency (r = .61, p <.001). Finally the Sensation Seeking Scale was strongly correlated with sensation-seeking scale of the UPPS-P (r = .82, p <.001) (see Table 2).

Evidence of validity based on the relationship with other variables: Relationship with alcohol consumption

Table 3 and 4 shows the analysis between the subscales of the SURPS and AUDIT scores, specifically, with their total score (problematic use), and items 1 to 8. Items 9 and 10 were discarded at this point because of the small amount of participant informing about someone else injured as result of his/her drinking (Item 9, 6.4%) or having anyone concerned about his/her drinking (Item 10, 5.3%).

Participants with problematic consumption showed higher scores on the subscales of impulsivity and sensation seeking than those without problematic use (statistically significant difference) (see Table 3). No statistically signi-

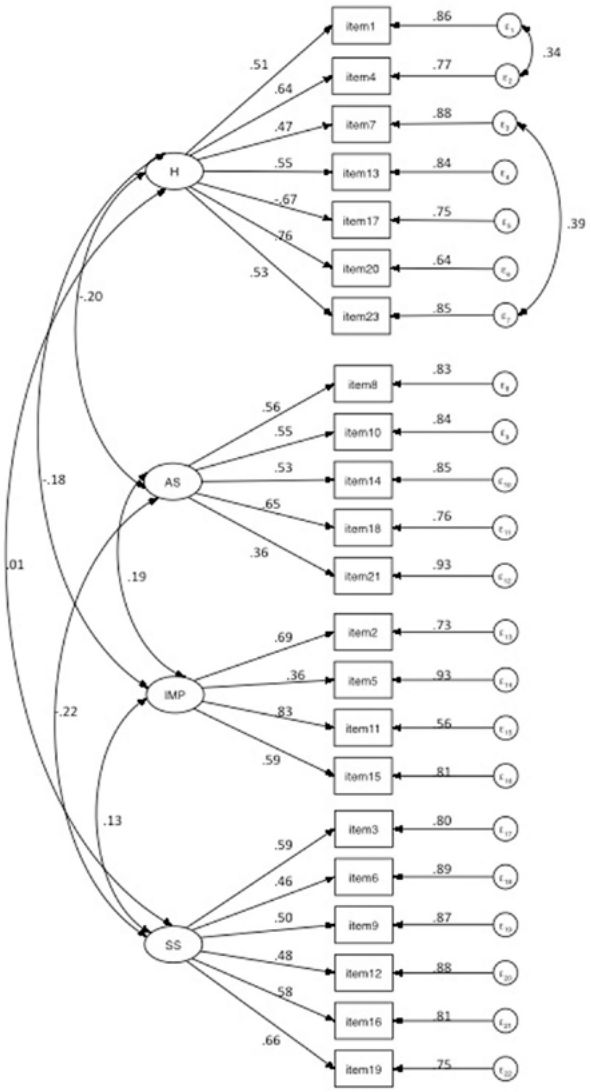

Figure 1. Model and factor loadings of Spanish SURPS version

Table 2. *Correlations between the SURPS and other personality measures*

	H	AS	IMP	SS
UPPS1. Lack of premeditation	0.01	-0.05	0.52**	0.20**
UPPS2. Negative urgency	0.29**	0.26**	0.61**	0.17*
UPPS3. Lack of perseverance	0.35**	0.06	0.22**	0.11*
UPPS4. Sensation Seeking	-0.01	-0.12*	0.13*	0.81**
UPPS5. Positive urgency	0.20**	-0.18**	0.38**	0.29**
Beck	0.58**	0.11**	0.07	-0.01
STAI	0.61**	0.40**	0.29**	-0.10

Note. *p < .05; **p < .01

Table 3. *Relationship between alcohol use and SURPS scores*

	Problematic use	n	Mean (SD)	t	P	d
Hopelessness	No	348	11.67 (2.88)	1.84	.066	0.21
	Yes	100	12.27 (2.92)			
Impulsivity	No	348	10.26 (2.33)	5.46	< .001	0.63
	Yes	100	11.69 (2.23)			
Sensation seeking	No	348	15.52 (3.54)	4.19	< .001	0.49
	Yes	100	17.18 (3.15)			
Anxiety sensitivity	No	348	11.16 (2.58)	1.62	.107	0.18
	Yes	100	11.63 (2.51)			

Table 4. *Spearman's correlation between AUDIT items (1-8) and SURPS scores among last year alcohol users*

	Hopelessness	Anxiety sensitivity	Impulsivity	Sensation seeking
Item 1	0.045	0.039	0.186**	0.265**
Item 2	0.003	0.070	0.215**	0.122**
Item 3	0.067	0.052	0.234**	0.245**
Item 4	0.150**	0.031	0.130**	0.126**
Item 5	0.075	0.075	0.179**	0.159**
Item 6	0.112*	0.086	0.127*	0.067
Item 7	0.167**	0.204**	0.187**	0.197**
Item 8	0.119*	0.076	0.190**	0.149**

Note. * $p < ,05$; ** $p < ,01$

ficant differences were observed in the subscale of anxiety and hopelessness between both groups. As expected, strong associations between alcohol use and the subscales IMP and SS were found. Among the participants who used alcohol in the last month, significant correlations were found between all items and Impulsivity scores. Sensation seeking subscale correlates with all items except for item 6 (Table 4).

Discussion

Although a Spanish-Mexican version of the SURPS has been developed (Robles-García, 2014), the large language and cultural differences between Mexico and Spain warrant the development of a Spanish version examined in a Spanish context and population. The present study analyzed the psychometric properties of a revised Spanish version of the SURPS in a sample of undergraduate college students recruited in Spain. Results showed that this revised version possessed good reliability and evidence of validity based on its internal structure and on its association with other personality and substance use measures.

In terms of reliability, as expressed in our first hypothesis, the results are consistent with those found in other studies for the adaptation of the SURPS into other languages, with internal consistency values for the SURPS-subscales ranging from moderate to good (Chandrika et al., 2009; Jurk et al., 2015; Malmberg et al., 2010; Robles-García et al., 2014; Saliba et al., 2014). The current study is one of the only studies on translated versions of the SURPS that analyzed test-retest reliability, finding good test-retest reliability on all scales. The interscale correlations found in our study are, in general, higher that those found in other language versions of the SURPS like the Japanese (Omiya et al., 2015), Sinhala (Chandrika et al., 2009) or the French and German versions (Jurk et al., 2015) and very similar of those found in the original scale (Woicik et al., 2009).

Consistent with our second hypothesis, our research replicated the expected four-factor structure of the original scale (Woicik et al., 2009). The two covariance errors included in the model tested are consistent with results found on Krank et al. (2011) and Woicik et al. (2009). Moreover, results suggested that item 22 must be removed from the Spanish version of the SURPS, which is consistent with results of the study on the Spanish-Mexican version (Robles-García et al., 2014), the English-Canadian Version in young adolescents (Krank, 2011), the Japanese version (Omiya et al., 2015), the Dutch version (Malmberg et al., 2010), and the English-Australian (Newton et al, 2015) and Korean versions of the SURPS (Saliba et al., 2014).

Thirdly, evidence of good convergent validity of the SURPS subscales was provided by showing they were significantly associated with other conceptually-relevant personality scales. In line with Krank et al.'s (2011) and Robles-García et al.'s (2014) findings, we showed significant associations between the H subscale and the Beck Hopelessness Scale. Moreover, our findings echoed Woicik et al.'s findings, (2009) who remarked: "*The IMP subscale of the SURPS should capture a dimension of personality that is distinct from SS and associated with heavier, unconstrained drug use*" (p. 1044). The fact that the IMP subscale correlated only mildly with the Sensation Seeking subscale of the UPPS-P, while the SURPS sensation-seeking scale correlated very strongly, may be considered a favorable discriminant evidence for the differences between these two dimensions.

Previous researchers have found that the subscales H, IMP and SS are the personality traits of SURPS most strongly associated with frequency of alcohol use and alcohol related problems. For example, Woicik et al. (2009) found that these subscales were associated with severity of alcohol-related problems in a sample of college students, while Stewart al.'s (2011) results showed that H, SS, and IMP were all positively correlated with alcohol problems. In this study, IMP and SS are correlated with frequency of alcohol use and alcohol related problems items of the AUDIT (except SS and item '*How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?*'). These two subscales are the ones positively associated to all alcohol measures analyzed in the current study with Spanish undergraduate college students; what should be considered when designing and delivering interventions to minimize or reduce alcohol-related problems.

It is noteworthy that the AS subscale was not related to hazardous drinking, frequency of alcohol use or heavy episodic drinking; AS is correlated only with item "*How often during the last year have you been unable to remember what happened the night before you had been drinking?*'. As stated before, previous studies have also found that this personality trait does not relate with these measures of alcohol use. Moreover, in some cases a negative relationship has been found between AS and frequency of alcohol use (i.e. Krank et al.,

2011; Stewart et al., 2011; Woicik et al., 2009). H subscale is correlated with item 4 ('*How often during the last year have you found that you were not able to stop drinking once you had started?*'), item 6 ('*How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?*'), item 7 (*How often during the last year have you had a feeling of guilt or remorse after drinking?)* and item 8 ('*How often during the last year have you been unable to remember what happened the night before you had been drinking?*'). The role of these personality traits on the alcohol use and misuse must be investigated further. Our results showed that frequency of alcohol use and heavy episodic drinking relate to higher scores on SS and IMP. These two subscales are the ones positively associated to all alcohol measures analyzed in the current study with Spanish undergraduate college students; something that should be considered when designing and delivering interventions to minimize or reduce alcohol-related problems.

Some limitations must be considered in interpreting our findings. First, the sample has not been selected randomly from the population of undergraduate students in Spain, what may affect the representativeness and generalizability of our results. This is a common limitation to many psychometric studies of the SURPS (with the exception of Malmberg et al., 2010 and Castellanos et al., 2013). Nevertheless, to minimize this limitation, students from four different universities were selected. Second, most of the participants in the current study were female, as was the case of other SURPS versions like the Japanese (Omiya et al., 2015) and the Portuguese (Canfield et al., 2015). This may influence the psychometric properties of the SURPS reported in our study. However, the measurement invariance of the four dimensions of the SURPS across gender has been extensively demonstrated (Ali et al., 2016; Jurk et al., 2015; Memetovic, Ratner, Gotay, y Richardson, 2016; Woicik et al., 2009). Lastly, given the importance of considering the characteristics of participants in the process of measurement adaptation, a deeper description of the sociodemographic characteristics of the sample will be appropriated.

Despite these limitations, our study provides evidence that this revised Spanish version of the SURPS possesses good psychometric properties, and is associated with alcohol use measures in a theoretically-expected ways. Thus, this Spanish version of the SURPS may be an useful instrument for the measurement of personality traits related to vulnerability to substance use and misuse in a research context or when targeting personality with preventative interventions.

Future studies should analyze its psychometric properties in other subpopulations, specifically in adolescents, with whom the value of this scale in the prevention of substance misuse is higher. Also, longitudinal studies are needed to demonstrate evidence of the predictive validity of this revised Spanish SURPS for alcohol use and other substance use.

Conflict of interest

The authors have no potential conflict of interest to report.

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References

Aguilar, E. J., Hidalgo, M. D., Cano, R., López, J. C., Campillo, M. & Hernández Martí, M. (1995). Estudio prospectivo de la desesperanza en pacientes psicóticos: características psicométricas de la Escala de Desesperanza de Beck. *Anales de Psiquiatría, 11*, 121-125.

Ali, A., Carré, A., Hassler, C., Spilka, S., Vanier, A., Barry, C. & Berthoz, S. (2016). Risk factors for substances use and misuse among young people in France: what can we learn from the Substance Use Risk Profile Scale? *Drug and Alcohol Dependence, 163*, 84-91. doi:10.1016/j.drugalcdep.2016.03.027.

American Psychological Association, American Educational Research Association, & National Council on Measurement in Education (2014). *Standards for educational & psychological tests*. Washington, DC: American Psychological Association.

Anderson, K. G., Tapert, S. F., Moabad, I., Crowley, T. J. & Brown, S. A. (2007). Personality risk profile for conduct disorder and substance use disorders in youth. *Addictive Behaviors, 32*, 2377-2382.

Anthony, A. B. & Brunelle, C. (2016). Substance use in incarcerated male offenders: predictive validity of a personality typology of substance misusers. *Addictive Behaviors, 53*, 86-93. doi:10.1016/j.addbeh.2015.10.001.

Ávila Escribano, J.J., Sánchez Barba, M., Álvarez Pedrero, A., López Villarreal, A., Recio Pérez, J., Rodríguez Rodilla, M. & Fraile García, E. (2016). Predictive Capacity of Cloninger's temperament and caracter inventory (TCI-R) in alcohol use disorder outcomes. *Adicciones, 28,* 136-143. doi:10.20882/adicciones.711.

Babor, T.F., Biddle-Higgins, J.C., Saunders, J.B. & Monteiro, M.G. (2001). *AUDIT: The Alcohol Use Disorders Identification Test: Guidelines for Use in Primary Health Care*. Geneva, Switzerland: World Health Organization

Beck, A., Weissman, A., Lester, D. & Trxier, L. (1974). The measurement of pessimism: the Hopelessness Scale. *Journal of Consulting and Clinical Psychology, 42*, 861-865. doi:10.1037/h0037562.

Bentler, P.M. (1995). EQS structural equations program manual. Multivariate Software.

Canfield, M., Gilvarry, C. & Koller, S. H. (2015). Psychometric properties of the Substance Use Risk Profile Scale Brazilian version. *International Journal of Mental Health and Addictions*, *13*, 204-214. doi:10.1007/s11469-014-9522-1.

Carretero-Dios, H. & Pérez, C. (2007). Standards for the development and the review of instrumental studies: considerations about test selection in psychological research. *International Journal of Clinical and Health Psychology, 7*, 863-882.

Castellanos-Ryan, N. & Conrod, P. J. (2012). Personality and substance misuse: Evidence for a four factor model of vulnerability. In: J. Verster, K. Brady, M. Galanter, P. J. Conrod. (Eds). *Drug Abuse and Addiction in Medical Illness: Causes, Consequences and Treatment.* (pp. 47–62.) New York, NY: Springer Press.

Castellanos-Ryan, N., O'Leary-Barrett, M. & Conrod, P. (2013). Substance use in childhood and adolescence: a brief overview of developmental processes and their clinical implications. *Journal of Canadian Child and Adolescence Psychiatry*, *22*, 41-46.

Castonguay-Jolin, L., Pernier-Ménard, E., Castellanos-Ryan, N., Parents, S., Vitaro, F., Tremblay, R. E.,… Conrod, P. J. (2013). Validation de la traduction française de la SURPS pour une population d'adolescents québécois. *Canadian Journal of Psychiatry*, *58*, 538-545.

Chandrika, C., Seneviratne, A., Newcombe, P., A. & Wanigaratne, S. (2009). A model of substance abuse risk: adapting to the Sri Lankan context. *Evaluation Review*, *33*, 83-97. doi:10.1177/0193841X08325145.

Cho, S. B., Llaneza, D., C., Adkins, A. E., Cooke, M., Kendler, K., Clark, S. & Dick, D. (2015). Patterns of substance use across the first year of college and associated risk factors. *Frontiers in Psychiatry*, *6*, 152. doi:10.3389/fpsyt.2015.00152.

Conrod, P. J., Castellanos-Ryan, N. & Mackie, C. J. (2011). Long-term effects of a personality-targeted intervention to reduce alcohol use in adolescents. *Journal of Consulting and Clinical Psychology*, *79*, 296–306. doi:10.1037/a0022997.

Conrod, P., Castellanos-Ryan, N. & Strang, J. (2010). Brief, personality-targeted skills interventions and survival as a non-drug user over a 2 year period during adolescence. *Archive General of Psychiatry*, *67*, 85-93. doi:10.1001/archgenpsychiatry.2009.173.

Cyders, M.A., Smith, G. T., Spillane, N. S., Fischer, S., Annus, A. M. & Peterson, C. (2007). Integration of impulsivity and positive mood to predict risky behavior: Development and validation of a measure of positive urgency. *Psychological Assessment*, *19*, 107–118.

Gonzálvez, M.T., Espada, J.P., Guillén-Riquelme, A., Secades, R. & Orgilés, M. (2016). Association between personality traits and substance use in Spanish adolescents. *Adicciones, 28,* 108-115. doi:10.20882/adicciones.777.

Hicks B. M., Durbin C. E., Blonigen D. M., Iacono W. G. & McGue M. (2012). Relationship between personality change and the onset and course of alcohol dependence in young adulthood. *Addiction*, *107*, 540–548. doi:10.1111/j.1360-0443.2011.03617.x .

IBM SPSS Statistics. (2012). IBM SPSS Statistics 21.0 for Windows. Chicago: IBM.

Jurk, S., Kuitunen-Paul, S., Kroemer, N. B., Artiges, E., Banaschewski, T., Bokde, A. L., … IMAGEN consortium. (2015). Personality and substance Use: psychometric evaluation and validation of the Substance Use Risk Profile Scale (SURPS) in English, Irish, French, and German adolescents. *Alcoholism, Clinical and Experimental Research*, 39, 2234-2248. doi:10.1111/acer.12886.

Kazemi, D., Levine, M., Dmochowski, J., Van Horn, K. & Qi, L. (2015). Health behaviors of mandated and voluntary students in a motivational intervention program. *Preventive Medicine Reports*, *2*, 423-428. doi:10.1016/j.pmedr.2015.05.004.

Krank, M., Stewart, S. H., O'Connor, R., Woicik, P. B., Wall, A. M. & Conrod, P. J. (2011). Structural, concurrent, and predictive validity of the Substance Use Risk Profile Scale in early adolescence. *Addictive Behaviors*, *36*, 37–46. doi:10.1016/j.addbeh.2010.08.010.

Kotov, R., Gamez, W., Schmidt, F. & Watson, D. (2010). Linking 'big' personality traits to anxiety, depressive, and substance use disorders: a meta-analysis. *Psychological Bulletin*, *136*, 768-821. doi:10.1037/a0020327.

Lynam, D. R., Smith, G. T., Whiteside, S. P. & Cyders, M. A. (2006). *The UPPS-P: Assessing five personality pathways to impulsive behavior.* West Lafayette, IN: Purdue University.

McDonald, R. P. (1999). *Test theory: A unified treatment.* Mahwah, NJ: Lawrence Erlbaum Associates. doi:10.1111/j.2044-8317.1981.tb00621.x

Mahu, I., Doucet, C., O'Leary-Barrett, M. & Conrod, P. J. (2015). Can cannabis use be prevented by targeting personality risk in schools? Twenty-four-month outcome of the adventure trial on cannabis use: a cluster-randomized controlled trial. *Addiction*, *110*, 1625-1633. doi:10.1111/add.12991.

Malmberg, M., Overbeek, G., Monshouwer, K., Lammers, J., Vollebergh, W. & Engels, R. (2010). Substance use risk profiles and associations with early substance use in adolescence. *Journal of Behavioral Medicine*, *33*, 474-485. doi:10.1007/s10865-010-9278-4.

Memetovic, J., Ratner, P. A., Gotay, C. & Richardson, C. G. (2016). Examining the relationship between personality and affect-related attributes and adolescents' intentions to try smoking using the Substance Use Risk Profile Scale. *Addictive Behaviors*, *56*, 36-40. doi:10.1016/j.addbeh.2016.01.002.

Mitchell, M. R. & Potenza, M. N. (2014). Addictions and personality traits: impulsivity and related constructs. *Current Behavioral Neuroscience Reports, 1*, 1–12. doi:10.1007/s40473-013-0001-y.

Muñiz, J., Elosua, P. & Hambleton, R. K. (2013). Directrices para la traducción y adaptación de los tests: segunda edición. *Psicothema*, *25*, 151-157.

Nees, F., Tzschoppe, J., Patrick, C., Vollstädt-Klein, S., Steiner, S., Poutska, L., … IMAGEN Consortium (2012). Determinants of early alcohol use in healthy adolescents: the differential contribution of neuroimaging and psychological factors. *Neuropsychopharmacology*, 37, 986-995. doi:10.1038/npp.2011.282.

Newton, N. C., Barret, E. L., Castellanos-Ryan, N., Kelly, E., Champion, K. E., Stapinski, L., … Teesson, M. (2015). The validity of the Substance Use Risk Profile Scale (SURPS) among Australian adolescents. *Addictive Behaviors, 53*, 23-30. doi:10.1016/j.addbeh.2015.09.015.

O'Leary-Barrett, M., Castellanos-Ryan, N., Pihl, R. O. & Conrod, P. J. (2016). Mechanisms of personality-targeted intervention effects on adolescent alcohol misuse, internalizing and externalizing symptoms. *Journal of Consulting and Clinical Psychology*, *84*, 438-452. doi:10.1037/ccp0000082.

Omiya, S., Kobori, O., Tomoto, A., Igarashi, Y. & Iyo, M. (2015). Personality and substance use in Japanese adolescent: the Japanese version of Substance Use Risk Profile Scale. *Personality and Individual Differences*, *76*, 153-157. doi:10.1016/j.paid.2014.11.034.

Robles-García, R., Fresán, A., Castellanos-Ryan, N., Conrod, P., Gómez, D., de Quevedo, … Medina-Mora, M. E. (2014). Spanish version of the substance use risk profile scale: factor structure, reliability, and validity in Mexican adolescents. *Psychiatry Research*, 220, 113–117. doi:10.1016/j.psychres.2014.08.057.

Saliba, A. J., Moran, C. & Yoo, Y. (2014). The Substance Use Risk Profile Scale: comparison of norms and outcomes for Australian and Korean adults. *International Journal of Mental Health and Addictions*, *12*, 538-547. doi:10.1007/s11469-014-9490-5.

Saunders, J. B., Aasland, O. G., Babor, T. F., de la Fuente, J. R. & Grant, M. (1993). Development of the Alcohol Use Disorders Identification Test (AUDIT): WHO Collaborative Project on early detection of persons with harmful alcohol consumption. *Addiction*, *88*, 791-804.

Schlauch, R., Crane, C., Houston, R. & Lang, A. (2015). Psychometric evaluation of the Substance Use Risk Profile Scale (SURPS) in an inpatient sample of substance users using cue-reactivity methodology. *Journal of Psychopathology and Behavioral Assessment*, *37*, 231-246. doi:10.1007/s10862-014-9462-x.

Sher. K. J., Bartholow, B. D. & Wood, M. D. (2000). Personality and substance use disorders: a prospective study. *Journal of Consulting and Clinical Psychology*, *68*, 363-371.

Siu, A. F. Y. (2010). Validation of the substance use risk profile scale for adolescents in Hong Kong. *Journal of Psychoeducational Assessment*, *29*, 75-83. doi:10.1177/0734282910362044.

Spielberger, C. D., Gorsuch, R. L. & Lushene, R. E. (1970). *Manual for the state-trait anxiety inventory*. Palo Alto, C. A.: Consulting Psychologist's Press.

Spielberger, C. D., Gorsuch, R. L. & Lushene, R. E. (2008). *STAI. Cuestionario de ansiedad estado-rasgo (7a ed. rev.)*. Madrid: TEA.

Stewart, S., McGonnell, M., Wekerle, C., Adlaf, E. & The MAP Longitudinal Study Research Team. (2011). Associations of personality with alcohol use behaviour receiving child welfare services. *International Journal of Mental Health and Addiction, 9*, 492-506.

Verdejo-García, A., Lozano, O. M., Moya, M., Alcázar, M. A. & Perez-García, M. (2010). Psychometric properties of a Spanish version of the UPPS-P Impulsive Behavior Scale: Reliability, validity and association with trait and cognitive impulsivity *Journal of Personality Assessment*, *92*, 70-77. doi:10.1080/00223890903382369.

Whiteside, S. P. & Lynam, D. R. (2001). The Five Factor Model and impulsivity: using a structural model of personality to understand impulsivity. *Personality and Individual Differences*, *30*, 669-689. doi:10.1016/S0191-8869(00)00064-7.

Woicik, P. A., Stewart, S. H., Pihl, R. O. & Conrod, P. J. (2009). The substance use risk profile scale: A scale measuring traits linked to reinforcement-specific substance use profiles. *Addictive Behaviors, 34*, 1042–1055. doi:10.1016/j.addbeh.2009.07.001.