

Design and validation of a Cannabis Use Intention Questionnaire (CUIQ) for adolescents

Diseño y validación de una escala de intención de consumo de cannabis (CUIQ) para adolescentes

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Abstract

In Spain, one in four 14 to 18-year-old adolescents has used cannabis during the last twelve months. Demand for treatment has increased in European countries. These facts have prompted the development of preventive interventions that require screening tools in order to identify the vulnerable population and to properly assess the efficacy of such interventions. The Theory of Planned Behaviour (TPB), widely used to forecast behavioural intention, has also demonstrated a good predictive capacity in addictions. The aim of this study is to design and validate a Cannabis Use Intention Questionnaire (CUIQ) based on TPB. 1,011 teenagers answered a set of tests to assess attitude towards use, subjective norms, self-efficacy towards non-use, and intention to use cannabis. CUIQ had good psychometric properties. Structural Equation Modelling results confirm the predictive model on intention to use cannabis in the Spanish adolescent sample, classified as users and non-users, explaining 40% of variance of intention to consume. CUIQ is aimed at providing a better understanding of the psychological processes that lead to cannabis use and allowing the evaluation of programmes. This can be particularly useful for improving the design and implementation of selective prevention programmes.

Keywords: Cannabis use; Intention; Questionnaire validation; Attitude; self-efficacy; Theory of planned behaviour.

Resumen

En España, uno de cada cuatro jóvenes de 14 a 18 años declara haber consumido cannabis en el último año. La demanda de tratamiento ha aumentado en todos los países europeos. Ello ha motivado el desarrollo de intervenciones preventivas que requieren instrumentos para el cribado de la población en riesgo y la evaluación de la prevención. La Teoría de la Acción Planificada (TAP), ampliamente utilizada para predecir las intenciones conductuales, ha mostrado una buena capacidad predictiva en el campo de las adicciones. El objetivo del presente trabajo es diseñar y validar un Cuestionario de Intención de Consumo de Cannabis (CUIQ, *Cannabis Use Intention Questionnaire*) basado en la TAP. 1011 adolescentes completaron una batería de cuestionarios que se compone de cuatro subescalas: actitud hacia el consumo, norma subjetiva, autoeficacia hacia la abstinencia e intención de consumo. El Cuestionario CUIQ obtuvo buenas características psicométricas. Las ecuaciones estructurales confirmaron el modelo predictivo sobre la intención de consumo en adolescentes españoles (consumidores y no consumidores), llegando a explicar el 40% de la varianza. El CUIQ tiene como objetivo una mejor comprensión del proceso psicológico que conduce al consumo de cannabis y permitir la evaluación de programas. Esto puede ser especialmente útil para mejorar el diseño e implementación de programas de prevención selectiva.

Palabras clave: Cannabis; Intención; Validación de cuestionario; Actitudes; Autoeficacia; Teoría acción planificada.

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Cannabis is the illicit drug with the highest prevalence of use and is currently on the rise (UNODC, 2016). In fact 11.2% of young Europeans (aged 15-34) report having consumed it in the previous 12 months, and prevalence is even higher (13.9%) in the 15-24 age range. Among adolescents, 3% of European students aged 15 to 16 years have used cannabis more than 10 times in the previous month (Hibell et al., 2012). The National Survey on the Use of Drugs in Secondary Education in Spain (ESTUDES) reveals that one in four young people aged 14 to 18 used it in the previous year and 16.1% of them presented hazardous consumption, defined as scoring four points or higher on the CAST scale (*Cannabis Abuse Screening Test*) (OEDT, 2014). The data show that cannabis use is widespread among the younger population, despite the negative consequences its use can have, such as problems of emotional control (Crean, Crane, & Mason, 2011), psychotic experiences (Fonseca-Pedrero, Ortuno-Sierra, Paino & Muñiz, 2016), or risk of psychotic disorders (Chadwick, Miller, & Hurd, 2013; Hall & Degenhardt, 2009; Rubino, Zamberletti, & Parolaro, 2012). This trend is reflected in the increased demand for treatment across European countries (EMCDDA, 2016) and warns of the need to step up efforts in specific preventive interventions against cannabis use. The European CAPPYC (Cannabis Abuse Prevention Program for Young Consumers) project was developed to this end in the period 2014-2016 in four European countries (Spain, Italy, Portugal and Romania), and has also made the present study possible.

In recent years, several tools have been developed to assess the risk factors associated with initiating and maintaining drug use in general. However, the use of cannabis in particular has some characteristics that differentiate it from other substances; personality traits have been found, for example, which have a specific influence on cannabis use (García-Sánchez, Mataly, Martín-Fernández, et al., 2016; González, Espada, Guillon-Riquelme, Secades & Orgilés, 2016). There are also specific beliefs related to cannabis,

such as the beliefs that it is not as addictive or dangerous as other drugs (Menghrajani, Klaue, Dubois-Arber & Michaud, 2005), that it provides beneficial relaxing effects (Boys, Marsden & Strang, 2001), that consumption can be controlled, that it is “good” for some diseases and for having fun and forgetting one’s problems (Morales-Manrique, Bueno-Cañigral, Aleixandre-Benavent & Valderrama-Zurián, 2011); and there is even the belief that it heightens creativity (Plancherel et al., 2005). Such widely held views regarding cannabis make it advisable to use specific questionnaires.

Some specific assessment questionnaires on the use and abuse of cannabis, associated factors and motivations (see Table 1) can currently be found. However, these instruments, despite their use in detecting problems of cannabis consumption and risk groups, do not allow the assessment of programs since they do not measure factors associated with consumption that may be modifiable through preventive interventions.

Among the different models that attempt to explain cannabis use, this study is based on the Theory of Planned Behaviour (TPB), proposed by Ajzen (1991) as a model rooted in social psychology (Armitage & Conner, 2001) which takes into account the interaction between personal and social factors to explain behaviour. From this psychosocial perspective, TPB proposes that intention is shaped by attitude towards the behaviour, subjective norms (SN) and perceived behavioural control (PBC).

TPB has been extensively used in the field of prevention (Rodríguez Marín, 1998) and has proven predictive capacity in relation to addictions (McMillan & Conner, 2003; Rodríguez-Kuri, Diaz-Negrete, Gracia-Gutiérrez de Velasco, Guerrero-Huesca & Gómez-Maqueo, 2007; Saiz Galdós, 2009; Topa & Moriano, 2010). Specifically, with respect to cannabis, several studies have found that intention significantly predicted cannabis use and, in turn, intention was predicted by attitudes and PBC, while SN did not appear to have a decisive influence (Armitage, Conner, Loach & Willetts, 1999; McMillan & Conner, 2002, 2003).

Table 1. Scales of cannabis use and abuse.

Acronym	Name	Year	Author	Measurement areas
CAST	<i>Cannabis Abuse Screening Test</i>	2007	Legleye, Karila, Beck & Reynaud	Problematic use of cannabis. Assesses the previous 12 months
CUPIT	<i>Cannabis Use Problems Identification Test</i>	2010	Bashford, Flett & Copeland	Problems associated with cannabis use
CUDIT	<i>Cannabis Use Disorders Identification Test</i>	2003	Adamson & Sellman	Symptoms of abuse, current and over previous 6 months
CPQ-A	<i>Adolescent Cannabis Problems Questionnaire</i>	2006	Martin, Copeland, Gilmour, Gates & Swift	Problems associated with use: psychosocial consequences, physical consequences, severe effects
MEEQ	<i>Marijuana Effect Expectancy Questionnaire</i>	1991	Schafer & Brown	Expectations about consequences of cannabis use (adolescents)
CMMQ	<i>Comprehensive Marijuana Motives Questionnaire</i>	2009	Lee, Neighbors, Hendershot & Grossbard	Motives for cannabis use

In Spain, Olivar and Carrero (2007) developed a specific cannabis questionnaire based on TPB but, as the authors themselves point out, this measures its factors indirectly and subtly, not following the considerations of Ajzen (2002). In addition, the instrument was used with a small sample of 214 students aged 15 to 21 from a single school in Madrid.

Given the applicability of TPB to cannabis use, the present study aims to meet the need for an assessment tool composed of different factors which: a) explains both the initiation and maintenance of cannabis use from a broad and robust theoretical approach, and b) can be used to assess the effectiveness of preventive interventions. The goal of this study is thus to construct and validate a questionnaire, the CUIQ (Cannabis Use Intention Questionnaire), aimed at evaluating the risk of cannabis use in adolescents within the theoretical framework of TPB (Ajzen, 1991). Since the CUIQ is designed for use primarily in the classroom, efforts have been made to create an instrument with a reduced number of items which is easy to administer and complete, but at the same time reliable and valid in terms of the scores obtained, an essential requirement for a good assessment and screening tool. Therefore, the specific objectives of the study are as follows: 1) to analyse the structure, reliability, and validity of the scores on the CUIQ questionnaire scales, 2) to analyse the differential functioning of the test scales scores according to sex, 3) to determine the sensitivity and specificity in detecting cannabis use and problems associated with it. The working hypotheses are therefore as follows:

Hypothesis 1. The scales that compose the CUIQ will present adequate reliability and validity.

Hypothesis 2. The TPB predictive model will be equivalent across groups of boys and girls.

Hypothesis 3. The scores on the CUIQ scales will enable the detection of cannabis use and the risk of problems due to cannabis use.

Method

Participants

First, a preliminary pilot study was carried out in the province of Alicante in which 73 secondary school students took part, with a mean age of 15.18 years ($SD = 0.961$, range 13-17 years of age) of which 43.8% were boys. The questionnaire was then applied to a group of 1011 students with a mean age of 16.09 ($SD = 0.95$, range 15-18), 52.8% boys. Participants were recruited in 16 public schools and 5 private schools in the provinces of Albacete, Alicante, Badajoz, Cuenca, Madrid and Valencia. The percentage of cannabis use in the previous month was 16.9%. By sex, 12.7% of girls and 21.1% of boys admitted using cannabis at least once in the previous month, a difference which proved to be significant ($\chi^2 = 12.34$, p -value $< .01$).

Instruments

The Cannabis Use Intention Questionnaire (CUIQ) we have developed consists of the following scales in accordance with the recommendations proposed by Ajzen (2002): attitude toward cannabis use, subjective norm, self-efficacy towards non-use and intention of use. Furthermore, two criterion variables were included: a) cannabis use in the previous 30 days, an item adapted from the European School Survey Project on Alcohol and Other Drugs, ESPAD (Hibell et al., 2012), and b) the problematic use scale *Cannabis Abuse Screening Test - CAST* (Fernández-Artamendi, Fernández-Hermida, Muñoz-Fernández, Secades-Villa & García-Fernández, 2012; Klemptova et al., 2009; Legleye et al., 2007).

Attitude to cannabis use. Attitudes are measured by four items about beliefs regarding the consequences of consuming and their assessment. This scale has two dimensions: a) the items in the first block measure to what extent marijuana or hashish is considered to influence a set of beliefs (e.g. "helps you relax"), with a Likert-type response scale of 5 points from 1 (*unlikely*) to 5 (*very likely*), and b) since attitudes depend not only on beliefs but also on the person's assessment of each of those beliefs, a second block of items measures how important the aspects listed in the first block are to each person, with a 5-point response scale from 1 (*not important*) to 5 (*very important*). Thus, two people can believe with the same strength that cannabis helps to relax, but one of them may value such relaxation very positively, while for the other it may be undesirable. These two dimensions are combined in a multiplicative fashion to obtain a unique score as follows (a denotes the items of the beliefs dimension and b the items of the valuation dimension):

$$Attitude = \frac{\sum_1^n Attitude_N}{n. items} = \frac{(a_1 \times b_1)/5 + \dots + (a_n \times b_n)/5}{n. items}$$

Subjective norm. This is the most social component of the model and reflects the influence of the subject's immediate environment on his/her behaviour, that is to say, to what extent the subject's main reference groups would agree or not were he/she to use cannabis. It consists of two dimensions: a) normative beliefs regarding significant others or referents (close friends, person I like and companions) are operationalized with three items that denote the degree to which the closest people would agree if cannabis were used on a 5-point Likert response scale, from 1 (*strongly disagree*) to 5 (*strongly agree*); and b) the motivation to go along with the significant others or referents, with three items measuring how the opinion of these people in relation to the use of marijuana or hashish on a response scale from 1 (*not important*) to 5 (*very important*). These two dimensions are also combined in a multiplicative way to obtain a unique

score as follows (a denotes the beliefs dimension items, and b the items of the dimension measuring the motivation to accommodate the referents):

$$\text{Subjective norm} = \frac{\sum_1^n NS_N}{n. \text{items}} = \frac{(a_1 \times b_1)/5 + \dots + (a_n \times b_n)/5}{n. \text{items}}$$

Self-efficacy. Perceived behavioural control has been operationalized as a measure of self-efficacy, since both concepts refer to the perceived ability to perform a particular behaviour (Bandura, 1982). This scale gathers a series of beliefs about the extent to which the individual feels capable of not using cannabis in different situations (for example, being able to “be with friends without smoking joints”). These beliefs can form part of one’s own experience of past behaviour or vicarious information about behaviour from family and friends, as well as depending on other factors that increase or reduce perceived difficulty in engaging in behaviour. The five items are measured with a 5-point Likert response scale, from 1 (*not capable*) to 5 (*fully capable*).

Intention to use. This consists of three items on “the intention to consume marijuana or hashish,” “planning to consume marijuana or hashish soon,” and “wanting to consume marijuana or hashish if the opportunity presents itself.” The response scale is a 5-point Likert-type measure, from 1 (*definitely not*) to 5 (*definitely yes*).

Procedure

In order to meet the objective proposed in this research, these phases were followed: 1) review of the main scales and questionnaires available focusing on the consumption of cannabis and associated problems (see Table 1); 2) questionnaire item development following guidelines for questionnaire creation within the TPB framework (Ajzen, 2002), 3) review and cleaning up of the item bank by a panel of 14 independent expert judges who evaluated comprehension and content with regard to the relevance and adequacy of the items for evaluating TPB dimensions, with the aim of guaranteeing evidence of content validity, 4) implementation of a pilot study using a semi-structured questionnaire that included open-ended questions about other benefits/negative effects of cannabis use (attitudinal beliefs) and identification of other relevant people (subjective norm), after which some items were eliminated whose score correlated poorly with the other items of its scale, while no new aspects to be included were identified in the responses to the open questions, and 5) application of the final questionnaire to a group of 1011 students.

In all cases, the questionnaires were administered in the classroom by experts, who explained the instructions and purpose of the study. The students responded to the paper questionnaire anonymously in the classrooms of their

secondary schools in the provinces of Albacete, Alicante, Cuenca, Madrid, Badajoz and Valencia. Parental consent was obtained as well as that of school management.

Data analysis

An initial exploratory analysis of the data was carried out which included checking the distribution of variables and for the existence of extreme data through stem-and-leaf plots, and their suitability for parametric analysis was assessed. Next, item analysis was performed by calculating the mean, standard deviation, asymmetry, and kurtosis. Due to the non-normality of the distribution of the variables it was decided to use robust methods (Brown, 2015; Satorra & Bentler, 1994). The missing values were treated using the listwise deletion method (Bentler, 2004), where the records in which missing data appeared were excluded. Due to the ordinal nature of the variables, alpha ordinal and omega reliability indices (Zumbo, Gadermann and Zeisser, 2007; Elosua and Zumbo, 2008) were calculated. To study sources of validity in relation to the internal structure of the test, confirmatory factor analysis was performed with structural equations based on the four-dimensional structure of TPB and in comparison with the one-dimensional model in order to analyse potential common method bias (Podsakoff, MacKenzie, Jeong-Yeon and Podsakoff, 2003). For the estimation of the models, the polychoric correlation matrices were used in accordance with the ordinal nature of the variables (Bentler, 2004). Model fit was evaluated using the chi-square index, Bentler-Bonett Non-Normed Fit Index (NNFI), Comparative Fit Index (CFI), and the root mean-square error of approximation (RMSEA) with 90% confidence interval. The chi-square index analysis has been widely used, although it has been considered too strict, especially with studies of large sample sizes, in which in most cases it is significant. Therefore, alternative fit indices have been proposed, such as the NNFI, which is based on the index developed by Tucker and Lewis (1973) and has the advantage of adequately reflecting the fit in samples of different size. Having said that, however, it also has the disadvantage of not being a good estimator for noncentral parameters (Bentler, 2004). The robust CFI index was thus proposed, which is a better estimator of noncentral parameters (Bentler, 2004). In addition, absolute adjustment indices based on the non-centrality of parameters, such as RMSEA with 90% confidence interval, were used. The main advantage of the latter is that it is one of the indices least affected by sample size (Browne and Cudeck, 1992; Jöreskog and Sörbom, 1993). Due to the differences in consumption between the participants, a factorial invariance analysis by sex was also carried out following the procedure presented by Dimitrov (2010) with the purpose of analysing the internal consistency of the test in the groups of boys and girls. To study validity evidence in relation to other criterion variables, Spearman correlations be-

Table 2. *Item analysis and score reliability.*

	Mean	SD	Asymmetry	Kurtosis	λ	p	Communality	α	ω	AVE
<i>Attitude_1</i>	2.56	1.39	0.30	-0.92	0.60	0.98	0.36	0.68	0.68	0.34
<i>Attitude_2</i>	2.36	1.33	0.44	-0.79	0.57	0.98	0.33			
<i>Attitude_3</i>	1.82	1.30	1.02	0.18	0.58	0.98	0.33			
<i>Attitude_4</i>	1.14	1.19	1.94	3.14	0.60	0.98	0.36			
<i>SN_1</i>	1.62	0.94	1.44	2.08	0.66	0.97	0.44	0.58	0.58	0.32
<i>SN_2</i>	1.33	0.76	1.51	4.08	0.51	0.97	0.26			
<i>SN_3</i>	1.42	0.91	1.90	3.76	0.52	0.97	0.27			
<i>SETNU_1</i>	4.53	1.05	-2.35	4.45	0.66	0.98	0.44	0.79	0.79	0.43
<i>SETNU_2</i>	4.56	1.01	-2.46	5.08	0.68	0.99	0.46			
<i>SETNU_3</i>	4.24	1.13	-1.44	1.13	0.61	0.98	0.37			
<i>SETNU_4</i>	4.62	0.94	-2.73	6.78	0.67	0.99	0.44			
<i>SETNU_5</i>	4.46	1.10	-2.05	3.12	0.65	0.98	0.42			
<i>Intention_1</i>	1.70	1.20	1.64	1.50	0.68	0.99	0.46	0.77	0.77	0.47
<i>Intention_2</i>	1.59	1.17	1.98	2.68	0.70	0.99	0.49			
<i>Intention_3</i>	1.69	1.19	1.68	1.66	0.68	0.99	0.46			

Note. SD Standard Deviation; λ completely standardised weighing; p associated p value; α ordinal alpha coefficient; ω omega coefficient; AVE average variance extracted.

tween the proposed TPB model variables and cannabis use in the previous month and the CAST questionnaire scores were calculated. The TPB predictive model was also put to the test in relation to cannabis use through the application of path analysis. Finally, the ROC curve analysis with the criteria of having used cannabis in the previous 30 days and a cut score 3 of CAST (Legleye et al., 2015) allowed cut-off points to be established for the risk of cannabis use and the risk of problems arising from its use, respectively. Statistical packages used were SPSS © Version 22 and EQS © Version 6.3.

Results

Item analysis and reliability

Positive asymmetries are shown in the item scores on the attitudes, subjective norm and intention scales, whereas the scale for self-efficacy towards non-use shows negative asymmetries, which takes into account the reverse direction of the self-efficacy towards non-use scale in comparison to the other constructs presented in the proposed model. Kurtosis varies widely from -0.92 to 6.78. The items presented moderate standardized factor loads for the attitudes and subjective norm scales, varying from 0.51 to 0.66, while standardized factor loads were higher on the self-efficacy towards non-use and intention scales (between 0.61 and 0.70). On the scales of attitudes, self-efficacy towards non-use and intention, reliability coefficient scores were above 0.70, the level recommended for reliability analyses (Nunnally & Bernstein, 1995), while for the subjective norm scale a value of 0.58 was obtained.

Analysis of the internal structure of the test

The four-dimensional model based on TPB presented an adequate fit (Figure 1). The goodness of fit indices exceed those recommended (Mulaik, et al., 1989; MacCallum, Browne & Sugawara, 1996). As for the comparison of the four-dimensional model with the one-dimensional model, the difference was significant ($\Delta S B \chi^2 = 571.94$, $\Delta g l = 6$, $p < 0.01$) and the one-dimensional model obtained worse goodness of fit indices (CFI = 0.775 ; NNFI = 0.738; RMSEA = 0.165; 10% CI RMSEA = 0.159-0.170), which shows that the data support the proposed four-dimensional model. The mean extracted variance from the self-efficacy and intention factors did not exceed the 0.50 cut-off point proposed by Fornell and Larcker (1981), only the attitudes and intention scales coming close with an average variance extracted of 0.43 and 0.47, respectively.

Factor invariance analysis of the measurement model (Table 4) indicated strict measurement invariance with respect to boys and girls, according to the classification proposed by Dimitrov (2010). Multi-group comparison indicated the equivalence of factorial loads (Model 1), the equivalence of intercepts with the exception of item *Attitude_4* (Model2PA), and the equivalence of residual variances except for items *Attitudes_3* and *Attitudes_4* (Model3PB). Even with the proposed exceptions, Dimitrov (2010) recognizes that partial invariance of up to 20% of the items would be acceptable. Moreover, although in this case an acceptable partial invariance of the residual variances was obtained, it has been recognized that tests of strict metric invariance or invariant item uniqueness are excessively restrictive (Bentler, 2004; Byrne, 1988). Therefore, based on the re-

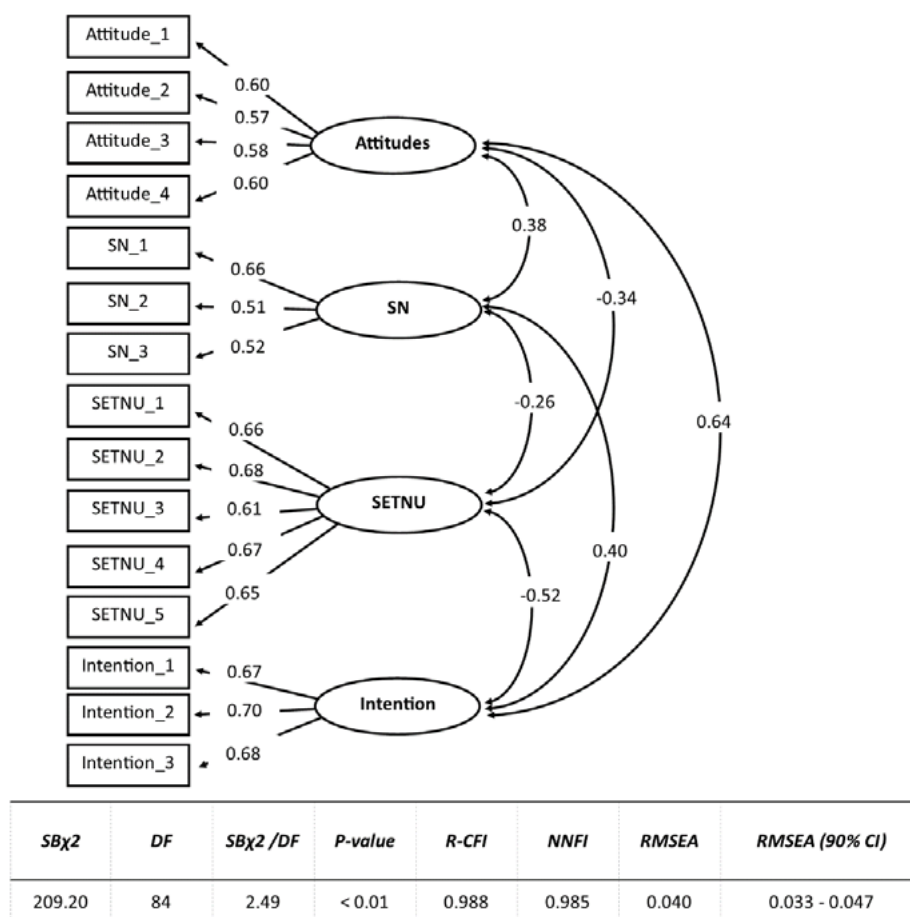


Fig. 1. Measurement model fit.

Note. Bχ² Satorra-Bentler chi-square; DF degrees of freedom; R-CFI Robust Comparative Fit Index; NNFI Non-Normed Fit Index; RMSEA Root Mean-Square Error of Aproximation.

Table 3. Factorial invariance analysis by sex.

Model	SBχ ²	DF	R-CFI	RMSEA(90% IC)	ΔSBχ ²	ΔDF	p
Model0	17.86	160	1	0	-	-	-
Model1	366.72	175	0.945	0.048(0.041-0.055)	0.013	15	1
Model2	423.47	190	0.948	0.049(0.042-0.056)	65.59	15	<0.01
Model2PA	371.18	189	0.958	0.044(0.037-0.056)	17.21	14	0.245
Model3	419.60	204	0.952	0.047(0.041-0.054)	44.03	15	<0.01
Model3PA	402.22	203	0.956	0.045(0.038-0.054)	29.87	14	0.008
Model3PB	375.37	202	0.962	0.043(0.036-0.049)	16.47	13	0.225
Model4	508.39	199	0.925	0.057(0.051-0.064)	85.73	14	<0.01

Note. Model_0: Unconstrained; Model_1: fixed and equal factor loadings; Model_2: Model_1 with fixed and equal item intercepts; Model_2PA partially invariant with free intercept of Attitude 4; Model_3: Model_2 with fixed and equal residual variances/covariances; Model_3PA: Model_3 partially invariant with fixed and equal residual variances/covariances of Attitude_4 and Attitude_3 free; Model_3PB: partially invariant with fixed and equal residual variances/covariances of Attitude_4 and Attitude_3 free; Model_4: Model_2 with fixed and equal factorial variances/covariances; SBχ² Satorra-Bentler chi-square; DF degrees of freedom; R-CFI robust comparative fit index; RMSEA root mean-square error of approximation; ΔSBχ² scaled difference of SBχ².

Table 4. Spearman correlations, scores on CUIQ scales and cannabis use and CAST.

	Attitudes	Social Norm	Self-efficacy towards non-use	Intention
Cannabis use	0.38**	0.32**	-0.35**	0.65**
CAST	0.38**	0.33**	-0.34**	0.58**

Note. **correlations significant at 0.01.

sults obtained, mean factor scores could be compared between both groups as could correlations between factors and other external variables since the change in one would also be equivalent in both groups. These results substantiate the good fit of the items to the dimensionality proposed by TPB.

Association of test scores with other variables

The attitude, subjective norm and intention variables showed significant and positive correlations with cannabis use in the previous month, as well as with CAST scores (Table 5). In line with expectations, self-efficacy towards non-use presented a negative correlation with the two measures of use: in the previous month ($r = -0.35, p < 0.01$) and CAST ($r = -0.34, p < 0.01$). According to TPB, the intention to perform a given behaviour is the best predictor of the effective performance of said behaviour, which in this study is evidenced by the high correlations between the intention variable and the two measures of use, with said correlations varying between 0.59 and 0.65 depending on the sample ($p < 0.01$).

The path analysis of the proposed model revealed a good fit (Figure 2). The effect of attitudes and subjective norm on cannabis use was mediated by intention, whereas self-efficacy towards non-use also showed a direct effect on consumption. The predictor variables explained 38% of the variance in intention, and, in turn, intention together with self-efficacy explained 57% of the variance in cannabis use.

Previous 30 day use ROC curve and CAST

Analyses of ROC curves (Table 6, Figures 3 and 4) indicate that intention is the factor that best classified both cannabis use and risk of problems due to use, measured as cut-off point 3 in CAST (Legleye et al., 2015). Areas under the intention curve were high (0.93 for cannabis use and 0.87 for risk measured with CAST). The cut-off point of 1.83 in intention adequately classified 87% of users and 87% of non-users, while the cut-off point of 2.17 in intention for risk of problems due to cannabis use adequately classified 82% of participants at risk and 82% in non-risk situations. The cut-off points of attitudes, subjective norm and self-efficacy had lower sensitivity and specificity than intention.

Discussion

The objective of this study was to construct and validate a questionnaire for the purpose of evaluating the intention to use cannabis and its predictors among adolescents. The design was based on the conceptual framework of TPB, which claims that intention is the main predictor of behaviour, while attitudes, subjective norm and self-efficacy are the antecedents of intention. Based on the results obtained, it can be concluded that the scores of the CUIQ scales have good psychometric properties. The reliability statistics of each subscale were adequate, with the exception of subjective norm, which yielded slightly lower results. These results are in line with those obtained by other authors,

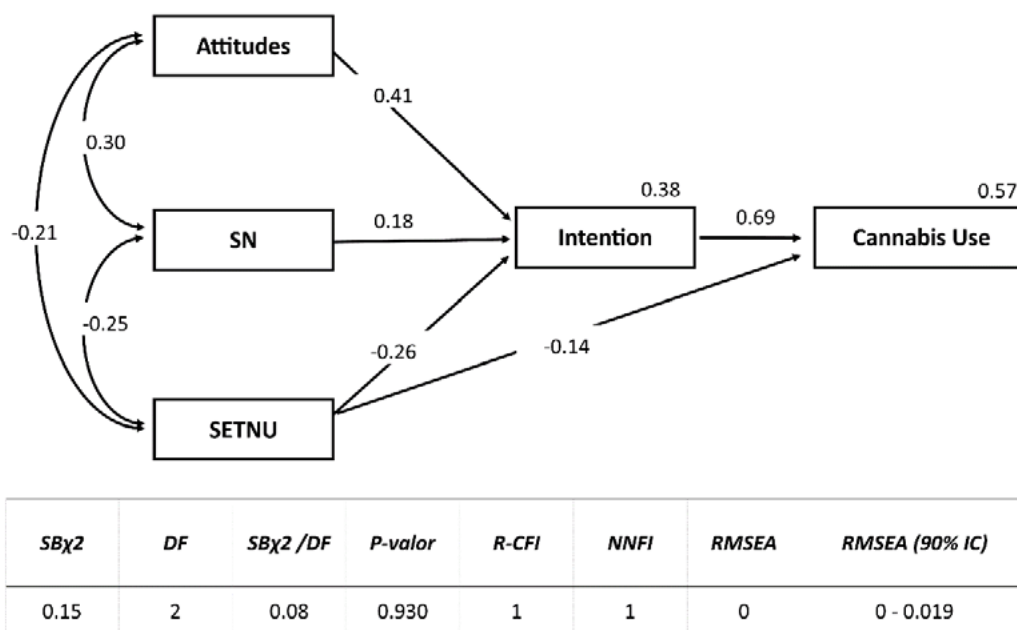


Fig. 2. Standardised coefficients of the TPB predictive model

Note. SBχ² Satorra-Bentler chi-square; DF degrees of freedom; R-CFI Robust Comparative Fit Index; NNFI Non-Normed Fit Index; RMSEA Root Mean-Square Error of Aproximation..

Table 5. ROC curve: consumption previous 30 days and CAST.

		AUC	Cut score	Susceptibility	Specificity
Cannabis 30 days	Attitudes	0.79	2.28	0.71	0.75
	SN	0.74	1.50	0.71	0.70
	Self-efficacy (*)	0.74	4.78	0.71	0.68
	Intention	0.93	1.83	0.87	0.87
CAST	Attitudes	0.82	2.63	0.73	0.79
	SN	0.70	1.72	0.62	0.73
	Self-efficacy (*)	0.76	3.90	0.56	0.86
	Intention	0.87	2.17	0.82	0.82

Note. AUC area under the curve; * Inverted.

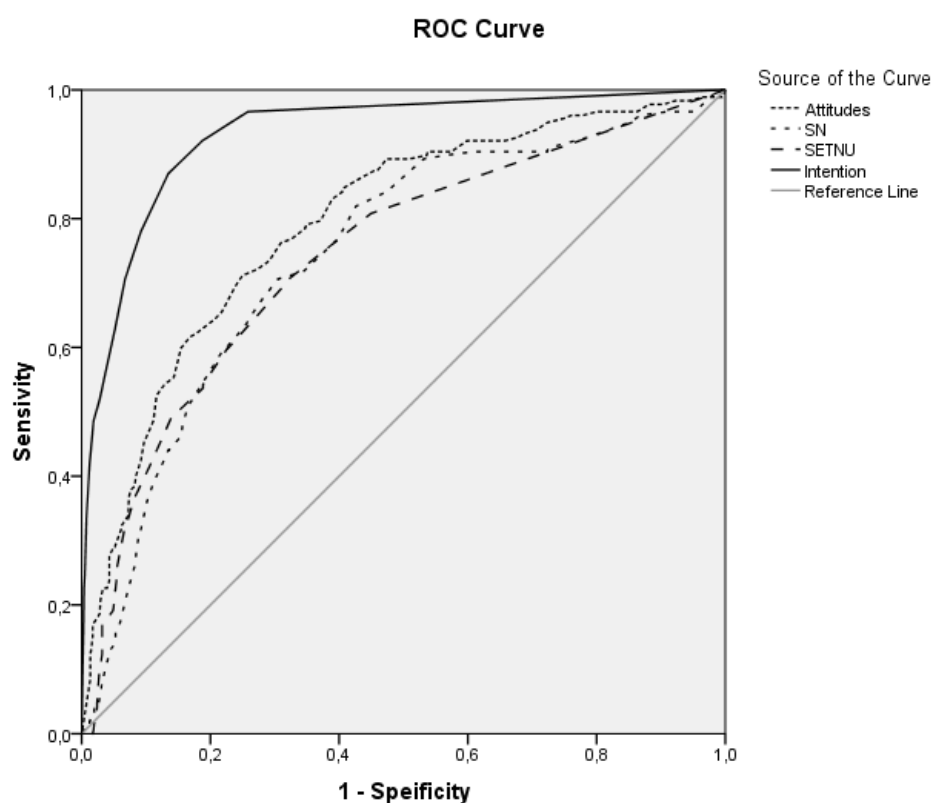


Fig. 3. 30 day use ROC curve

who also found a lower predictive capacity of subjective norm (Armitage & Conner, 2001; McMillan & Conner, 2003). Once the sampling was performed, analysis of the internal structure of the test and the factorial invariance with respect to gender suggest high generalizability of the questionnaire in the population of Spanish adolescents. The proposed predictive model, and in particular the variable intention to use, point to adequate evidence of validity in relation to cannabis use and to the probability of experiencing problems related to use, as reflected in the CAST score.

Having a validated questionnaire to measure the intention to use cannabis during adolescence is useful for monitoring populations, detecting early intervention needs and evaluating preventive interventions, all the more so when considering that most of the instruments available in Spanish are aimed at the adult population, which may present differences to the adolescent population, in particular as regards the understanding of the questions or the capacity for sustained attention required for the completion of a questionnaire. The CUIQ has therefore been specifically designed to be a brief questionnaire, easily understood by

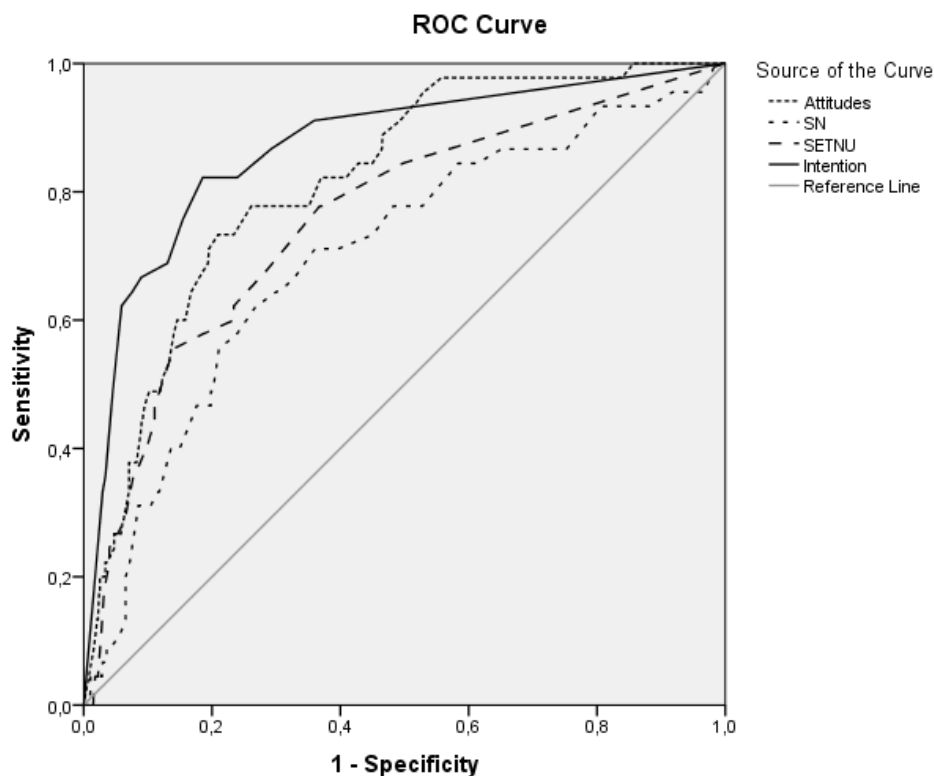


Fig. 4. CAST ROC curve

minors, which can be administered individually or in group in a simple way by teachers or other professionals working with adolescents, such as psychologists or social workers. For this purpose, a manual and an Excel spreadsheet for scoring have been developed alongside the questionnaire, aiming to facilitate its use especially in the educational field. Its application in the CAPPYC prevention project has demonstrated its usefulness in evaluating a program to prevent cannabis abuse among younger consumers.

The CUIQ presents some differences compared to other questionnaires such as CPQ-A, validated in Spain by Fernández-Artamendi et al. (2012), such as the lower number of items and the use of 5-point Likert scales (instead of dichotomous yes/no answers). In addition, it was developed within the TPB (Ajzen, 1991) framework. Compared to other scales, the CUIQ measures factors linked to cannabis use which are susceptible to change through preventive interventions and, therefore, enables pre- and post-intervention measures to be compared. However, as with any self-report measure, it is not without limitations, such as the potential lack of honesty if the anonymity of the questionnaire is doubted, or if the estimate of use is too low. Nevertheless, self-report measures are widely used for the screening of problematic substance use as well as

for other types of addictive behaviour. This new questionnaire should on no account be taken for a diagnostic tool, since it aims to be a useful instrument for prevention, in combination with programs specially designed for this purpose, by identifying intervention needs and evaluating the impact of such programs.

This study paves the way for future lines of research. Firstly, validation is considered necessary in other cultural contexts. Secondly, a longitudinal study would deepen the analysis of the evidence regarding predictive validity. Similarly, expanding the target population in further studies with slightly older subjects, in early adulthood for example or adults, would confirm its generalizability. It is important that this new questionnaire is not restricted to occasional administrations, but is accompanied by an intervention that focuses on a reduction or total elimination of cannabis use.

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Conflict of interests

The authors have no conflicts of interest to report.

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