

Internalizing and externalizing personality and subjective effects in a sample of adolescent cannabis users

Personalidad internalizante y externalizante y efectos subjetivos en una muestra de adolescentes consumidores de cánnabis

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Abstract

Cannabis is the illicit substance most widely used by adolescents. Certain personality traits such as impulsivity and sensation seeking, and the subjective effects experienced after substance use (e.g. euphoria or relaxation) have been identified as some of the main etiological factors of consumption. This study aims to categorize a sample of adolescent cannabis users based on their most dominant personality traits (internalizing and externalizing profile). Then, to make a comparison of both profiles considering a set of variables related to consumption, clinical severity and subjective effects experienced. From a cross-sectional design, 173 adolescents (104 men and 69 women) aged 13 to 18 asking for treatment for cannabis use disorder in an Addictive Behavior Unit (UCAD) from the hospital were recruited. For the assessment, an *ad hoc* protocol was employed to register consumption, the Millon Adolescent Clinical Inventory (MACI) and the Addiction Research Center Inventory (ARCI) 49-item short form were also administered. Factor analysis suggested a two-profile solution: Introverted, Inhibited, Doleful, Dramatizing (-), Egotistic (-), Self-demeaning and Borderline tendency scales composed the internalizing profile, and Submissive (-), Unruly, Forceful, Conforming (-) and Oppositional scales composed the externalizing profile. The comparative analysis showed that the internalizing profile has higher levels of clinical severity and more subjective effects reported than the externalizing profile. These results suggest the need to design specific intervention strategies for each profile.

Keywords: Adolescents; Cannabis; Internalizing personality; Externalizing personality; Subjective effects.

Resumen

El cánnabis es la sustancia ilícita más consumida por los adolescentes. Determinados rasgos de personalidad, como la impulsividad y la búsqueda de sensaciones, así como los efectos subjetivos experimentados tras el consumo (p.e. euforia o relajación), se han identificado como algunos de los principales factores etiológicos de consumo. Este estudio tiene por objetivo categorizar a una muestra de adolescentes consumidores de cánnabis en función de sus rasgos de personalidad más predominantes (perfil internalizante y externalizante) para, posteriormente, realizar una comparación de ambos perfiles a partir de un conjunto de variables asociadas al consumo, la gravedad clínica y los efectos subjetivos experimentados. A partir de un diseño transversal, se reclutaron 173 adolescentes (104 hombres y 69 mujeres) de 13 a 18 años, que demandaron tratamiento por Trastorno por Uso de Cánnabis en la Unidad de Conductas Adictivas (UCAD) del Hospital. Para la evaluación se utilizó un protocolo *ad hoc* para registrar el consumo, el Inventario Clínico para Adolescentes de Millon (MACI) y la versión abreviada del *Addiction Research Center Inventory* (ARCI)-49. El análisis factorial sugirió una solución en 2 perfiles: las escalas Introvertido, Inhibido, Pesimista, Histriónico (-), Egocéntrico (-), Autopunitivo y Tendencia límite forman el perfil internalizante, y las escalas Sumiso (-), Rebelde, Rudo, Conformista (-) y Oposicionista el externalizante. El análisis comparativo mostró que el perfil internalizante presenta mayores niveles de gravedad clínica y reporta más efectos subjetivos que el externalizante. Estos resultados sugieren la necesidad de diseñar estrategias de intervención específicas para cada perfil.

Palabras clave: Adolescentes; Cánnabis; Personalidad internalizante; Personalidad externalizante; Efectos subjetivos.

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Cannabis is the most widely used illicit substance consumed by adolescents worldwide (United Nation Office on Drugs and Crime, 2014). In Spain, survey conducted among school students between the ages of 14 and 18 reveals that 33.6% have consumed it at least once in their lives, 22.6% in the last year, 16.1% in the last 30 days and 2.7% on a daily basis, with a higher percentage of adolescent boys consuming than adolescent girls (3.8% vs. 1.5%) (Spanish Observatory on drugs, 2014).

An early onset age for use is related to a greater risk of problematic use (Martínez-Lorca & Alonso-Sanz, 2003), the later use of other illicit drugs (Swift et al., 2012), of the presence of cerebral alterations (DuPont & Lieberman, 2014; Jacobus & Tapert, 2014), of cognitive processing (Alameda-Bailén, Salguero-Alcañiz, Merchán-Clavellino, & Paño-Quesada, 2014; Becker, Wagner, Gouzoulis-Mayfrank, Spuentrup, & Daumann, 2010; Grant, Chamberlain, Schreiber, & Odlaug, 2012) and motor functions being affected (Hall & Degenhardt, 2009), with the exacerbation of psychopathological symptoms in adulthood (Arias et al., 2013; Chen et al., 2011; Cuenca-Royo, Torrens, Sánchez-Niubó, Selves, & Domingo-salvany, 2013; Muro i Rodríguez, 2015; Rubino, Zamberletti, & Parolaro, 2012) and with a higher probability of academic failure (Volkow, Baler, Compton, & Weiss, 2014).

The etiology of cannabis use – sporadic or problematic – in the adolescent population is multi-causal (Hemphill et al., 2011), with several risk factors being involved: namely individual factors (Magallón-Neri et al., 2012; Szerman, Goti, Díaz, & Arango, 2014; ter Bogt et al., 2014), familial factors (Becoña, Fernández del Río, Calafat, & Fernández-Hermida, 2014; Brière, Fallu, Descheneaux, & Janosz, 2011; Creemers et al., 2015), school factors (Guxens, Nebot, Ariza, & Ochoa, 2007; Hall & Degenhardt, 2009) and factors related to the personal environment (European Monitoring Centre for Drugs and Drug Addiction, 2014; Peñafiel, 2009; Szerman et al., 2014).

Among the individual risk factors, certain personality traits stand out (Belcher, Volkow, Moeller, & Ferré, 2014; Gunnarsson, Gustavsson, Tengström, Franck, & Fahlke, 2008; Marquez-Arrico & Adan, 2013) such as high levels of impulsiveness, sensation-seeking, dissocial traits, and a low predisposition to harm avoidance (Gunnarsson et al., 2008; Munno, Saroldi, Bechon, Sterpone, & Zullo, 2015; Walther, Morgenstern, & Hanewinkel, 2012), which are aggravated by continuous use (Chakroun, Doron, & Swendsen, 2004). Deficits in emotional regulation and negative affectivity have also been associated with use (Chabrol, Melioli, & Goutaudier, 2014; Creemers et al., 2009). In studies that have been carried out among adolescent users and non-users using the Millon Adolescent Clinical Inventory (MACI) (Millon, 1993) it has been observed that the consumers showed higher scores on the *Unruly*, *Force-*

ful, *Oppositional* and *Borderline* personality scales (Becoña et al., 2011; Fantin, 2006) and lower scores on the *Submissive* and *Conforming* scales (Faúndez & Vinet, 2009). However, studies of adolescents are scarce, possibly owing to the lack of consensus on the applicability of the construct of personality at early ages or in adolescence (Adshead, Brodrick, Preston, & Deshpande, 2012).

In order to help the study of personality, some authors have suggested encompassing it within the internalizing and externalizing dimensions (Achenbach & Edelbrock, 1984) and the research shows that they do explain the greater part of the associations between personality patterns, psychopathological indicators and clinical dysfunction in patients (Cosgrove et al., 2011; Harford et al., 2013; Hink et al., 2013; Hopwood & Grilo, 2010).

Elsewhere, several studies determine that the problematic use of cannabis is also related to the subjective experience that is obtained by its use (Zeiger et al., 2010). Subjective effects are characterized in two sub-types: 1) positive effects; linked to agreeable sensations such as euphoria, relaxation or sensorial alteration, and 2) negative effects; linked to disagreeable experiences such as anxiety, paranoia, hallucinations, sadness or nausea. Cannabis users may report both (Block, Erwin, Farinpour, & Braverman, 1998; Scherrer et al., 2009; Zeiger et al., 2012). These effects have shown themselves to be good predictors of cannabis abuse or dependency (Pedrero Pérez, 2003; Zeiger et al., 2012). Among the adolescent population it has been observed that the subjective positive experiences before the age of 16 are linked to cannabis dependency in adulthood (Fergusson, Horwood, Lynskey, & Madden, 2003). More recently, it has been observed that experiencing subjective positive and negative effects, known as “high response”, is linked to a tendency to develop cannabis dependency (Scherrer et al., 2009) and to the presence of higher levels of use of other illegal substances (Zeiger et al., 2012).

Given the importance of personality traits in the onset and maintenance of use and of the subjective effects on the development of problematic cannabis use, as well as the paucity of the data existing in the subject, this study is presented with the following objectives. Firstly, to discriminate between the personality traits that are present in a clinical sample of adolescent cannabis users by means of the categorization into two personality profiles: internalizing and externalizing. Secondly, to make a comparison of both profiles by means of a set of variables that are associated with consumption, such as: gender, age of onset of consumption, age of regular consumption, age at which treatment was sought, hourly use patterns, clinical seriousness and the subjective effects experienced after use.

Methods

This is an exploratory, cross-sectional study.

Sample

In order to carry out the present research, a total of 173 adolescents who had come to the Unidad de Conductas Adictivas (Addictive Behaviors Unit) of the Hospital's Psychiatric and Psychological Service (anonymized for peer review) seeking treatment for cannabis use.

The inclusion criteria for the sample were: 1) to be under the age of 18, and 2) to show signs of cannabis abuse or dependency. On the other hand, the exclusion criteria were: 1) having an acute mental pathology that prevented the subject from understanding the questionnaires.

The final sample was made up of a total of 173 subjects: 60.1% (n = 104) adolescent boys and 39.9% (n = 69) adolescent girls, with an average age of 15.67 (SD= 1.23).

Regarding the academic background, of the 173 subjects, 70.5% (n = 22) were studying, 69.4% (n = 120) had been held back a year and 29.5% (n = 51) had dropped out. At the time of evaluation the sample group were either in, or had been in, the following school years: 13.3% (n = 23) in the 2nd year of compulsory secondary education (CSE) 27.7% (n = 48) in the 3rd year of CSE, 31.2% (n = 54) in the 4th year of CSE, 8.7% (n = 15) in the 1st year of senior high school (SHS) 0.6% (n = 1) in 2nd year of SHS, 8.1% (n = 14) in vocational courses leading to professional qualifications (VCPQ), 0.6% (n = 1) at university and 9.8% (n = 17) in other academic situations.

Evaluation tools / Analysis

In order to gather the necessary information for the research, the socio-demographic variables referring to gender, age and academic level were collected. Variables relating to the use of cannabis were obtained by means of an *ad hoc* protocol in which the onset age of consumption, the age at which use became regular, the age when treatment was sought and the hourly use pattern (before entering class, during recess, midday, afternoons/evenings, before going to sleep) were all registered.

In order to determine whether there was Substance Use Disorder, the Spanish version of the Substance Abuse Supplement of the *Kiddie-Schedule for Affective Disorders & Schizophrenia, Present & Lifetime Version* (K-SADS-PL) semi-structured diagnostic interview was used; (Kaufman et al., 1997; Ulloa et al., 2006) which is based on the criteria of the DSM-IV. The K-SADS.PL is designed to analyze episodes of psychopathology in children and adolescents (from the age of 6 to 17) both in the past and in the present. The reliability coefficients of the Spanish version of the scale go from 0.76 for major Depressive Disorder to 1 for Dissocial Disorder.

In order to evaluate personality patterns and the clinical severity of the patients the Spanish version of the Millon Adolescent Clinical Inventory (Millon, 1993) was used. The MACI is a questionnaire that is designed to analyze personality traits in adolescents (from the age of 13 to 19),

which consists of 160 true-false items and is arranged into 31 scales, 27 clinical and 4 non-clinical. These are: Twelve *Personality Patterns Scales* which reveal personality styles that arise during child development and stabilize during adolescence (*Inhibited, Doleful, Submissive, Dramatizing, Egotistic, Unruly, Forceful, Conforming, Oppositional, Self-demeaning, and Borderline tendency*). Eight scales of *expressed concerns* focused on areas of adolescent development (*Identity Confusion, Self-Devaluation, Body Disapproval, Sexual Discomfort, Peer Insecurity, Social Insensitivity, Family Discord and Childhood Abuse*). Seven scales of *clinical syndromes* that involve highly prevalent disorders among adolescents: (*Eating Dysfunctions, Substance-Abuse Proneness, Delinquent Predisposition, Impulsive Propensity, Anxious Feelings, Depressive Affect, Suicidal Tendency*). One scale of validity of the protocol (*Reliability*) and three modifying indices that allow for certain response tendencies to be controlled (*Disclosure, Desirability, Debasement*); (Faúndez & Vinet, 2009). This tool was validated among the Spanish population and the reliability coefficients of the scales were between 0.65 (*Sexual Discomfort*) and 0.91 (*Self-Devaluation*). Among the personality pattern scales, the coefficients go from 0.69 (*Submissive*) to 0.90 (*Self-demeaning*); (Millon & Aguirre, 2004). In the sample for this study, the reliability coefficient for all the items was of 0.66.

In order to study the subjective effects that adolescents experience when consuming cannabis, the Spanish version of the short-form *Addiction Research Center Inventory* (ARCI)-49 (Martin, Sloan, Sapira, & Jasinski, 1971) was administered, as this is one of the most widely-used questionnaires in the field of clinical testing of substances with potential for abuse (Poudevida, Farré, Roset, & Camí, 2003). This questionnaire consists of 49 true-false questions and is made up of 5 scales that differentiate 5 subjective effects: 1) the *Morphine-Benzadrine Group* (BMG) scale, which measures the effect of *Euphoria*, 2) the *Pentobarbital-Chlorpromazine-Alcohol Group* (PCAG) scale, which measures the *Sedation* effect, 3) the *Lysergic Acid-Diethylamide* (LSD) scale, which measures *Dysphoria* and psychotomimetic changes, 4) the *Benzadrine Group*, which measures the *Stimulant-sensitive* scale and 5) the A scale, or *Amphetamine Group*, which measures *Amphetamine* effects. This instrument was validated among the Spanish population and the reliability coefficients were of between 0.87 for the PCAG scale; 0.81 for MBG, 0.55 for LSD, 0.79 for BG and 0.49 for A (Lamas, Farré, Llorente, & Camí, 1994). In the sample group for the current study, the reliability coefficient for the 49 items was 0.78.

Procedure

The research was carried out entirely at the Hospital's Unidad de Conductas Adictivas de adolescentes (Adolescent Addictive Behaviors Unit) and was anonymized for peer revision.

Prior to the work being undertaken, approval was obtained from the hospital's Ethics Commission, taking

into account the internal ethics regulations and those of the World Medical Association and the 1975 Declaration of Helsinki with its successive amendments (CIOMS and WHO, 1993) and all participants gave their written consent after being duly informed of the project, its aims, the confidentiality agreement and personal data protection. Participation in the study was not remunerated.

All participants were assessed by the unit's clinical psychologist over two sessions of approximately 45 minutes' duration. In the first session, the psychological anamnesis was conducted and participants' socio-demographic and use data were recorded (*ad hoc* protocol). In the second session, the MACI and ARCI-49 questionnaires were administered to the participants and were later checked to make sure they had been duly completed.

Statistical Analysis

Version 18 of the *Statistical Package for the Social Sciences* (SPSS), (SPSS Inc., 1988) was used for the statistical analysis of the data gathered.

In order to analyze the prevalence of the different socio-demographic characteristics and the variables associated with use that were considered, both descriptive and frequency-distribution analyses were carried out.

Next, the MACI personality pattern scales were categorized into profiles by means of factor analysis carried out through the extraction of the principal elements and VARIMAX rotation from which the internalizing/externalizing profiles were obtained. Once these had been obtained, the sample was distributed over both profiles by means of a K-means cluster analysis and the differences between these were analyzed according to the socio-demographic variables and the variables related to consumption. In order to do this, a comparison of means was performed using Student t test for independent samples (for the quantitative variables) and the Chi-square test, calculated from 2X2 contingency tables (for the nominal variables).

The statistical significance of all the tests was considered with a probability level of 5% or lower, with the exact significance that the SPSS offered always being indicated.

Results

Descriptive analysis of the sample

Regarding the use of cannabis, the average age of onset into use was 13.01 ($SD = 1.63$). The average age of regular use was 13.80 ($DE = 1.51$). The average age at which treatment was sought was 15.67 ($DE = 1.23$).

Regarding the hourly use pattern, of the whole sample ($n = 173$), some 63.6% ($n = 110$) smoke before going into school, 54.3% ($n = 94$) smoke during recess, 64.7% ($n = 112$) smoke at midday after class, 69.9% ($n = 121$) smoke during the afternoon/evening and 31.8% ($n = 55$) smoke before going to bed.

Exploratory factor analysis of the MACI

An exploratory factor analysis (EFA) was carried out to determine whether the Personality Pattern scales of the MACI could be represented by means of a two-profile structure: internalizing and externalizing (Hopwood & Grilo, 2010; Newman, Larsen, Cunningham, & Barry, 2015).

The Kaiser-Meyer-Olkin measure of sampling adequacy indicated that the relationship between the MACI personality patterns is notable ($KMO = .856$), and the Bartlett test for homogeneity of variances showed that the factor analysis ($X^2 = 1902.944$, $p < .001$) can be applied.

The Principal Components Analysis (PCA) indicated 2 factors with their own value that was greater than 1 (5.356, 3.732). A two-factor model was extracted which explains the variance of 75.73%; 44.12% with the first component and 31.62% with the second.

The rotated components matrix (Varimax) suggested the following cluster. The internalizing profile is made up of the *Introverted*, *Introverted*, *Inhibited*, *Doleful*, *Dramatizing* (negative sign), *Egotistic* (negative sign), *Self-demeaning* and *Borderline tendency* scales. The externalizing profile is made up of the *Submissive* (negative sign), *Unruly*, *Forceful*, *Conforming* (negative sign) and *Oppositional* scales. The negative values attached to the submissive and conforming scales indicate that a low score determines that they belong to the externalizing profile (see Table 1).

Analysis of the K-means cluster

Starting from the K-means cluster analysis, we classified the two profiles obtained by means of the factor analysis (internalizing and externalizing). In cluster 1, the internalizing profile, 49.1% ($n = 85$) of the participants are grouped. Cluster 2, the externalizing profile, is made up of 50.1% ($n = 88$) of the participants. The variance analysis

Table 1. Exploratory Factor Analysis of the MACI Personality Pattern Scales.

Scales	Component	
	Internalizing	Externalizing
Dramatizing (4)	-.864	
Introverted (1)	.844	
Egotistic (5)	-.841	
Self-demeaning (8B)	.835	
Doleful (2B)	.832	
Inhibited (2A)	.789	
Borderline tendency (9)	.692	
Unruly (6A)		.863
Forceful (6B)		.846
Submissive (3)		-.843
Conforming (7)		-.795
Oppositional (8A)		.647

of one factor (ANOVA) indicates that all of the scales are significantly different between the clusters, except *Forceful* ($p = .488$) which is the scale on which both clusters are most similar.

Comparative analysis between the internalizing and externalizing profiles

For the variables referring to age of onset, age of regular use and age at which treatment was sought, there are no statistically significant differences between the internalizing and externalizing profiles (see Table 2).

Regarding gender, of the total number of internalizing participants ($n = 85$), 58.8% are male and 41.2% ($n = 35$) are female. Of all the externalizing participants ($n = 88$),

61.4% are male compared to 38.6% ($n = 34$) who are female. There are no statistically significant differences between profiles by gender.

Regarding hourly use patterns, of the externalizing participants, 64.8% ($n = 57$) smoke before entering class and 59.1% ($n = 52$) during recess as opposed to 62.4% ($n = 53$) and 49.4% ($n = 56$) of the internalizing participants, respectively. In the same way, on leaving school at midday, 65.9% ($n = 56$) of the internalizing participants smoke as opposed to 63.6% ($n = 56$) of the externalizing participants. Of all the internalizing participants ($n = 85$), some 72.9% ($n = 62$) smoke during the afternoon/evening as opposed to 67% ($n = 59$) of the externalizing participants.

Table 2. Comparison between profiles by onset age for use, age of regular use and age at which treatment was sought.

Age	Total sample	Internalizing	Externalizing		Mean	SD	t	p
	(N = 173)	(n = 85)	(n = 88)	(n = 88)				
	Mean	SD	Mean	SD				
Onset age for use	13.01	1.63	13.02	1.57	13	1.69	-.533	s.i.
Age of regular use	13.80	1.51	13.74	1.48	13.86	1.53	.095	s.i.
Age at which treatment was sought	15.67	1.23	15.76	1.21	15.58	1.24	.986	s.i.

Note. s.i.: statistically insignificant differences according to the t Student test ($p > .05$).

Table 3. Comparison between profiles by hourly use patterns.

Hourly pattern	Total sample	Internalizing	Externalizing		n	%	Chi Squared	p
	(N = 173)	(n = 85)	(n = 88)	(n = 88)				
	n	%	n	%				
Before entering class								
Yes	110	63.6	53	62.4	57	64.8		
No	63	36.4	32	37.6	31	35.2	.109	s.i.
During recess								
Yes	94	50.3	42	49.4	50	59.1		
No	79	45.7	43	50.6	36	40.9	1.633	s.i.
At midday								
Yes	112	64.7	56	65.9	56	63.6		
No	61	35.3	29	34.1	32	36.4	.096	s.i.
In the afternoon/ evening								
Yes	121	69.9	62	72.9	59	67		
No	52	30.1	23	27.1	29	33	.715	s.i.
Before going to sleep								
Yes	55	31.8	34	40	21	23.9		
No	118	68.2	51	60	67	76.1	5.192	.023

Note. s.i.: statistically insignificant differences according to the Chi Squared test ($p > .05$).

Table 4. Comparison between profiles by the MACI expressed concerns and clinical syndromes scales.

MACI	Total sample (N = 173)		Internalizing (n = 85)		Externalizing (n = 88)		t	p
	Mean	SD	Mean	SD	Mean	SD		
Identity Confusion	54.49	22.69	64.35	20.43	44.97	20.70	6.197	<.001
Self-Devaluation	48.33	20.54	62.45	16.26	34.69	14.01	12.038	<.001
Body Disapproval	47.80	22.13	58.78	23.45	37.19	14.37	7.330	<.001
Sexual Discomfort	35.18	23.95	34.45	25.18	35.89	22.83	-.394	s.i.
Peer Insecurity	38.39	21.54	47.95	22.22	29.15	16.27	6.365	<.001
Social Insensitivity	79.11	25.82	68.21	26.31	89.64	20.54	-5.981	<.001
Family Discord	69.25	20.04	70.04	20.61	68.50	19.57	.502	s.i.
Childhood Abuse	57.21	21.07	67.68	19.41	47.10	17.43	7.342	<.001
Eating Dysfunctions	48.95	20.36	58.25	19.72	39.98	16.68	6.586	<.001
Substance-Abuse Proneness	86.69	17.66	90.12	16.85	83.39	17.88	2.545	.012
Delinquent Predisposition	83.87	22.96	76.49	23.51	90.99	20.09	-4.363	<.001
Impulsive Propensity	76.94	25.33	76.60	24.17	77.26	26.52	-.171	s.i.
Anxious Feelings	21.43	16.81	22.95	18.84	19.95	14.54	1.174	s.i.
Depressive Affect	42.05	21.47	56.46	16.87	28.14	15.44	11.523	<.001
Suicidal Tendency	52.23	18	62.36	14.88	42.43	15.14	8.729	<.001

Note. s.i.: statistically insignificant differences according to the t Student test ($p > .05$).

However, there are statistically no significant differences between the profiles for any of these four variables. Against that, 40% ($n = 34$) of the internalizing participants smoke before going to sleep as opposed to 23.9% ($n = 21$) of the externalizing participants, this difference being statistically significant ($p = .023$) (see Table 3).

Expressed Concerns (MACI)

For the *Expressed Concerns* category on the MACI, there are statistically significant differences between the profiles with the internalizing participants scoring significantly higher than the externalizing ones on the scales of: *Identity Confusion* ($t_{(171)} = 6.197$, $p < .001$, $IC\ 95\ %\ 13.21 - 25.56$, $d = 1$), *Self-devaluation* ($t_{(171)} = 12.038$, $p < .001$, $IC\ 95\ %\ 23.20 - 32.30$, $d = 1.8$), *Body Disapproval* ($t_{(171)} = 7.330$, $p < .001$, $IC\ 95\ %\ 15.77 - 27.39$, $d = 1.1$), *Peer Insecurity* ($t_{(171)} = 6.365$, $p < .001$, $IC\ 95\ %\ 12.97 - 24.63$, $d = 0.9$) and *Childhood Abuse* ($t_{(171)} = 7.342$, $p < .001$, $IC\ 95\ %\ 15.04 - 26.11$, $d = 1.1$).

In the same way, there are statistically significant differences between the profiles with the externalizing participants scoring significantly higher than the internalizing ones on the scale of: *Social Insensitivity* ($t_{(171)} = -5.981$, $p < .001$, $IC\ 95\ %\ -28.49 - -14.35$, $d = 0.9$).

On the *Sexual Discomfort* and *Family Discord* scales there are no statistically significant differences observed between the internalizing and externalizing profiles (see Table 4).

Clinical Syndromes (MACI)

For the *Clinical Syndromes* category on the MACI statistically significant differences may be observed in favour of the internalizing participants who score significantly higher than the externalizing ones on the scales of: *Eating Dysfunctions* ($t_{(171)} = 6.586$, $p < .001$, $IC\ 95\ %\ 12.79 - 23.74$, $d = 1.08$), *Substance-abuse Proneness* ($t_{(171)} = 2.545$, $p = 0.012$, $IC\ 95\ %\ 1.51 - 11.95$, $d = 0.4$), *Depressive Affect* ($t_{(171)} = 11.523$, $p < .001$, $IC\ 95\ %\ 23.471 - 33.174$, $d = 1.8$) and *Suicidal Tendency* ($t_{(171)} = 8.729$, $p < .001$, $IC\ 95\ %\ 15.42 - 24.44$, $d = 1.3$).

At the same time, there are statistically significant differences between the profiles in which the externalizing participants score significantly higher than the internalizing ones on the scale of: *Delinquent Predisposition* ($t_{(171)} = -4.363$, $p < .001$, $IC\ 95\ %\ -21.05 - -7.93$, $d = 0.65$).

On the scales of *Impulsive Propensity* and *Anxious Feelings* no statistically significant differences are observed between the internalizing and externalizing profiles (see Table 4).

Subjective Effects (ARCI)

Regarding the subjective effects of use as measured on the ARCI, significant differences are found between the profiles with the internalizing participants scoring significantly higher than the externalizing ones on the scales that measure the effects of: *Sedation* (PCAG) ($t_{(169)} = 3.103$, $p =$

Table 5. Comparison between profiles by the ARCI Subjective Effects scales.

ARCI	Total sample (N = 173)		Internalizing (n = 85)		Externalizing (n = 88)		t	p
	Mean	SD	Mean	SD	Mean	SD		
Sedation	3.54	3.37	4.34	3.66	2.78	2.89	3.103	.002
Euphoria	7	3.17	7.34	3.24	6.65	3.08	1.405	s.i.
Dysphoria/ Disagreeable physical effects	0.89	2.50	1.31	2.57	0.49	2.38	2.155	.033
Stimulant- sensitive	1.47	2.87	1.49	3.35	1.44	2.30	0.107	s.i.
Amphetaminic effects	4.45	1.95	4.63	2.01	4.27	1.89	1.204	s.i.

Note. s.i.: statistically insignificant differences according to the t Student test ($p > .05$).

.002, IC 95 % 0.56 – 2.55, $d = 0.78$) and *Dysphoria* (LSD) ($t_{(167)} = 2.155$, $p = .033$, IC 95 % 0.06 – 1.57, $d = 0.5$).

On the scales that measure the effects of *Euphoria* (BMG), *Stimulant-sensitive* (BG) and those of the *Amphetaminic* type (A) no statistically significant differences are observed between the internalizing and externalizing profiles (see Table 5).

Discussion

This study was carried out to discriminate between personality traits of a sample of adolescent cannabis users, by means of the categorization of the participants into internalizing and externalizing profiles in order to, later, make a comparison of both profile groups in terms of certain variables relating to consumption, clinical severity and subjective effects of the same.

The results of the research support the existence of significant differences in the personality traits of adolescent cannabis users. Two personality profiles, internalizing and externalizing, have been obtained on which the dimensional construct of personality in adolescent cannabis users is based (Hopwood & Grilo, 2010). It is worth noting that the distribution of the sample over the profiles was balanced, since the number of participants that each profile included was similar and, therefore, the results appear to indicate that, in a clinical sample of adolescent cannabis users neither profile predominates over the other.

The results obtained show that the adolescents with an internalizing profile are characterized by scoring higher on the *Introverted*, *Inhibited*, *Doleful*, *Self-demeaning* and *Borderline tendency* scales, and by very low scores on the *Dramatizing* and *Egotistical* scales. The adolescents with an externalizing profile, for their part, reach higher scores on the *Unruly*, *Forceful* and *Oppositional* scales, and very low scores on the *Conforming* and *Submissive* ones (Hopwood & Grilo, 2010). No statistically significant differences were observed be-

tween the personality profiles in terms of gender. This fact was also observed in Hopwood and Grilo's paper and may be explained by the fact that both studies were carried out with clinical samples, where comorbidity with externalising disorders is much higher than in the general population (Chi, Sterling, & Weisner, 2006; Hopwood & Grilo, 2010).

Focusing on age, it is notable that in the sample studied, the average onset age of use is 1.8 years before the average onset age in the general population (Spanish Observatory on Drugs, 2014). The same occurs with the age at which a regular pattern of use is established, also one year before that of the reference population (Spanish Observatory on Drugs, 2014). This fact is explained once more by the clinical characteristics of the sample group, since they are adolescent users whose use is frequent and problematic, and requires treatment (Creemers et al., 2009). These results ratify, as has been widely described in the literature, that an early onset age predicts later problematic use (Martínez-Lorca & Alonso-Sanz, 2003).

Between the personality profiles no differences are observed for the onset age, the age at which use becomes regular and the age at which treatment is sought. The homogeneity of these results could once again be explained by the clinical characteristics of the sample group since the participants were recruited at a specific unit and share aspects such as the chronology of use and the severity of the addictive pathology.

If we focus on the hourly use patterns, the frequency with which both profile groups consume during school hours stands out. At the same time, 69.4% of the sample group have been held back a year at school and 29.5% have dropped out altogether. The use of cannabis, therefore, seems to be significantly related to problems with academic performance as has been observed in other studies (Hall & Degenhardt, 2009; Volkow et al., 2014). On the other hand, the internalizing profile reports higher frequency of use before going to sleep, a facet that has been

described in other studies as one of the main effects sought when consuming (Schofield et al., 2006).

The clinical severity of both profile groups was evaluated by means of the Expressed Concerns and Clinical Syndromes scales on the MACI. In the sample group studied, the adolescents with an internalizing profile obtained higher scores on most of the scales when compared with the externalizing profile. Looking at the internalizing profile, the observed data point in the same direction as previous studies (Casullo & Castro, 2002; Fantin, 2006; Szerman et al., 2014). Specifically, the *Depressive Affect* and *Suicidal Tendency* have been described as traits that are highly prevalent among substance users (Chabrol et al., 2014). Contrasting with this, the *Social Insensitivity* and *Delinquent Predisposition* scales are highlighted in the externalizing profile, and have been observed in studies in which samples of adolescent users have been compared with samples of adolescent non-users (Fantin, 2006; Faúndez & Vinet, 2009). On the other hand, both profiles score high in *Family Discord*. As has been indicated in the literature, the presence of problems within the family is associated with substance use (Brière et al., 2011). The highest scores obtained, regardless of the profile group to which the adolescents belong, are: *Social Insensitivity*, *Substance-abuse Proneness*, *Delinquent Predisposition*, and *Impulsive Propensity*. As has been described in the literature, the most dissocial and impulsive traits are most prevalent among the adolescent consuming population (Becoña et al., 2011; Fantin, 2006; Faúndez & Vinet, 2009).

Regarding the subjective effects, both profiles show a greater Euphoria effect, an effect that is widely described in the literature and is most associated with the reasons for consumption, problematic use, abuse and dependence (Block et al., 1998; Scherrer et al., 2009; Zeiger et al., 2010). On the other hand, the internalizing group show higher scores for the *Sedation* and *Dysphoria* effects. This may be defined, as Scherrer et al., 2009, described it, as a “high response”, as both positive and negative effects are experienced. The “high response” has been associated with a greater tendency to use and with the development of dependency (Scherrer et al., 2009). We believe, therefore, that in view of the scarcity of literature that links personality and subjective effects it is necessary to carry out further studies in which this association is considered.

Among the limitations of the present study we find, firstly, the small size of the sample group, which limits the statistical potential of the results. Secondly, the sample group is clinical and the results obtained cannot therefore be extrapolated to the general population. Therefore, any generalization of the results to population samples of adolescent users with cannabis use patterns that are less problematic should be approached with caution. Thirdly, the instruments used for the evaluation, the MACI and ARCI-49 questionnaires, are self-administered and the results could be skewed by a tendency of the adolescents to mi-

nimize or maximize symptomology. Lastly, the scarcity and the heterogeneity of the studies of personality and of the subjective effects of consumption, specifically among the adolescent population of cannabis users, make any comparison of the results obtained difficult. This is, nevertheless, one of the main contributions that this study makes to the existing literature, more so if we consider that the results obtained are consistent with empirical research and the background theoretical antecedents.

In this study it has been observed that the categorization by means of the personality traits of two profiles -internalizing and externalizing- allows us to characterize a clinic sample of adolescent cannabis users. The expression of the clinical severity and of the subjective effects is different according to the personality traits. Thus, the internalizing profile shows greater clinical complexity: higher use at night time, more prevalence of expressed concerns and of clinical syndromes and a greater experience of subjective effects. Knowing the internalizing/externalizing personality profile is useful when it comes to proposing interventions aimed at this type of population. Discriminating between the subjective effects of cannabis allows us to know the functions of use and to propose an approach that is aimed at the factors that maintain it.

For the future, and basing what we say on the results obtained, we propose that it is necessary for new lines of research to be opened that are related to our study and that will respond to the existing scarcity and widen the debate around personality and the subjective effects in adolescents who consume substances. If that were to be the case, we could point to the interest in increasing the size of the sample group in order to be able to contrast the results obtained and enhance the statistical potential of the same. It would, also, be desirable to protocolize the evaluation of personality, as a part of the initial assessment, in order to be able to draw up interventions that are more effective and more suited to the characteristics of these patients.

Conflict of interests

The researchers declare no conflict of interests.

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