

## Association between personality traits and substance use in Spanish adolescents

### *Asociación entre rasgos de personalidad y consumo de sustancias en adolescentes españoles*

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#### Abstract

Substance use is considered one of the most frequent risk behaviors during adolescence. Personality factors are linked to consumption during adolescence. Although there are studies on personality and consumption among Spanish adolescents, some outcomes are contradictory, and more studies including larger samples and using validated measures are needed. The aim of this study is to analyze the relationship between different personality factors and substance use among Spanish adolescents. Participants were 1,455 students aged between 13-18 years. The adaptation of the 16PF-IPIP Personality Inventory was applied to assess Warmth, Stability, Gregariousness, Friendliness, Sensitivity, Trust, Openness to experience, Sociability, Perfectionism, and Calmness. Participants were asked about their different consumption substances during their lifetime. Results provide evidence for a relationship between personality factors and psychoactive substance use. There are different distributions of alcohol use regarding personality traits. Furthermore, personality factors have some influence on consumption of alcohol, cannabis, and cocaine. Trust and Calmness influence average alcohol, cannabis, and cocaine consumption, whereas Sociability had no statistically significant influence on any of the three substances. The results from this study are highly useful in the design of preventive programs, as they provide more evidence of the role of personality traits as a risk factor.

*Keywords:* substance use, alcohol, cannabis, cocaine, personality.

#### Resumen

El consumo de sustancias está considerado como una de las conductas de riesgo más frecuentes durante la adolescencia. Los factores de personalidad están relacionados con el consumo en la adolescencia. Aunque existen estudios sobre personalidad y consumo en adolescentes españoles, algunos resultados son contradictorios y son necesarios más estudios con muestras de mayor tamaño y que utilicen medidas validadas. El objetivo de este estudio es analizar la relación entre los diferentes factores de personalidad y el consumo de sustancias en adolescentes españoles. Participaron 1,455 estudiantes de secundaria entre 13 y 18 años. Se aplicó la adaptación del Inventario de Personalidad 16PF-IPIP para evaluar Calidez, Estabilidad, Gregarismo, Amigabilidad, Sensibilidad, Confianza, Apertura, Sociabilidad, Perfeccionismo y Calma. Se preguntó a los participantes acerca de las diferentes sustancias que habían consumido a lo largo de su vida. Los resultados evidencian la relación entre las variables de personalidad y el consumo de sustancias psicoactivas. El consumo de alcohol presenta diferentes distribuciones con respecto a los rasgos de personalidad. Por otra parte, los factores de personalidad tienen cierta influencia en el consumo de alcohol, cannabis y cocaína. Confianza y Calma tienen influencia en el consumo de alcohol, cannabis y cocaína, mientras que Sociabilidad no presenta ninguna influencia estadísticamente significativa en ninguna de las tres sustancias. Los resultados de este estudio son de gran utilidad a la hora de diseñar programas preventivos, ya que proporcionan mayor evidencia sobre el papel de los rasgos de personalidad como factores de riesgo.

*Palabras clave:* consumo, alcohol, cannabis, cocaína, personalidad.

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Adolescence is a critical period when the onset and experimentation with psychoactive substances typically occur. Occasional use of alcohol and other drugs during adolescence is normative within the Spanish cultural context (Spanish Drug Observatory, 2009). Furthermore, in recent years have been highlighted the heavy alcohol, or binge drinking, which constitutes the most common problem drug use during adolescence (López-Caneda et al., 2014). Substance use has increased in adolescents in recent years and become a threat to this population due to short- and long-term consequences to their health (Vinet & Faúndez, 2012). International studies have observed high percentages of experimentation with legal drugs (Torregrosa, Inglés, Delgado, Martínez-Monteagudo, & García-Fernández (2007), such as alcohol and tobacco, in addition to others like cannabis and amphetamine derivatives (Becoña & Míguez, 2006; Gómez-Fraguela, Fernández, Romero, & Luengo, 2008; Sirvent, Moral, & Rodríguez, 2007).

Addictive behaviors respond to a wide range of variables, and indicators of personality may influence the predisposition to consume substances in youth (Llorens, Palmer, & Perelló, 2005). The DSM-IV-TR (2002) considers personality traits to be persistent patterns of ways of perceiving, relating to others, and thinking. Certain individual characteristics and factors of vulnerability exist that may facilitate or predispose consumption (Fantin, 2006). The explanation for the association between substance use and personality traits presents some difficulties, since it is unknown whether drug use modulates a number of previous traits, whether personality determines drug use, or if they are independent. Llorens et al. (2005) studied the probability of future consumption in subjects according to their personality traits, showing that indicators of personality influence different substances and the type of consumption differently.

One of the factors most commonly associated with alcohol consumption is personality (Kyrkcaldy, Siefen, Surall, & Bischoff, 2004), and broad evidence exists that personality factors are linked to alcohol consumption in adolescence. The highest prevalence of substance use in adolescents is related to high psychoticism (Knyazev, Slobodskaya, Kharchenko, & Wilson, 2004) and elevated sensation seeking (Kuo, Yang, Soong, & Chen, 2002). Impulsivity, sensation seeking, self-concept, and antisocial behavior are found among the risk factors in addictive substance use in adolescents (Llorens et al., 2005). Impulsivity and disinhibition are those most consistently related with alcohol consumption behaviors (Aragues, Jurado, Quinto, & Rubio, 2011). Furthermore, impulsivity is related to the quantity of alcohol ingested (Cortés, Giménez, Motos, & Cadaveira, 2014), and during adolescence predicts a pattern of alcohol abuse in adulthood (Chassin, Flora, & King, 2004). The extraversion/sociability trait is related with alcohol use in adolescents (Kuntsche, Rehm, & Gmel, 2004). Moreover,

extraversion scores constitute the greatest predictor for alcohol consumption, followed by neuroticism (Anderson, Scheweinsburg, Paulus, Brown, & Tarpert, 2005). In addition, psychoticism seems to show a greater relationship and predictive capacity with respect to alcohol consumption, and youngsters who use cannabis are more impulsive and greater sensation seekers (Bravo de Medina, Echeburúa, & Aizpuri, 2010).

According to Fantin (2006), adolescent users present specific personality characteristics, with a trend to relate to others aggressively, to be irresponsible and impulsive, in addition to being indifferent to the needs of others, showing rebellious and oppositional behavior in family relationships. Some authors coincide in that antisocial personality traits are directly linked to drug use. While social fears and social phobia are characterized by their high prevalence in adolescents with a pattern of drug abuse, several studies have found that certain maladaptive behaviors, such as impulsive, disruptive, antisocial, and aggressive behaviors are potent predictors of tobacco (Bergen, Martin, Roeger, & Allison, 2005; Kollins, McClernon, & Fuemmeler, 2005) and alcohol use (Bergen et al., 2005; Blum & Ireland, 2004; Paschall, Flewelling, & Russell, 2004). However, other studies demonstrate that prosocial, assertive, and socially skilled adolescents, as compared to antisocial students, are less likely to manifest risk behaviors to their health, such as using drugs (Sussman, Unger, & Dent, 2004). Grant et al. (2004) affirm that disorders from the consumption of alcohol and other drugs are related more with the antisocial, histrionic, and dependent personality. Likewise, in a study carried out with Spanish adolescents, Inglés et al. (2007) concluded that alcohol use is related with extraversion and psychoticism scores, with only extraversion identified as a risk factor. Becoña et al. (2011) found important differences in personality features between stimulant users (cocaine and ecstasies) and non-users.

Although there are studies on personality and consumption among Spanish adolescents, some outcomes are contradictory and more studies are needed including larger samples and using validated measures. With this background in mind, the goal of the present study is to examine substance use patterns and their relation with personality factors in a sample of Spanish adolescents, through the 16PF-IPIP Personality Inventory to an Orientation Context (Pérez, Cupani, & Beltramino, 2004), a genuine personality questionnaire. An additional aim is to analyze the differences between personality traits and the use of specific substances. According to previous studies we hypothesize that: (1) relationship between substance use and personality factors will be found, (2) personality traits as sociability, friendliness, stability, calmness, warmth, gregariousness, perfectionism, and trust will be related to lower consumption, (3) sensitivity and openness to experience will be linked to higher rates of consumption.

## Method

### Participants

The sample was comprised of 1,547 adolescents from 17 public schools in five Spanish provinces (Alicante, Oviedo, Castellón, Granada, and Murcia). 92 adolescents were excluded for not completing correctly the questionnaire. The total final sample was comprised of 1,455 adolescents. Every adolescent had the family consent. The recruitment was incidental. Of the total sample, 720 (49.5%) were female with a mean age of 14.96 years ( $SD = 1.15$ ). Regarding academic course, 53.3% were ninth graders, 35% tenth graders, 6.5% were first-year initial vocational training students, and 5.2% were second-year initial vocational training students. Most of the adolescents either had parents who were married or living together at the time of the evaluation (77.1%), while 21.2% of them were separated or divorced; the remaining 1.6% had been widowed. About the socio-economical level, 3.4% have a low level, 55% a medium level, and 41.6% a high level (206 adolescents of the total sample did not answer the socio-economic questions).

### Instruments

A survey was administered to collect socio-demographic data such as gender, age, family characteristics (living or not with both parents or other family, and parents marital status), academic year, school center, and province. In addition, the participants were asked about their consumption of different substances during their lifetime [ever use and/or during the last month (1 = yes; 0 = no)].

Along with these questions, various scales from the Adaptation of the 16PF-IPIP Personality Inventory to an Orientation Context (Pérez, Cupani, & Beltramino, 2004) were administered, created from the International Personality Item Pool. This instrument was used as the presenting smaller time application. Being an adolescent sample, this instrument allowed the subjects completed all items. The applied scales were *Warmth*, *Stability*, *Gregariousness*, *Friendliness*, *Sensitivity*, *Trust*, *Openness to experience*, *Sociability*, *Perfectionism*, and *Calmness*. In all, there were 100 items, each having 5 response alternatives (from 1 = *strongly disagree*, to 5 = *strongly agree*). Internal consistency for this sample was  $\alpha = .66$ , and for each subscale was: *Warmth* = .72; *Stability* = .70; *Gregariousness* = .70; *Friendliness* = .70; *Sensitivity* = .64; *Trust* = .64; *Openness to experience* = .61; *Sociability* = .66; *Perfectionism* = .69; and *Calmness* = .72.

### Procedure

After approval by the ethics committee, schools were contacted to establish collaboration. Participants and their parents provided written informed assent and consent, respectively, to participate in this study. Two researchers went to the schools during school hours to administer the questionnaires electronically. These were administered collectively in classrooms. Printed questionnaires were used at schools that

did not possess adequate electronic infrastructure. There is evidence that the assessment on paper and online (of the same instrument) produce similar and comparable results (Ritter, Lorig, Laurent, & Matthews, 2004; Riva, Teruzzi, & Anolli, 2003). Following this, the data were unified into a single database.

### Data analysis

To analyze the average of consumers of alcohol in the last month in relation to groups of level in each trait was calculated using *probit* analysis. This technique is recommended for to analyze the relation between a dichotomous variable and a cluster variable (Ashford, & Sowden, 1970). For the analysis in a first step the cases with missing data were deleted. After, we selected only the adolescent consumers of drugs in the last years. For these adolescents, ten levels were established like one group for each 10% of the distribution of scores in the personality trait. We conducted the *probit* analysis with total sample. This analysis was made for alcohol, cannabis and cocaine month consume or not. At the end we replicate the analysis for each gender separately. The recodifications clusters were recalculated for men and women. Finally we conducted a new analysis for gender and substance.

## Results

### Personality relation with drug use without gender control

We analyzed, first, how personality is related to the consumption of psychoactive substances. No separation was made here for gender.

After we decided to conduct the analysis without gender separation, the average of consumers of alcohol in relation to groups of level in each trait was calculated (the cases with missing data were deleted). Ten levels were established like one group for each 5% of the distribution of scores. The results for consume or not during last 30 days are presented in Table 1, which shows different distributions: a) the lower and higher groups had more consumers of alcohol, like *Warmth*; b) the central groups had more consumers of alcohol, like *Trust*; c) the higher groups had more consumers, like *Openness to experience*; d) the higher groups had less consumers, like *Gregariousness*.

To analyze the differences in average distribution we used *probit* analysis. In Table 2 adjust of models was presented for each trait included. We can see that for alcohol consumers, the statistically significant models were *Stability*, *Gregariousness*, *Friendliness*, *Sensitivity*, *Trust*, *Openness to experience*, *Perfectionism*, and *Calmness*. For cannabis consumers *Gregariousness*, *Friendliness*, *Sensitivity*, *Trust*, *Openness to experience*, *Perfectionism*, and *Calmness* were statistically significant. In the cocaine average of consumers, only *Warmth*, *Trust*, and *Calmness* were statistically significant.

*Trust* and *Calmness* were the variables that have influence on the three models. In the first of these, the adolescents in lower groups and the three higher groups had lower averages of having consumed any of these drugs, while the intermediate groups had at least a 5% greater chance to have consumed alcohol. In the cannabis consumers frequency the average of consumers per group had a distribution similar to that of alcohol. In the cocaine average of consumers, the frequency is low but the tendency is different. In this case, an adolescent in a higher group had less chance to have consumed cocaine in the last year.

In *Calmness*, the average of alcohol consumers was higher in the lower groups: adolescents with more calm have a lower chance to have consumed alcohol in the last year, and the differences between groups reached 22%. For the cannabis and cocaine frequency of consumers in the last year, the tendency is similar in all groups. The participants were also asked about other substances they had used, and of these, the most common were MDMA ( $n = 7$ ), ketamine ( $n = 6$ ), and hallucinogenic mushrooms ( $n = 2$ ). The frequencies for these substances were too low to be included in the analyses.

Table 1. Percentage of alcohol consumers in the last 30 days for groups of level in personality traits.

Level Groups	Warmth	Stability	Gregariousness	Friendliness	Sensitivity	Trust	Openness to experience	Sociability	Perfectionism	Calmness
0	81.65	72.52	89.47	86.36	70.09	75.70	64.57	69.16	57.66	87.94
1	83.33	79.49	86.83	86.76	73.28	85.21	68.37	82.35	66.92	87.50
2	82.35	72.48	87.59	81.01	80.15	84.80	84.44	73.77	76.92	85.37
3	78.02	76.19	86.52	81.32	83.52	84.55	76.99	74.42	79.50	80.68
4	76.79	84.26	84.34	80.10	80.91	78.45	81.76	83.95	87.10	88.70
5	70.81	84.47	79.52	79.38	76.76	80.39	73.68	78.81	82.96	80.77
6	84.38	75.44	76.56	77.30	78.26	83.41	86.21	81.44	86.92	77.30
7	81.58	80.22	80.28	76.61	81.25	77.32	80.70	78.01	83.64	74.67
8	80.00	81.93	71.90	79.29	80.79	72.92	84.65	80.77	81.60	66.10
9	79.50	84.67	59.21	69.80	83.87	71.43	88.28	81.88	84.21	68.62

Note. Groups were made as follows: Warmth: 0 = 0-15; 1 = 16-18; 2 = 19-20; 3 = 21; 4 = 22; 5 = 23-24; 6 = 25; 7 = 26-27; 8 = 28-29; 9 = > 30; Stability: 0 = 0-18; 1 = 19-20; 2 = 21-22; 3 = 23; 4 = 24-25; 5 = 26; 6 = 27-28; 7 = 29; 8 = 30-32; 9 = > 33; Gregariousness: 0 = 0-15; 1 = 16-18; 2 = 19-20; 3 = 21; 4 = 22-23; 5 = 24; 6 = 25-26; 7 = 27; 8 = 28-30; 9 = > 31; Friendliness: 0 = 0-16; 1 = 17-19; 2 = 20-21; 3 = 22; 4 = 23-24; 5 = 25; 6 = 26-27; 7 = 28-29; 8 = 30-31; 9 = > 32; Sensitivity: 0 = 0-19; 1 = 20-22; 2 = 23-24; 3 = 25-26; 4 = 27; 5 = 28-29; 6 = 30; 7 = 31-32; 8 = 33-35; 9 = > 36; Trust: 0 = 0-27; 1 = 28-30; 2 = 31-32; 3 = 33; 4 = 34; 5 = 35; 6 = 36-37; 7 = 38; 8 = 39-40; 9 = > 41; Openness to experience: 0 = 0-24; 1 = 25-26; 2 = 27; 3 = 28-29; 4 = 30; 5 = 31; 6 = 32; 7 = 33; 8 = 34-36; 9 = > 37; Sociability: 0 = 0-23; 1 = 24-26; 2 = 27-28; 3 = 29; 4 = 30-31; 5 = 32; 6 = 33; 7 = 34-35; 8 = 36-38; 9 = > 39; Perfectionism: 0 = 0-19; 1 = 20-22; 2 = 23-24; 3 = 25-26; 4 = 27; 5 = 28-29; 6 = 30; 7 = 31-32; 8 = 33-34; 9 = > 35; Calmness: 0 = 0-26; 1 = 27-28; 2 = 29; 3 = 30-31; 4 = 32-33; 5 = 34; 6 = 35-36; 7 = 37-38; 8 = 39-40; 9 = > 41.

Table 2. Estimate parameters for drug use in logit models ( $n = 1,455$ ).

Trait	Alcohol Estimation ( $n = 1,153$ )	SE	Z	Cannabis Estimation ( $n = 401$ )	SE	Z	Cocaine Estimation ( $n = 23$ )	SE	Z
Warmth	0.01	0.01	0.65	0.01	0.01	1.63	0.07	0.02	3.71***
Stability	0.02	0.01	2.64**	0.01	0.01	1.69	0.04	0.02	2.04*
Gregariousness	0.06	0.01	-7.68***	-0.03	0.01	-5.06***	0.01	0.02	0.47
Friendliness	-0.07	0.02	-4.87***	-0.02	0.01	-2.05*	0.01	0.02	0.60
Sensitivity	0.02	0.01	2.54*	0.02	0.01	3.34***	0.03	0.02	1.79
Trust	-0.03	0.01	-3.16**	-0.03	0.01	-3.67***	-0.04	0.02	-2.05*
Openness to experience	0.05	0.01	5.32***	0.03	0.01	2.86**	-0.02	0.02	1
Sociability	0.01	0.01	1.70	-0.01	0.01	-0.79	-0.01	0.02	-0.74
Perfectionism	0.04	0.01	5.77***	0.02	0.01	2.83**	0.00	0.02	0.05
Calmness	-0.05	0.01	-6.33***	-0.04	0.01	-5.68***	-0.05	0.02	-2.54**

Note. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ ; SE = standard error.

Table 3. Estimate parameters for drug use in logit models for women (n = 723).

Trait	Alcohol Estimation	SE	Z	Cannabis Estimation	SE	Z	Cocaine Estimation	SE	Z
Warmth	0.07	0.1	0.57	-0.01	0.01	-0.09	0.08	0.05	1.67
Stability	0.03	0.01	2.42*	0.2	0.01	2*	0.09	0.5	1.83
Gregariousness	-0.08	0.01	-7.18***	-0.4	0.1	-4.3***	0.03	0.03	1.02
Friendliness	-0.04	0.1	-3.84***	-0.02	0.01	-1.63	0.03	0.04	0.91
Sensitivity	0.03	0.01	2.99**	0.02	0.01	1.59	0.08	0.04	1.92
Trust	-0.02	0.01	-1.35	-0.03	0.01	-2.87**	0.01	0.04	0.3
Openness to experience	0.06	0.01	4.33***	0.03	0.01	2.49*	-0.07	0.05	-1.37
Sociability	0.02	0.01	2.27*	0.01	0.01	0.52	0.03	0.04	0.77
Perfectionism	0.05	0.01	5.27***	0.03	0.01	2.71**	0	0.03	0.08
Calmness	-0.05	0.01	-4.88***	-0.03	0.01	-3.32**	-0.28	0.04	-0.76

Note. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ ; SE = standard error.

Tabla 4. Estimación de los parámetros de consumo de drogas en modelos logit para los varones (n = 732).

Trait	Alcohol Estimation	SE	Z	Cannabis Estimation	SE	Z	Cocaine Estimation	SE	Z
Warmth	-0.01	0.01	-0.47	0.01	0.01	0.7	0.05	0.03	1.73
Stability	0.02	0.01	1.38	0.01	0.01	1.03	0.04	0.02	1.67
Gregariousness	-0.04	0.01	-3.57***	-0.03	0.01	-3.62***	-0.01	0.02	-0.32
Friendliness	-0.03	0.01	-2.12*	-0.02	0.1	-1.91	0	0.2	-0.15
Sensitivity	0.01	0.01	1.03	0.01	0.01	1.27	0	0.01	-0.18
Trust	-0.04	0.01	-3.15**	-0.03	0.01	-2.94**	-0.07	0.03	-2.61**
Openness to experience	0.05	0.02	3.13**	0.03	0.01	1.92	-0.01	0.03	-0.22
Sociability	0	0.01	-0.04	-0.01	0.01	-1.18	-0.02	0.02	-1.01
Perfectionism	0.03	0.01	2.68**	0.01	0.01	1.13	0	0.02	-0.06
Calmness	-0.04	0.01	-3.98***	-0.04	0.01	-4.38***	-0.04	0.02	-1.83

Note. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ ; SE = standard error.

### Personality relation with drug use without gender control

We analyzed how personality is related to the consumption of psychoactive substances by sex. We used *Probit* analysis for men and women independently. In Table 3 adjust of models was presented for each trait included for women, and for men in Table 4. We can see that in women alcohol consumers, the statistically significant models were *Gregariousness*, *Friendliness*, *Sensitivity*, *Openness to experience*, *Sociability*, *Perfectionism*, and *Calmness*. For cannabis, *Gregariousness*, *Trust*, *Openness to experience*, *Perfectionism*, and *Calmness*. For cocaine no variables were significant. For men *Gregariousness*, *Friendliness*, *Trust*, *Openness to experience*, *Perfectionism*, and *Calmness* were significant for alcohol. In the cannabis the significant variables were *Gregariousness*, *Trust*, and *Calmness*. For cocaine consume only *Trust* was significant.

### Discussion

The purpose of this study was to analyze the relationship between various personality factors and the consumption of alcohol, cannabis, and cocaine in a sample of Spanish adolescents. The outcomes reveal that personality variables have some influence on using different substances, as hypothesized. Regarding the average of alcohol consumers for level groups, the distributions are based on the personality, not counting the same trend for all personality traits.

Regarding the influence of personality traits on consumption, only *Trust* and *Calmness* have a statistically significant influence on the three models, while *Sociability*, related to extraversion, doesn't influence any of the three. Initially hypothesized that sociability adolescents will have a low consumption. Extroverts are characterized by a strong need

for stimulation (Eysenck & Zuckerman, 1978). This sensation-seeking trait could explain the positive relationship between extraversion and the use of legal and illicit drugs. Persons most in need of stimuli will be more inclined to perform behaviors involving stimulation and risk (Pérez & García-Sevilla, 1986), and will therefore have a greater probability of using drugs. Teichman, Barnea, & Rabay (1989) consider that sensation seeking is a better predictor for drug use than either anxiety or depression. In this sense, Luengo, Otero-López, Romero, & Gómez (1996) assert that sensation seeking is a relevant variable for differentiating consumers from non-consumers in adolescents. Sáiz et al. (1999) conclude that substance use is associated in both sexes with higher levels of emotional instability, greater extraversion and psychoticism, as well as a marked sensation seeking profile. However, the results of this study agree with Sussman, Unger, & Dent (2004), who demonstrate that prosocial, assertive, and socially skilled adolescents are less likely to using drugs.

Personality traits are similarly correlated with alcohol and cannabis consumption. All of them correlated statistically significant with alcohol and cannabis consumption, except *Warmth* and *Sociability*. In the case of cannabis consumption, either *Stability* correlates. In cocaine consumption, personality traits that correlate are *Warmth*, *Stability*, *Trust*, and *Calmness*. Contrary to what was initially hypothesized, *Stability* and *Perfectionism* are not correlated with lower consumption. However, the results are in favor of our hypothesis in the case of *Sensitivity* and *Openness to experience*, with higher consumption, and *Calmness* and *Trust*, with lower consumption. In the case of *Gregariousness* and *Friendliness* our hypothesis is true for alcohol and cannabis consumption. López, Santín, Torrico, & Rodríguez (2003), starting from the model of the Big Five factors, found slight differences in the personality structure of young persons in terms of substance use. In their study, they conclude that consuming subjects are more open, sociable, dynamic, active, energetic, and loquacious than non-users. At the same time, they find differences in favor of regular consumers of alcohol on the open-mindedness scale, while such differences between consumers and non-consumers are not found on the scale of emotional stability or trait impulsivity. As for young cannabis users, the authors affirm that these have a greater propensity for novel experiences and are fairly open towards values and lifestyles that are distinct from their own. The highest score in extraversion may be related to a greater tendency for early contact with substances and an increased neural sensitivity toward them (Pedrero, 2007). The same study concluded that young users obtain lower scores in emotional stability and open-mindedness.

In this study, different distributions of alcohol consumption regarding personality traits were found and it can be concluded that personality factors are significantly related with the use of psychoactive substances among adolescents.

The relationship between personality variables and the use of psychoactive substances appears clear. Furthermore,

personality traits have influence not only on alcohol consumption but also on cannabis and cocaine consumption. This is important for establishing prevention programs based on such variables. Still, there are several notable limitations. First, the use of the 16PF-IPIP makes it difficult to compare the results with similar studies. Also, the instrument used has a low consistency in the scales, so future studies should consider the suitability of the use of this instrument. This study, however, is limited by being a cross-sectional study, so cause-effect cannot be established. Further research must determine whether these variables have a causal relationship and the potential benefits for preventive programs by considering the personality characteristics of the target population. However, the results of this study are not generalizable to the Spanish adolescent population. The findings provide new (albeit modest) data on the association of variables.

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## Conflicts of interest

There are no conflicts of interest.

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