

Trait and ability emotional intelligence as factors associated with cannabis use in adolescence

Inteligencia emocional rasgo y habilidad como factores asociados al consumo de cannabis en la adolescencia

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Abstract

Many international organisms have warned of the increased consumption of cannabis and its extensive use by adolescents. This study is one of the first with the aim of analyzing the role of ability and trait emotional intelligence, based on the model of Mayer and Salovey, with regards to the consumption of cannabis by adolescents. The study participants were 799 Spanish nationals aged 12 to 16. They were administered a self-report on trait emotional intelligence (EI), a test of maximum EI performance and were asked about their habits relating to cannabis consumption. This cross-sectional study used a quantitative, correlational methodology. The main results obtained from the regression analysis once gender, age and context of residence were controlled for, revealed negative associations between the factors of understanding and emotional repair of trait EI and the cannabis consumption variables, in contrast to emotional attention. On the other hand, with regards to ability EI, the factors of perception and facilitation were inversely associated with cannabis consumption in adolescents. The results suggest that both trait and ability EI are complementary constructs that help to explain cannabis consumption during this life stage. These findings offer empirical evidence that may help guide clinical and educational interventions focused on prevention of consumption during this period.

Key Words: Emotional intelligence; self-report; performance test; cannabis; adolescence.

Resumen

Diversos organismos internacionales alertan sobre el incremento de consumo de cannabis y de su uso extendido entre los adolescentes. El presente estudio ha sido uno de los primeros con el objetivo de analizar el papel de la inteligencia emocional rasgo y habilidad, basada en el modelo de Mayer y Salovey, en relación al consumo de cannabis en adolescentes. En este estudio participaron 799 jóvenes españoles con edades comprendidas entre los 12 y los 16 años. Se administró un autoinforme de inteligencia emocional (IE) rasgo, un test de rendimiento máximo de IE y se preguntó sobre los hábitos relacionados con el consumo de cannabis. Este estudio de tipo transversal se llevó a cabo a través de una metodología de corte cuantitativo y de tipo correlacional. Los principales resultados obtenidos mediante los análisis de regresión una vez controlados el género, la edad y el contexto de centro, revelaron asociaciones negativas entre los factores de comprensión y reparación emocional de la IE rasgo y las variables de consumo de cannabis, al contrario que la atención emocional. Por otro lado, en relación con la IE habilidad, los factores de percepción y facilitación se asociaron de manera inversa al consumo de cannabis en los adolescentes. Los resultados de este estudio sugieren que tanto la IE rasgo como la IE habilidad son constructos complementarios que ayudan a explicar el consumo de cannabis. Estos hallazgos proporcionan evidencias empíricas que podrían orientar intervenciones clínicas y educativas enfocadas a la prevención del consumo en esta etapa.

Palabras clave: Inteligencia emocional; autoinforme; test de rendimiento máximo; cannabis; adolescencia.

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According to the World Drug Report (2018), the use of cannabis is on the increase, and excepting alcohol and tobacco it is the most widely used drug worldwide by young people and adolescents. It is estimated that about 17.2 million (14.1%) of young Europeans aged between 15 and 34 consumed cannabis in the previous year (European Monitoring Centre for Drugs and Drug Addiction, 2018). As regards Spain, 31.1% of adolescents between 14 and 18 claim to have tried it once, 26.3% used it during the previous year and of these, 13.3% reported problematic levels of use (Plan Nacional Sobre Drogas, 2018). Likewise, according to the Spanish survey on drug use in secondary school students (ESTUDES 2016-2018; Plan Nacional Sobre Drogas, 2018), cannabis use is more widespread among males, and the proportion of general consumption increases progressively with age. Longitudinal research has highlighted peer group use of cannabis as one of the main risk factors for adolescent use (Creemers et al., 2010; von Sydow, Lieb, Pfister, Höfler & Wittchen, 2002). Furthermore, the quantity and frequency of cannabis use has been associated with the appearance of mental disorders, abuse and dependence among adolescents and young adults (Degenhardt et al., 2013; von Sydow et al., 2002). Similar studies warn that those who begin cannabis use at an early age are not only more susceptible to consuming other illegal substances and developing a pattern of risky alcohol consumption (Díaz, Busto & Caamaño, 2018; Rial et al., 2018), but also have a greater probability of getting involved in behaviours related to problematic gambling (Míguez & Becoña, 2015), presenting school and mental health problems, as well as committing suicide (Anglin et al., 2012; Silins et al., 2014).

Several investigations have revealed that emotional intelligence (EI), understood as the ability to recognize, understand and regulate one's own emotions and those of others, discriminate between them and use the information as a guide for thoughts and actions (Mayer & Salovey, 1997), is a predictor of well-being and better adaptive functioning in adolescence (Gascó, Badenes & Plumed, 2018; Resurrección, Salguero & Ruiz-Aranda, 2014). The literature reflects the important role that EI plays in relation to various areas of relevance such as mental, psychological and psychosomatic health in both adults and adolescents (Balluerka, Gorostiaga, Alonso-Arbiol & Aritzeta, 2016; Davis & Humphrey, 2012; Martins, Ramalho & Morin, 2010). Nevertheless, adolescence remains a less studied stage, and one which poses an important challenge for research and clinical and educational progress.

The scientific literature currently supports the distinction of two EI constructs which can be differentiated on the basis of the measurement method used to operationalize it (Petrides, 2011). Trait EI refers to the self-perception of a series of emotional skills assessed through self-reports.

Ability EI, on the other hand, is the ability to respond correctly to various emotional tasks by means of maximum performance tests. The first domain belongs to the field of personality while the second refers to cognitive ability and the relevant literature has thus developed independently. While self-report measures of EI rely on the subject's perception of their own emotional abilities, the model proposed by Mayer et al. (1997) stresses the importance of using maximum performance measures to assess the real ability of the person, thus following the traditional methodology used to measure cognitive intelligences (Brackett & Salovey, 2006; Mayer, Salovey & Caruso, 2008).

In their review of EI and addictive substance use, Kun and Demetrovics (2010) analysed 36 studies which, for the most part, measured EI by proven methods. The data obtained in this research support the idea that low levels of trait and ability EI are related to more problematic use of alcohol, tobacco and illegal substances in adults, university students and adolescents. More specifically, the results showed that the components of the perception and regulation of emotions played a key role in understanding the use of addictive substances and addictions. However, it should be noted that most studies used a global index of EI and did not provide information on the impact of each factor individually, which would have helped to focus clinical and educational interventions. In addition, self-report measures studying only the role of trait EI were used in a large number of the studies. It is for this reason that the study authors recommended using joint measures of trait and ability EI for a more precise understanding of this problem. Likewise, very little research is carried out in the adolescent population and there are hardly any studies attempting to relate EI to cannabis use in particular.

The findings of the research assessing the relationship between cannabis use and trait EI through the self-report Trait Meta-Mood Scale (TMMS; Salovey, Mayer, Goldman, Turvey & Palfai, 1995) are detailed below. Limonero, Tomás-Sábado and Fernández-Castro (2006) observed how the perceived ability of university students to regulate negative emotional states was inversely associated with habitual use of cannabis and tobacco. University students with greater perceived ability to clearly understand their emotional states similarly reported lower cannabis use (Limonero et al., 2006; Limonero, Gómez-Romero, Fernández-Castro & Tomás-Sábado, 2013). Limonero et al. (2013) also found that emotional attention along with alcohol abuse were the main factors associated with cannabis abuse. The authors concluded that young people who worry too much about their emotional state and lack adequate resources to regulate them as a mechanism are prone to excessive alcohol use, which facilitates cannabis abuse. In a study with adult patients using cannabis by medical prescription, Boden, Gross, Babson and Bonn-Miller (2013) found that a lower perceived ability to understand emotional

states resulted in ineffective emotional regulation, which increased cannabis abuse and dependence. Furthermore, Ruíz-Aranda et al. (2010) found that adolescents who had not used cannabis had a greater perceived ability to regulate negative emotional states and prolong positive ones than those who claimed to have used it.

In two studies carried out with adult males diagnosed with cannabis dependence and control groups without addiction problems, trait EI was measured with the Emotional Intelligence Scale (EIS; Shutte et al., 1998), adapted by Bhattacharya, Bhattacharya, Dutta and Mandal (2004). In them, significant differences were found between the low total EI score and high alexithymia in the groups with cannabis dependence problems compared to control groups (Nehra, Kumar, Sharma & Nehra, 2013; Nehra et al., 2012). These results concur with the review of studies by Kun et al. (2010), which concluded that the decoding of emotional states is less accurate in people with alcoholism problems, intensive smokers, cannabis users and people with internet addiction. Similarly, the results of research by Claros and Sharma (2012) showed that low scores on the EIS factors of perception, use, understanding and emotional regulation were associated with higher alcohol and marijuana use in school adolescents.

Based on the research which assessed EI as a skill through maximum performance tests, Brackett, Warner and Mayer (2004) analysed the relationship between EI measured with the Mayer-Salovey-Caruso-Emotional Intelligence Test (MSCEIT; Mayer, Salovey & Caruso, 2002a) and the consumption of legal and illegal drugs among university students. The area scores of this test cover two branches each: the experiential area (perception and facilitation), which refers to the ability to access emotional information, recognize it, compare it to other sensations and understand how it influences thinking; and the strategic area (understanding and regulation), referring to the ability to understand and manage the information of emotions, both one's own and those of others, of positive or negative valence, in order to adapt to daily life situations effectively. The results of their study showed significant negative relationships between the scores on the total EI scale, the experiential area and the strategic area with regard to the use of marijuana, illegal drugs, alcohol, and consumption with friends in a sample of university students. Similarly, Trinidad and Johnson (2002) found negative associations between the factors of perception, understanding, emotional regulation and total EI measured on the Multifactor Emotional Intelligence Scale (MEIS; Mayer, Salovey & Caruso, 1997) and alcohol and tobacco use in an adolescent population. The authors concluded that EI was a protective factor against such use which also reduced the influence exerted by the peer group to use.

As can be seen, and despite the importance of the previous findings, most of the research was carried out with clinical

adult and university populations, while studies analysing the implication of EI and cannabis use at the teenage stage are almost non-existent. Likewise, hardly any research has been carried out which combines the assessment of trait and ability EI factors in order to provide a complete understanding of their role in the use of this substance.

Given the concern caused by the excessive use of cannabis at an early age, the present study aims to analyse how the dimensions of trait and ability EI are related to cannabis use variables in adolescents aged 12 to 16.

Based on the results of previous studies, we propose the following working hypothesis: the dimensions of trait and ability EI will be associated significantly and inversely with the dependent variables of cannabis use ("occasional hashish or marijuana use"; "number of days of hashish or marijuana use in the last 12 months"; "weekly number of units used"; "using hashish or marijuana if offered it by a friend"), with the exception of trait EI factor "attention to one's emotions", which will be associated positively and significantly. Both constructs will be complementary explanatory factors in the understanding of this issue.

Method

Type of study

This study presents a cross-sectional design with a quantitative, correlational methodology.

Participants

A total of ten compulsory secondary education centres in the Spanish autonomous community of Cantabria participated in the study. Stratified random sampling was carried out based school ownership (state run or private/charter) and location in rural or urban settings, matching the proportion present in the reference population. It should be noted the 66.6% participation rate of the schools initially selected was due to the high workload some of them were under. The initial sample was 844 participants. Exclusion criteria were being of an age outside the range under study, 12-16 years ($N = 21$), and not having completed the questionnaire by the end of the second session ($N = 24$). The final sample ($N = 799$) represented 94.6% of the initial sample and was made up of schoolchildren aged between 12 and 16 years ($M = 14.49$; $SD = 1.17$) with a gender-balanced distribution (51.8 % female, 48.2% male). Just over half, 51.4%, went to private/charter schools and 48.6% to state run schools, with 64% located in urban and 36% in rural environments.

Instruments

Dependent variables:

- *Cannabis use questionnaire.* We adapted four items of the ESTUDES questionnaire (Plan Nacional Sobre Drogas, 2018). First, subjects were asked about "lifetime use of

hashish or marijuana" (yes/no), as well as whether they would "use hashish or marijuana if offered it by a friend" (yes/no). The following variables were dichotomized according to the median for use in subsequent analyses: "number of days of hashish or marijuana use in the last 12 months" (<40 days; ≥40 days) and "weekly quantity of units" (<10 units; ≥10 units).

Independent variables:

- *Questionnaire of sociodemographic data.* Gender (female/male), age (12-13/14-16) and the school area (urban/rural) were collected.
- *Trait Meta-Mood Scale* (TMMS; Salovey et al., 1995, validated in the Spanish teenage population by Salguero, Fernández-Berrocal, Balluerka and Aritzeta, 2010). This self-report comprises 24 items and provides an indicator of trait emotional intelligence levels. Items are scored on a 5-point Likert scale from "Strongly disagree" (1) to "Strongly agree" (5). It consists of three subscales: attention to feelings is the degree to which people believe they pay attention to their emotions and feelings (e.g., "I pay close attention to feelings"); emotional clarity refers to the degree to which people believe they understand their emotional states (e.g., "I am often wrong about my feelings"); and finally, emotional repair refers to the person's belief in their ability to interrupt and regulate negative emotional states and prolong positive ones (e.g., "although sometimes I feel sad, I usually have an optimistic outlook"). Each subscale consists of 8 items and does not offer a global score. The original self-report has shown a high internal consistency (Cronbach's alpha for Attention = .90, Clarity = .90, Repair = .86). Our study obtained Cronbach alphas of .87 for Attention, .85 for Clarity and .82 for Repair.
- *Botín Foundation's Emotional Intelligence Test for Adolescents* (TIEFBA; Fernández-Berrocal, Ruiz-Aranda, Salguero, Palomera & Extremera, 2011). This self-administered battery for adolescents (12-17 years of age) provides performance measures for each of the four emotional abilities of Mayer and Salovey's theoretical model (1997). The test comprises 143 items presenting emotional situations in eight short cartoons with characters. It provides a total of seven scores: two area, four branch and the total score.

In this study we have used the four branch scores, referring to each of the four EI abilities, with the aim of obtaining more concise results which may help in future interventions. Emotional perception refers to the degree to which people can properly identify their own emotions and those of others, as well as the physiological and cognitive states and sensations involved. It involves the ability to label emotions and provide an appropriate word for each, whether positive such as joy, love or gratitude, or negative such as anger, sadness or envy (e.g., "to what extent do you think Rocío shows each

of the following feelings?"). Emotional facilitation is the ability to access emotions and feelings and to generate them in order to facilitate thinking, cognitive processes or problem solving, among others (e.g., "to what extent will feeling like this help Rocío to check the list of school materials she needs to buy this year?"). Emotional understanding includes the ability to interpret the meaning of complex emotions, for example, those generated in an interpersonal situation, as well as the ability to recognize emotional states transitioning into others and the appearance of simultaneous feelings (e.g., "what might Rocío be thinking to make her feel like this?"). Emotional management includes the ability to regulate one's own emotions and those of others, moderating negative emotions and intensifying positive ones without repressing or exaggerating the information they communicate (e.g., "what could Rocío do to go to school feeling happy?"). The test has demonstrated adequate internal consistency, with Cronbach's alpha values of .86 for Perception, .76 for Facilitation, .76 for Comprehension and .74 for Regulation. Cronbach's alphas obtained in our study were .86 for Perception, .78 for Facilitation, .80 for Comprehension and .76 for Regulation.

Procedure

First, schools were requested in writing to provide the signed authorization of families and informed consent of students. To guarantee anonymity during the process, numerical codes were used in each questionnaire, thus avoiding personal identification of students. A trait EI self-report and a maximum EI performance test were administered, and students were asked about their habits regarding cannabis use. A researcher was present in the classroom during the two non-consecutive 45-minute sessions in which the pen and paper test was performed.

Ethical considerations

This research was carried out in accordance with the principles covered by the Declaration of Helsinki (World Medical Association, 2013). The implementation of the present study's research plan was presented to the University of Cantabria's Doctoral Studies Academic Commission.

Data analysis

For the data analysis process the statistical package SPSS Statistics 24.0 was used. A quantitative, correlational methodology was employed. First, Cronbach's alpha reliability indices were calculated for each of the EI factors assessed. Descriptive analyses and point biserial correlation of the study variables were performed. Subsequently, binomial regression models were constructed based on the factors of trait EI (Emotional Attention, Clarity and

Repair) and ability EI (Emotional Perception, Facilitation, Understanding and Regulation), also controlling for the effects of age, gender and the school setting when observing its association with the dependent variables: “Lifetime use of hashish or marijuana”; “Number of days of hashish or marijuana use in the last 12 months”; “Weekly number of units”; “Use of hashish or marijuana if offered it by a friend”). Likewise, prevalence rates (PR) were obtained with their respective 95% confidence intervals (95% CI) (Espelt, Bosque-Prous & Mari-Dell’Olmo, 2019; Espelt, Mari-Dell’Olmo, Penelo & Bosque-Prous, 2017). In order to synthesize the amount of data, only the final models explaining a higher percentage of variance are presented.

Results

Prevalence of cannabis use in adolescents

Table 1 shows the most significant data regarding the prevalence of cannabis use in the study sample. The first point of interest is that two out of ten adolescents used cannabis. Among these, a majority had done so for forty or more days in the last 12 months (74.9%). Approximately half of the users smoked ten or more joints per week. Likewise, a fifth said they would use cannabis if offered it by friends (20.5%). In relation to sociodemographic variables, it can be seen that 18.3% of women used cannabis at some time, while among men the prevalence was somewhat

higher (26.4%). Regarding the 12-13 age group, 13.9% claimed to have used this substance, with an appreciable increase in use among the 14-16 group (27.3%). In relation to school setting, two out of ten urban school students used cannabis, while this figure was somewhat higher in students from rural schools (28.1%).

Descriptive and correlation analyses between cannabis consumption variables, trait and ability EI

Table 2 shows the descriptive statistics for the EI subscales used in this study, while the results of the correlation analysis between the EI and cannabis use variables are detailed in Table 3. As can be seen, there are significant negative associations between the variables of trait EI and ability EI and cannabis use, except for the attention to feelings that correlated directly and significantly. Specifically, for the “lifetime cannabis use” variable, the highest correlations were found with the factors of emotional perception and facilitation. In relation to “frequency of use last year”, the correlations with the factors of emotional attention and repair stood out. With respect to the “weekly units used” and “use if offered by friends”, the highest correlations were again obtained with emotional perception and facilitation.

In this section, and in order to synthesize the abundance of data, only the four final models which were statistically significant and explained a greater percentage of the criterion variance are presented (Table 4).

Table 1. *Cannabis use prevalences.*

Cannabis	Answer category	Percentage	N
Cannabis use	Yes	22.3	179
	No	77.7	620
Use over previous year	≥ 40 days	74.9	134
	< 40 days	25.1	45
Weekly units	≥ 10	51.4	92
	< 10	48.6	87
Would use it if offered by friends	Yes I would	20.5	161
	No I wouldn't	79.5	638
Use by gender	Female yes	18.3	73
	Female no	81.8	327
	Male yes	26.4	106
	Male no	73.6	293
Use by age	12-13 years yes	13.9	41
	12-13 years no	73.7	255
	14-16 years yes	27.3	137
	14-16 years no	58.9	366
Use by school context	Urban yes	19.6	107
	Urban no	80.4	438
	Rural yes	28.1	71
	Rural no	71.9	183

Table 2. Descriptive variables of trait and ability emotional intelligence depending on use or non-use of cannabis.

Cannabis use		Min/Max	M	MED	SD	CI 95%
TMMS Attention	No	8/40	23.80	23.00	7.20	23.20 / 24.30
	Yes	10/40	28.30	30.00	7.80	27.20 / 29.50
TMMS Clarity	No	8/40	23.70	24.00	7.20	23.10 / 24.30
	Yes	8/40	18.70	16.00	7.10	17.70 / 19.80
TMMS Repair	No	10/40	26.10	26.00	7.00	25.50 / 26.60
	Yes	10/40	20.40	18.00	7.30	19.30 / 21.50
TIEFBA Perception	No	75/129	103.00	105.00	12.40	101.90 / 103.90
	Yes	76/123	90.80	90.20	11.10	89.00 / 92.60
TIEFBA Facilitation	No	72/139	107.20	108.00	14.00	106.00 / 108.40
	Yes	73/123	94.40	94.70	11.80	92.60 / 96.20
TIEFBA Comprehension	No	77/144	106.50	106.40	14.00	105.40 / 107.70
	Yes	74/134	95.30	94.40	13.00	91.90 / 93.30
TIEFBA Regulation	No	70/114	92.60	92.90	8.80	93.30 / 97.30
	Yes	70/111	86.70	84.90	8.00	85.50 / 87.90

Note. TMMS: Trait Meta-Mood Scale; TIEFBA: Botín Foundation's Emotional Intelligence Test for Adolescents. M: mean; MED: median; SD: standard deviation; CI: confidence interval.

Table 3. Point biserial correlation between the variables of trait and ability EI and cannabis use.

	Lifetime	Previous year	Weekly units	Use if offered by friends
1. TMMS - Attention	.25**	.26**	.08	.29**
2. TMMS - Clarity	-.28**	-.23**	-.21**	-.30**
3. TMMS - Repair	-.32**	-.24**	-.10	-.33**
4. TIEFBA - Perception	-.38**	-.17*	-.25**	-.42**
5. TIEFBA - Facilitation	-.37**	-.22**	-.21**	-.34**
6. TIEFBA - Comprehension	-.33**	-.08	-.20**	-.30**
7. TIEFBA - Regulation	-.28**	-.08	-.12	-.27**

Note. TMMS: Trait Meta-Mood Scale; TIEFBA: Botín Foundation's Emotional Intelligence Test for Adolescents.

* = $p < .05$. ** = $p < .01$.

Binomial regression for the calculation of the prevalence rates of cannabis use based on the variables of trait and ability EI, taking into account gender, age and school setting

First, in relation to the model created for the dependent variable "lifetime cannabis use", independent variables of emotional clarity, repair, perception and facilitation, and age entered the equation. Among these, the highest PR were found for the emotional clarity [PR = 0.96; 95% CI (0.92-0.99)] and facilitation [PR = 0.96; 95% CI (0.94-0.97)] factors, these being similar to those of emotional perception [PR = 0.95; 95% CI (0.94-0.97)] and repair [PR = 0.93; 95% CI (0.90-0.97)]. Finally, subjects in the 14-16 group had a prevalence of use 0.73 times higher than that in the 12-13 group. Secondly, when we take "cannabis use per year" as the criterion variable, the independent variables of emotional repair [PR = 0.97; 95% CI (0.96-0.98)] and facilitation [PR = 0.98; 95% CI (0.97-0.99)] entered the equation. For the dependent variable "weekly number of units", emotional clarity [PR = 0.96; 95% CI (0.93-0.99)] and perception [PR = 0.97; 95% CI (0.96-0.98)] entered

the equation. Finally, the independent variables attention, clarity, repair, perception, facilitation and age were part of the equation for the model of the dependent variable "use if offered by friends". Among these, the highest PR were found for the attention [PR = 1.03; 95% CI (1.00-1.07)] and facilitation factors [PR = 0.97; 95% CI (0.95-0.99)], followed by emotional repair [PR = 0.94; 95% CI (0.91-0.98)] and perception [PR = 0.93; 95% CI (0.91-0.95)]. The prevalence of use among subjects in the 14-16 group was 0.65 times higher than among 12-13 group.

Binomial regression of cannabis use based on trait and ability EI for each age group (12-13 and 14-16 years)

As can be seen above (Table 4), the sociodemographic variable age was significant for the "lifetime cannabis use" model, as well as for the "if offered by friends" model. The results were then stratified according to the two age groups for both use variables (Table 5 and 6). First, for the "lifetime cannabis use" model with the 12-13 group, the independent variables repair, perception and facilitation became part of the equation. Among these, the highest PR

Table 4. *Binomial Regression of cannabis use based on trait and ability EI alongside sociodemographic factors.*

	B	SE	Wald	PR	CI 95% of OR
Lifetime use					
TMMS - Clarity	-0.07	0.00	49.52**	0.96	0.92 / 0.99
TMMS - Repair	-0.08	0.00	61.15**	0.93	0.90 / 0.97
TIEFBA - Perception	-0.06	0.00	94.58**	0.95	0.94 / 0.97
TIEFBA - Facilitation	-0.04	0.00	92.12**	0.96	0.94 / 0.97
Gender (F / M)	0.18	0.22	0.42	0.93	0.83 / 1.15
Age (12-13 / 14-16)	0.48	0.24	0.05*	0.73	0.63 / 1.00
Context (R / U)	0.20	0.23	0.39	0.93	0.83 / 1.14
Use over previous year					
TMMS - Repair	-0.02	0.01	8.09**	0.97	0.96 / 0.98
TIEFBA - Facilitation	-0.01	0.00	3.76*	0.98	0.97 / 0.99
Gender (F / M)	-0.25	0.24	1.03	0.32	0.44 / 1.30
Age (12-13 / 14-16)	0.48	0.27	2.61	1.60	0.88 / 2.82
Context (R / U)	0.19	0.30	0.51	1.22	0.70 / 2.26
Weekly units					
TMMS - Clarity	-0.04	0.02	6.84**	0.96	0.93 / 0.99
TIEFBA - Perception	-0.02	0.01	8.31**	0.97	0.96 / 0.98
Gender (F / M)	0.06	0.15	0.15	1.07	0.77 / 1.46
Age (12-13 / 14-16)	0.32	0.20	2.15	1.39	0.90 / 2.14
Context (R / U)	0.03	0.15	0.03	1.03	0.76 / 1.38
Use if offered by friends					
TMMS - Attention	0.08	0.00	51.15**	1.03	1.00 / 1.07
TMMS - Clarity	-0.09	0.00	55.53**	0.96	0.92 / 0.99
TMMS - Reparation	-0.09	0.00	62.89**	0.94	0.91 / 0.98
TIEFBA - Perception	-0.07	0.00	115.33**	0.93	0.91 / 0.95
TIEFBA - Facilitation	-0.04	0.00	67.18**	0.97	0.95 / 0.99
Gender (F / M)	0.09	0.23	0.18	0.96	0.86 / 1.21
Age (12-13 / 14-16)	0.55	0.27	3.92*	0.65	0.53 / 0.99
Context (R / U)	0.08	0.22	0.09	0.97	0.84 / 1.29

Note. TMMS: Trait Meta-Mood Scale; TIEFBA: Botín Foundation's Emotional Intelligence Test for Adolescents; B: coefficient; SE: standard error; PR: prevalence rate; CI: confidence interval.

* = $p < .05$; ** = $p < .01$.

Table 5. *Binomial regression of cannabis use based on trait and ability EI, segmented by cases aged 12 to 13.*

	B	SE	Wald	PR	CI 95% of OR
Lifetime use					
TMMS - Repair	-0.07	0.02	11.64**	0.93	0.89 / 0.97
TIEFBA - Perception	-0.04	0.01	8.39**	0.96	0.93 / 0.99
TIEFBA - Facilitation	-0.02	0.01	4.26*	0.97	0.98 / 0.99
Use if offered by friends					
TMMS - Repair	-0.08	0.03	9.23**	0.92	0.87 / 0.97
TIEFBA - Perception	-0.06	0.01	18.23**	0.94	0.92 / 0.97

Note. TMMS: Trait Meta-Mood Scale; TIEFBA: Botín Foundation's Emotional Intelligence Test for Adolescents; B: coefficient; SE: standard error; PR: prevalence rate; CI: confidence interval.

* = $p < .05$; ** = $p < .01$.

Table 6. Binomial regression of cannabis use based on trait and ability EI, segmented by cases aged 14-15-16.

	B	SE	Wald	PR	CI 95% of OR
Lifetime use					
TMMS - Attention	0.06	0.01	33.32**	1.07	1.04 / 1.09
TMMS - Repair	-0.08	0.01	42.88**	0.93	0.90 / 0.95
TIEFBA - Perception	-0.05	0.00	63.81**	0.95	0.94 / 0.96
TIEFBA - Facilitation	-0.04	0.00	82.40**	0.96	0.95 / 0.97
Use if offered by friends					
TMMS - Attention	0.07	0.01	33.13**	1.07	1.05 / 1.09
TMMS - Clarity	-0.08	0.01	36.18**	0.93	0.90 / 0.95
TIEFBA - Perception	-0.06	0.01	80.95**	0.94	0.92 / 0.96
TIEFBA - Facilitation	-0.04	0.00	56.50**	0.96	0.95 / 0.97

Note. TMMS = Trait Meta-Mood Scale; TIEFBA = Botín Foundation's Emotional Intelligence Test for Adolescents. B = coefficient; SE = standard error; PR = prevalence rate; CI = confidence interval.

* = $p < .05$; ** = $p < .01$.

were found for emotional facilitation factors [PR = 0.97; 95% CI (0.98-0.99)], followed by perception [PR = 0.96; 95% CI (0.93-0.99)] and repair [PR = 0.93; 95% CI (0.89-0.97)]. For the 14-16 model, the independent variables attention, repair, perception and facilitation entered the equation. The highest PR were found for attention [PR = 1.07; 95% CI (1.04-1.09)] and facilitation [PR = 0.96; 95% CI (0.95-0.97)], followed by perception [PR = 0.95; 95% CI (0.94-0.96)] and repair [PR = 0.93; 95% CI (0.90-0.95)]. Secondly, for the model of the dependent variable "if offered by friends", the independent variables repair [PR = 0.92; 95% CI (0.87-0.97)] and perception [PR = 0.94; 95% CI (0.92-0.97)] became part of the equation. Finally, for the 14-16 group, the variables attention, clarity, perception and facilitation entered the equation. Among these, the highest PR were found for attention [PR = 1.07; 95% CI (1.05-1.09)] and facilitation [PR = 0.96; 95% CI (0.95-0.97)], followed by perception [PR = 0.94; 95% CI (0.92-0.96)] and clarity [PR = 0.93; 95% CI (0.90-0.95)].

Discussion

The results yielded by the present study show that the prevalence of cannabis use among schoolchildren generally coincides with the data reported in the last Survey on Drug Use in Secondary School Students (ESTUDES 2016-2018) (Plan Nacional sobre Drogas, 2018); this has important implications at the prevention level and highlights the need for intensive work at the beginning of compulsory secondary education and even in the final years of primary education.

The main objective of this research was to analyse the relationship between trait EI, ability EI and cannabis use in school-age adolescents, taking into account gender, age and the school context. The findings of this study provide clues regarding the role of EI in relation to cannabis use at early ages. Indeed, it is noteworthy that both EI constructs were complementary, explanatory dimensions of this

issue. In this sense, both the components of trait EI and the experiential area of EI, which includes the ability to perceive and use emotions to facilitate decision making and cognitive performance, were associated with cannabis use in adolescents. However, the strategic area referring to the ability to understand the meaning of emotions and use this to achieve a specific objective had no explanatory power for the use of this substance. On the other hand, the influence of emotional attention on use is remarkable as the age of adolescents increases.

Given the data obtained, and in relation to the three factors of trait EI, it can be said that adolescents scoring higher on attention to their own emotions were more likely to use cannabis when offered it among their group of friends. Emotional attention was also one of the most strongly associated with lifetime cannabis use and with use when offered by friends in the 14-16 group. In this context, several studies have indicated how high levels of emotional attention are involved in abuse of alcohol, tobacco and cannabis in adults and adolescents (Limonero et al., 2013; Ruiz-Aranda et al., 2010, Ruíz-Aranda et al., 2006). Research has shown consistently negative associations between the emotional clarity and repair factors regarding anxiety and depression in the adolescent population (Fernández-Berrocal, Alcaide, Extremera & Pizarro, 2006; Extremera & Fernández-Berrocal, 2006; Lombas, Martín-Albo, Valdivia-Salas & Jiménez, 2014). Likewise, while greater clarity and repair have been linked to the appropriate use of stress management strategies (Fernández, Velasco & Campos, 2003; Saklofske, Austin, Galloway & Davidson, 2007), emotional attention has shown positive associations with anxiety, depression and maladjusted coping strategies such as ruminative thinking in young people (Extremera & Fernández-Berrocal, 2006; Lombas et al., 2014; Saklofske et al., 2007). Thus, while the tendency to focus attention on our own emotional states allows us to follow the process of our emotions, this may not be adaptive on some

occasions. High levels of attention to emotional states could lead to an increase in rumination and unpleasant moods (Ruíz-Aranda et al., 2006). If adolescents focus a great deal of attention on their feelings without being able to clarify what they feel at any moment or to regulate their emotions internally, they are more likely to decide to use cannabis in order to mitigate aversive emotional states. Because the search for personal identity, the departure from family values and the need for group acceptance are developmental characteristics which are accentuated with age (Sussman, Unger & Dent, 2004), this could explain the fact that emotional attention becomes a facilitator of cannabis use and its use in the presence of peers among the older age group (14 to 16 years old).

On the other hand, low levels of trait EI emotional clarity and repair were negatively associated with lifetime cannabis use and with a higher likelihood of smoking it with friends. Similarly, lower perceived ability to clearly understand emotional states was linked to higher weekly use of cannabis. Likewise, it was found that lower perceived capacity to repair negative moods was related to higher frequency of use during the previous year. Once results were stratified by age group, it was observed that the perceived ability to repair negative emotional states was inversely related to lifetime use in both age groups, as well as to use if offered it by friends in the 12-13 age group. At the same time, less emotional clarity was associated with greater use on being offered it by friends in the 14-16 group. The findings of this study are in line with those of previous studies in which a relationship between low scores on emotional repair and clarity and the use of this substance was found. It is worth mentioning that only some studies have thus far analysed the separate components of trait EI in young people and adolescents. However, the few carried out have shown that lower capacity to understand and regulate emotional states is associated with higher addictive substance use in the adolescent and university population (Limonero et al., 2006; Limonero et al., 2013; Ruíz-Aranda et al., 2010; Ruíz-Aranda, Fernández-Berrocal, Cabello & Extremera, 2006). Furthermore, peer group pressure is one of the factors most strongly present at the beginning of drug use, as well as in abuse situations (Golpe, Isorna, Barreiro, Braña & Rial, 2017; Teunissen et al., 2016). The results yielded by our research support the idea that adolescents with greater issues in understanding and regulating emotions could have problems in identifying peer-group pressure and managing differences between their motivations and those of others.

With regard to the four branches or factors of ability EI, the models were mostly obtained with emotional perception and facilitation, which together make up the experiential area of EI. The experiential area of EI is characterized by the ability to perceive and use emotions, thereby facilitating the decision-making and cognitive performance of adolescents (Fernández-Berrocal et al., 2011). In this study,

both emotional perception and facilitation were negatively associated with lifetime cannabis use and using it when offered cannabis in a group of friends.

Likewise, the emotional facilitation ability was negatively related to the frequency of use in the previous year, just as emotional perception was with levels of weekly use. These EI abilities were also the most influential when stratifying the results by age group. Here, emotional perception was negatively associated with both lifetime use of cannabis and use on being offered it by friends in both age groups. The emotional facilitation ability meanwhile was inversely related to lifetime use in both age groups, as well as to use on being offered it by friends in the 14-16 group. These findings are consistent with those of Brackett et al. (2004), whose research observed negative associations between the experiential branch of ability EI, cannabis use, illegal drugs, alcohol and shared use among groups of friends in university students. In their study with adolescents, Trinidad et al. (2002) also found that those with greater capacity to perceive, understand and regulate their emotional states reported lower use of tobacco and alcohol.

Despite the importance that emotional understanding and management have when interpreting emotions and regulating them, these components of ability EI were not explanatory of cannabis use variables when trait EI was taken into account. It is worth pointing out that although emotional understanding and management skills were not significant in the models proposed when taking into account trait EI, they did correlate inversely with some of the cannabis use variables. This fact not only demonstrates the relevance of knowing and processing emotional information but also of knowing how to use it to prevent risky behaviours related to cannabis use at an early age.

The results obtained in this study extend the previous evidence regarding the relationships between emotional variables and behaviours linked to cannabis use among young people (Brackett et al., 2004; Kun et al. 2010; Limonero et al., 2006; Limonero et al., 2013; Ruíz-Aranda et al., 2010). It may be concluded that those adolescents possessing a greater repertoire of abilities for perceiving the emotions of others and attending to their own in a moderate way, and with the ability to use emotional information to facilitate cognition and make use of strategies to understand and repair their own negative emotional states, are less likely to use cannabis. Young people with these skills are better able to manage their emotions adaptively and may not need to use other types of external regulators to deal with key life events at this stage. In this sense, given that the abilities included in EI can be learned and improved by avoiding health-risk behaviours (Mayer et al., 2008), we consider that these results could guide the design of clinical and educational interventions aimed at preventing the appearance of problems involving psycho-social imbalance in adolescence such as drug use, in particular cannabis.

Our results must be interpreted in the context of certain methodological limitations. It should be noted that a more heterogeneous sample would be desirable, incorporating samples from other communities in order to generalize results. Finally, it is important to remember the cross-sectional nature of the study. Future work should continue to corroborate the results found here through prospective designs which allow inference of causal relationships between the variables studied. Despite these limitations, this research provides additional information on the relationship between EI and cannabis use at the earliest stage of adolescence (12-16 years), which has hardly been studied. Likewise, since research combining the assessment of the constructs of trait and ability EI is scarce, this study provides a more complete understanding of their role on cannabis use at an early age.

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Conflicts of interests

The authors declare no conflicts of interest.

References

- Anglin, D. M., Corcoran, C. M., Brown, A. S., Chen, H., Lighty, Q., Brook, J. S. & Cohen, P. R. (2012). Early cannabis use and schizotypal personality disorder symptoms from adolescence to middle adulthood. *Schizophrenia Research*, 137, 45-49. doi:10.1016/j.schres.2012.01.019.
- Balluerka, N., Gorostiaga, A., Alonso-Arbiol, I. & Aritzeta, A. (2016). Peer attachment and class emotional intelligence as predictors of adolescents' psychological well-being: A multilevel approach. *Journal of Adolescence*, 53, 1-9. doi:10.1016/j.adolescence.2016.08.009.
- Bhattacharya, M., Dutta, A. K. & Mandal, M. K. (2004). Factor structure of emotional intelligence in India. *Psychological Studies*, 49, 142-146.
- Boden, M. T., Gross, J. J., Babson, K. A. & Bonn-Miller, M. O. (2013). The interactive effects of emotional clarity and cognitive reappraisal on problematic cannabis use among medical cannabis users. *Addictive Behaviors*, 38, 1663-1668. doi:10.1016/j.janxdis.2011.11.007.
- Brackett, M. A., Mayer, J. D. & Warner, R. M. (2004). Emotional intelligence and its relation to everyday behaviour. *Personality and Individual Differences*, 36, 1387-1402. doi:10.1016/S0191-8869(03)00236-8.
- Brackett, M. A. & Salovey, P. (2006). Measuring emotional intelligence with the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT). *Psicothema*, 18(Supl.), 34-41.
- Claros, E. & Sharma, M. (2012). The relationship between emotional intelligence and abuse of alcohol, marijuana, and tobacco among college students. *Journal of Alcohol and Drug Education*, 56, 8-37.
- Creemers, H. E., Dijkstra, J. K., Vollebergh, W. A., Ormel, J., Verhulst, F. C. & Huizink, A. C. (2010). Predicting life-time and regular cannabis use during adolescence; the roles of temperament and peer substance use: The TRAILS study. *Addiction*, 105, 699-708. doi:10.1111/j.1360-0443.2009.02819.x.
- Davis, S. K. & Humphrey, N. (2012). The influence of emotional intelligence (EI) on coping and mental health in adolescence: Divergent roles for trait and ability EI. *Journal of Adolescence*, 35, 1369-1379. doi:10.1016/j.adolescence.2012.05.007.
- Degenhardt, L., Coffey, C., Romaniuk, H., Swift, W., Carlin, J. B., Hall, W. D. & Patton, G. C. (2013). The persistence of the association between adolescent cannabis use and common mental disorders into young adulthood. *Addiction*, 108, 124-133. doi:10.1111/j.1360-0443.2009.02819.x.
- Díaz, A., Busto, A. & Caamaño, F. (2018). Alcohol, tobacco and cannabis consumption in adolescents from a multicultural population (Burela, Lugo). *Adicciones*, 30, 264-270. doi:10.20882/adicciones.915.
- Espelt, A., Bosque-Prous, M. & Marí-Dell'Olmo, M. (2019). Considerations on the use of Odds Ratio versus Prevalence or Proportion Ratio. *Adicciones*, 31, 257-259. doi:10.20882/adicciones.1416.
- Espelt, A., Marí-Dell'Olmo, M., Penelo, E. & Bosque-Prous, M. (2017). Estimación de la Razón de Prevalencia con distintos modelos de Regresión: Ejemplo de un estudio internacional en investigación de las adicciones. *Adicciones*, 29, 105-112. doi:10.20882/adicciones.823.
- European Monitoring Centre for Drugs and Drug Addiction (2018). *European Drug Report 2018: Trends and Developments*. Publications Office of the European Union, Luxembourg.
- Extremera, N. & Fernández-Berrocal, P. (2006). Emotional intelligence as predictor of mental, social, and physical health in university students. *The Spanish Journal of Psychology*, 9, 45-5. doi:10.1017/S1138741600005965.
- Fernández-Berrocal, P., Alcaide, R., Extremera, N. & Pizarro, D. A. (2006). The role of emotional intelligence in anxiety and depression among adolescents. *Individual Differences Research*, 4, 16-27.
- Fernández-Berrocal, P., Extremera, N., Palomera, R., Ruiz-Aranda, D. & Salguero, J. M. (2011). *Test de Inteligencia Emocional de la Fundación Botín para adolescentes (TIEFBA)*. Santander: Fundación Botín.
- Fernández, I., Velasco, C. & Campos, M. (2003). Inteligencia emocional, alexitimia y factores psicosociales. *Encuentros en Psicología Social*, 1, 246-250.
- Gascó, V. P., Badenes, L. V. & Plumed, A. G. (2018). Trait emotional intelligence and subjective well-being in

- adolescents: The moderating role of feelings. *Psicothema*, 30, 310-315. doi:10.7334/psicothema2017.232.
- Golpe, S., Isorna, M., Barreiro, C., Braña, T. & Rial, A. (2017). Binge drinking among adolescents: Prevalence, risk practices and related variables. *Adicciones*, 29, 256-267. doi:10.20882/adicciones.932.
- González-Yubero, S., Palomera, R. & Lázaro-Visa, S. (2019). Trait and ability Emotional Intelligence as predictors of alcohol consumption in adolescents. *Psicothema*, 31, 292-297. doi:10.7334/psicothema2018.315.
- Kun, B. & Demetrovics, Z. (2010). Emotional intelligence and addictions: A systematic review. *Substance Use & Misuse*, 45, 1131-1160. doi:10.3109/10826080903567855.
- Legleye, S., Piontek, D. & Kraus, L. (2011). Psychometric properties of the Cannabis Abuse Screening Test (CAST) in a French sample of adolescents. *Drug and Alcohol Dependence*, 113, 229-235. doi:10.1016/j.drugalcdep.2010.08.011.
- Limonero, J. T., Gómez-Romero, M. J., Fernández-Castro, J. & Tomás-Sábado, J. (2013). Influencia de la inteligencia emocional percibida y la impulsividad en el abuso de cánnabis en jóvenes. *Ansiedad y Estrés*, 19, 223-234.
- Limonero, J. T., Tomás-Sábado, J. & Fernández-Castro, J. (2006). Perceived emotional intelligence and its relation to tobacco and cannabis use among university students. *Psicothema*, 18 (Supl.1), 95-100.
- Lombas, A. S., Martín-Albo, J., Valdivia-Salas, S. & Jiménez, T. I. (2014). The relationship between perceived emotional intelligence and depressive symptomatology: The mediating role of perceived stress. *Journal of Adolescence*, 37, 1069-1076. doi:10.1016/j.adolescence.2014.07.016.
- Martins, A., Ramalho, N. & Morin, E. (2010). A comprehensive meta-analysis of the relationship between emotional intelligence and health. *Personality and Individual Differences*, 49, 554-564. doi:10.1016/j.paid.2010.05.029.
- Mayer, J. D. & Salovey, P. (1997). What is emotional intelligence? In P. Salovey & D. Sluyter (Eds.), *Emotional development and emotional intelligence: Implications for educators* (pp. 3-34). New York: Basic Books.
- Mayer, J. D., Salovey, P. & Caruso, D. R. (2008). Emotional intelligence: New ability or eclectic traits? *American Psychologist*, 63, 503. doi:10.1037/0003066X.63.6.503.
- Mayer, J. D., Salovey, P. & Caruso, D. (2002a). *Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT), Version 2.0*. Toronto, Canada: Multi-Health Systems.
- Mayer, J. D., Salovey, P. & Caruso, D. (1997). *Multifactor emotional intelligence scale, student version*. New Hampshire, Durham.
- Míguez, M. C. & Becona, E. (2015). Do cigarette smoking and alcohol consumption associate with cannabis use and problem gambling among Spanish adolescents? *Adicciones*, 27, 108-115.
- Nehra, D. K., Kumar, P., Sharma, V. & Nehra, S. (2013). Alexithymia and emotional intelligence among people with cannabis dependence and healthy control: A comparative study. *Dysphrenia*, 5, 49-55.
- Nehra, D. K., Sharma, V., Mushtaq, H., Sharma, N., Sharma, M. & Nehra, S. (2012). Emotional intelligence and self esteem in cannabis abusers. *Journal of the Indian Academy of Applied Psychology*, 38, 397-405.
- Petrides, K. V. (2011). Ability and trait emotional intelligence. In T. Chamorro-Premuzic, S. Von Stumm & A. Furnham, (Eds.), *The Wiley-Blackwell handbook of individual differences* (pp. 656-678). Malden, MA: Wiley-Blackwell.
- Plan Nacional sobre Drogas (2018). *Encuesta sobre el uso de drogas en enseñanzas secundarias en España (ESTUDES 2016-2018)*. Madrid, España: Ministerio de Sanidad, Servicios Sociales e Igualdad.
- Resurrección, D. M., Salguero, J. M. & Ruiz-Aranda, D. (2014). Emotional intelligence and psychological maladjustment in adolescence: A systematic review. *Journal of Adolescence*, 37, 461-472. doi:10.1016/j.adolescence.2014.03.012.
- Rial, A., Burkhart, G., Isorna, M., Barreiro, C., Varela, J. & Golpe, S. (2019). Cannabis use among adolescents: Risk pattern, implications and possible explanatory variables. *Adicciones*, 31, 64-77. doi:10.20882/adicciones.1212.
- Ruiz-Aranda, D., Cabello, R., Salguero, J. M., Castillo, R., Extremera, N. & Fernández-Berrocal, P. (2010). *Los adolescentes malagueños ante las drogas: La influencia de la inteligencia emocional*. Málaga: GEU.
- Ruiz-Aranda, D., Fernández-Berrocal, P., Cabello, R. & Extremera, N. (2006). Inteligencia emocional percibida y consumo de tabaco y alcohol en adolescentes. *Ansiedad y Estrés*, 12, 223-230.
- Saklofske, D. H., Austin, E. J., Galloway, J. & Davidson, K. (2007). Individual difference correlates of health-related behaviours: Preliminary evidence for links between emotional intelligence and coping. *Personality and Individual Differences*, 42, 491-502. doi:10.1016/j.paid.2006.08.006.
- Salguero, J. M., Fernández-Berrocal, P., Balluerka, N. & Aritzeta, A. (2010). Measuring perceived emotional intelligence in the adolescent population: Psychometric properties of the Trait Meta-Mood Scale. *Social Behavior and Personality: An international journal*, 38, 1197-1209. doi:10.2224/sbp.2010.38.9.1197.
- Salovey, P., Mayer, J. D., Goldman, S. L., Turvey, C. & Palfai, T. F. (1995). Emotional attention, clarity, and repair: Exploring emotional intelligence using the Trait Meta-Mood Scale. In J. W. Pennebaker (Ed.), *Emotion, disclosure, and health* (pp. 125-154). Washington, DC: American Psychological Association.
- Schutte, N. S., Malouff, J. M., Hall, L. E., Haggerty, D. J., Cooper, J. T., Golden, C. J. & Dornheim, L. (1998). Development and validation of a measure of emotional

- intelligence. *Personality and Individual Differences*, 25, 167-177. doi:10.1016/S0191-8869(98)00001-4.
- Silins, E., Horwood, L. J., Patton, G. C., Fergusson, D. M., Olsson, C. A., Hutchinson, D. M. & Coffey, C. (2014). Young adult sequelae of adolescent cannabis use: An integrative analysis. *The Lancet Psychiatry*, 1, 286-293.
- Teunissen, H. A., Kuntsche, E., Scholte, R. H., Spijkerman, R., Prinsein, M. J. & Engels, R. C. (2016). Friends' drinking norms and male adolescents' alcohol consumption: The moderating role of performance-based peer influence susceptibility. *Journal of Adolescence*, 53, 45-54. doi:10.1016/j.adolescence.2016.08.017.
- Trinidad, D. R. & Johnson, C. A. (2002). The association between emotional intelligence and early adolescent tobacco and alcohol use. *Personality and Individual Differences*, 32, 95-105. doi:10.1016/S0191-8869(01)00008-3.
- von Sydow, K., Lieb, R., Pfister, H., Höfler, M. & Wittchen, H. U. (2002). What predicts incident use of cannabis and progression to abuse and dependence?: A 4-year prospective examination of risk factors in a community sample of adolescents and young adults. *Drug and Alcohol Dependence*, 68, 49-64. doi:10.1016/S0376-8716(02)00102-3.
- World Drug Report 2018 (United Nations publication, Sales No. E.18.XI.9).
- World Medical Association. (2013). World Medical Association Declaration of Helsinki: Ethical principles for medical research involving human subjects. *JAMA*, 310, 2191-2194. doi:10.1001/jama.2013.281053.