International Journal of Clinical and Health Psychology 21 (2021) 100251

International Journal of Clinical and Health Psychology

www.elsevier.es/ijchp

ORIGINAL ARTICLE

A longitudinal study of preadolescent and adolescent substance use: Within-individual patterns and protective factors

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Received 15 January 2021; accepted 7 May 2021
Available online 10 July 2021

KEYWORDS
Substance use
Adolescence
Longitudinal profiles
Protective factors
Ex post facto study

Abstract *Background/Objective:* Substance use is one of the main risks for adolescent health. Many research projects have studied longitudinal patterns of use and risk/protective factors, but the number of studies focused on within-individual stability and change is low. The objective of this study was to discover specific longitudinal profiles of drug use and explore the role of social and emotional competencies, and empathy as possible protective factors against substance use. *Method:* This was a longitudinal study with 879 students (9-17 years at wave 1, 10-18 at wave 2). Substance use, social and emotional competencies, and empathy were measured with a survey. *Results:* Nine longitudinal profiles of substance use were found in this sample. Multinomial regression analysis found that low responsible decision making, self-management and affective empathy predicted the profiles of ascending user, chronic user and experiencer, respectively. Experiencer was also predicted by a low level of social awareness. *Conclusions:* The trend to a higher use over time can increase the odds of addiction in future. Some personal variables were found as protective factors against drug use. Thus, school interventions addressed to promote social and emotional competencies, and empathy seem necessary in order to decrease the adolescent drug use.
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PALABRAS CLAVE
Consumo de sustancias;
Adolescencia;
Perfiles longitudinales;

Estudio longitudinal del consumo de sustancias en preadolescentes y adolescentes: patrones intraindividuales y factores protectores

Resumen *Antecedentes/Objetivo:* El consumo de sustancias es uno de los mayores riesgos para la salud de los adolescentes. Numerosas investigaciones han estudiado el patrón longitudinal de consumo y factores de riesgo/protección, pero pocas han estudiado la estabilidad y el cambio a nivel intraindividual. El objetivo de este estudio fue descubrir patrones longitudinales

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https://doi.org/10.1016/j.ijchp.2021.100251
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Factores protectores;
Estudio longitudinal prospectivo

específicos de consumo de drogas y explorar el papel de las competencias sociales y emocionales, y la empatía como posibles factores protectores. *Método:* Un estudio longitudinal con 879 participantes (9-17 años en tiempo 1; 10-18 en tiempo 2). El consumo de sustancias, las competencias socioemocionales y la empatía se midieron con una encuesta. *Resultados:* Se encontraron nueve perfiles longitudinales de consumo. Los análisis de regresión encontraron que baja toma de decisiones responsables, autocontrol y empatía afectiva predijeron los perfiles de consumidor ascendente, consumidor crónico y experimentador, respectivamente. Experimentador también fue predicho por bajos niveles de conciencia social. *Conclusiones:* La tendencia a aumentar el consumo a través del tiempo puede incrementar el riesgo de adicción en el futuro. Algunas variables personales actúan como factores de protección. Por ello, parecen necesarias intervenciones escolares dirigidas a promocionar las competencias sociales y emocionales, y la empatía para disminuir el consumo de sustancias.

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Drug use is widespread among adolescents in most countries (ESPAD Group, 2016) and it is one of the main risks for adolescent health (World Health Organization, 2018), as well as a public health problem in Europe (EMCDDA, 2018). Drug use in childhood and adolescence can change the normative and crucial brain development, which occurs in this period of life (Volkow et al., 2019). Indeed, many research studies have found that early consumption increases the odds of acquiring addictive behaviors in future, including a more noxious substance use (Woodcock et al., 2015) and other psychosocial problems (Poudel & Gautam, 2017). A recent study by Chen et al. (2019) found that a prolonged drug use was a predictor of depression. Thus, in-depth knowledge of protective factors against drug use, especially at early stages such as childhood and adolescence is essential (Gázquez et al., 2016).

Cross-sectional studies on drug use have been fruitful, and there is a wide knowledge about the prevalence rates of drug use at different ages. Different reports agree that substance use increases with age from childhood to late adolescence (ESPAD Group, 2016). Moreover, most findings are consistent regarding the frequency of use of different substances: the most used is alcohol, followed by tobacco, cannabis and, finally, other strong drugs -cocaine, LSD, inhalants, etc.- (EMCDDA, 2018).

Although information regarding prevalence rates of use of different substances at different ages is plentiful, the number of studies about within-individual stability and change in substance use over time considering the frequency, onset and sequences of use is still low. Regarding between-individual changes in the frequency of use over time, in a study conducted by Martínez-Fernández et al. (2018), students in Grade 1 of secondary education were followed up for one year. Alcohol use increased from 9.7% to 18.5%, tobacco use from 3.2% to 11.1% and cannabis use from 1.6% to 8.7%. Regarding within-individual stability, 30.4% of alcohol consumers in Grade 1 continued in Grade 2, and 15.4% of tobacco users in Grade 2 already reported consumption of this substance in Grade 1.

Taylor et al. (2017) studied within-individual stability in frequency and onset of cannabis use in a sample of students from 13 to 18 years old. They found four profiles: non-users (the vast majority of the sample belonged to this group), late-onset occasional, early-onset occasional (the least prevalent group) and regular users. Both occasional groups and regular users included 20% of the sample, and they were more likely to evolve to a hazardous consumption.

In Spain, there are a few studies focused on longitudinal stability and change in substance use. Oliva et al. (2008) followed up 101 students at ages 13, 15 and 18. Three groups were found. A low-use group, which showed low consumption in the three waves, although it increased slightly throughout the adolescence. An ascending-use group showed more frequency of use than the low-use group, especially between ages 15 and 18. There was also an early-experimentation group that reported moderate use in early adolescence, increasing in mid-adolescence, and decreasing in late adolescence. Zych et al. (2020) examined longitudinal stability of drug use in a sample of Spanish students aged 9-17 years, followed up one year later. An increase in drug use over time was tested and three groups were found: non-users, occasional users and frequent users. While occasional users were quite unstable from wave 1 to wave 2 (22.86% became frequent users and 18.63% became non-user), frequent users and non-users showed high stability over time with 90.68% of frequent users and 89.12% of non-users who remained in the same group.

Thus, most of the longitudinal studies showed that the most numerous group is usually non-users (or a group with low drug use). Participants tend to remain in the same group over time and an increase in substance use is more common than a decrease in substance use. Nevertheless, there is a dearth of research about within-individual stability and change combining frequency, onset and sequences of substance use and, in general, the number of studies focused on within-individual stability and change is still low.

Different studies linked social and emotional competencies and substance use. Self-knowledge was identified as a protective factor against the use of alcohol, tobacco and illicit drugs in a research with 11 to 17 years old Australian students (Hodder et al., 2016). Moreover, Estévez et al. (2017) found that low emotional management predicted drug abuse, and difficulties in goal-oriented behavior predicted alcohol abuse. In a research study that

compared samples of addicted and non-addicted young adults, it was observed that people with drug addiction showed greater difficulties in emotional regulation, less self-knowledge, social knowledge and interpersonal skills (Parolin et al., 2017). Self-knowledge and emotional regulation and management are key variables to prevent school burnout and foster academic engagement, which are two factors related to alcohol use (Pérez-Fuentes et al., 2021).

Regarding relational variables, (Hernández-Serrano et al., 2016) pointed out that prosocial behavior was a protective factor against alcohol and cannabis use in adolescence. A research study, based on a sample of Estonian students aged 15-16 years, found that participants who scored low on social skills reported higher drug use than their peers with higher social skills (Vorobjov et al., 2014). Moreover, alterations in the decision making process were related to alcohol use (Clay & Parker, 2018) and cannabis use (Alameda et al., 2012; Velez et al., 2010)

Given the cross-sectional nature of these studies, it is not possible to conclude if social and emotional competencies are predictors, correlates, or outcomes of substance use. Thus, new longitudinal studies focused on the evolution of substance use, and social and emotional competencies at the within-individual level are necessary. Moreover, it is still necessary to further investigate the association of social and emotional competencies with different groups of substance users depending on the frequency of use, or even with specific longitudinal patterns of substance use.

Empathy has been linked to substance use in several studies. Ciarrochi et al. (2001) pointed out that substance users have less capacity to empathize with other people. Furthermore, Pérez de la Barrera (2012), in a study with adolescents, found that empathy was a protective factor against tobacco, alcohol, inhalants and cannabis use. On the other hand, a study conducted by Schmits and Glowacz (2019) with adolescents and young adults, showed that alcohol users had lower levels of empathy, but they did not find a link between empathy and cannabis use. Ferrari et al. (2014) compared empathy scores between a group of patients with a clinical diagnosis of drug addiction and a group of people with no history of substance abuse. The addicted participants showed significantly lower levels of affective empathy compared to non-addicted. However, the differences in cognitive empathy were not statistically significant.

On the other hand, some research studies have found that some drugs may increase affective empathy in psychotherapy patients. In this line, Hysek et al. (2014) developed an experiment with healthy 20 to 31 years old participants. The experimental group was administered a dosage of MDMA, whereas the control group was administered a placebo. The results showed that the experimental individuals got better results in affective empathy, although no alteration was observed in cognitive empathy. Furthermore, Dolder et al. (2016) carried out another research study with a similar procedure to Hysek et al. (2014), administering LSD to 25 to 65 years old participants. Higher levels of affective empathy were also found in the experimental group, as well as a decrease in cognitive empathy when compared to the control group.

The outcomes of the studies described above are inconsistent. Furthermore, most of the projects were conducted with a cross-sectional design, and some did not distinguish between affective and cognitive empathy. Therefore, it is still necessary to carry out studies that provide evidence about the longitudinal link between substance use and affective, and cognitive empathy.

Although drug use and its protective factors have been widely studied, there are still some gaps in knowledge that need to be addressed. Longitudinal research reports a general trend to remain in the same group of use over time, or an increase in substance use over time. However, few studies explored specific longitudinal profiles of drug use, taking into account the frequency, sequencing, stability and change at several time points. Most of the research projects are focused on one or a few substances, instead of considering a wide range of drugs. Moreover, a notable body of research found relations between social and emotional competencies, empathy and drug use, but the low number of longitudinal studies does not allow to draw conclusions regarding the chronological order in these variables.

Patterns of substance use are traditionally studied in adolescent samples. Nonetheless, Zych et al. (2020) found that 9 years old students already reported substance use. Precisely, the current study builds on the study conducted by Zych et al. (2020). They classified the participants into three groups (non-users, occasional users, frequent users) at each wave according to their frequency of use. Stability and change among groups over time were also measured in that research. However, within-individual change in frequency of substance use, and protective factors against substance use were not studied. Thus, the current study aims to explore within-individual change in substance use, combining the frequency of use of each participant at both waves. Specific longitudinal profiles are calculated taking into account the belonging group (non-user, occasional user or frequent user) of each participant combining wave 1 and wave 2. Protective factors against each profile are also explored, relating each specific profile to empathy and social and emotional competencies reported at wave 1.

Therefore, the current study has been conducted to: i. discover specific longitudinal profiles of drug use over time in a sample of students aged 9-17 followed up for one year; ii. explore if social and emotional competencies and empathy can act as longitudinal protective factors against drug use.

Method

Participants

The sample was selected by convenience. Eight schools located in Cordoba and Seville (Spain) took part in the study. The sample comprised 879 participants (49.9% girls, 50.1% boys) enrolled in grades 4, 5 and 6 of Primary Education and 1, 2 and 3 of Compulsory Secondary Education at wave 1, followed up one year later. The age range of the participants at wave 1 was 9-17 years (M = 11.98, SD = 1.87). At wave 2, participants were aged 10-18 years (M = 12.99, SD = 1.87).

There were 1,271 participants in the original sample, but 21 were excluded because they did not fill out at least 66%

of the substance use scale. Moreover, 371 were not followed up at wave 2 due to different motives (absent, moving to another school or illegible anonymous codes). The largest sampling mortality occurred between Grade 1 and Grade 2 of Secondary Education (91 students could not be followed up) and between Grade 6 of Primary Education and Grade 1 of Secondary Education (79 students could not be followed up).

Out of the 879 participants, 18 were excluded from the study of protective factors because they had more than 33% of missing data in the questionnaires focused on social and emotional competencies or empathy.

Instruments

Substance use was measured with the Self-Reported Antisocial Behavior Questionnaire (SRA; Loeber et al., 1989). Specifically, the items corresponding to the Substance use subscale (α = .92 at W1, Ω = .92 at W1; α = .93 at W2, Ω = .93 at W2) were: having drunk beer, having drunk wine, having drunk liquor (strong alcohol), having smoked tobacco, having smoked marijuana, and having used other strong drugs (pills, cocaine, mushrooms, etc.).This instrument measures substance use in the past six months, with a Likert scale, in which 1 means *No*; 2 *Yes, once*; 3 *Yes, twice*; and 4 *Yes, more times*.

Social and Emotional Competencies Questionnaire (SEC-Q; Zych et al., 2018) is made up of 16 items, divided into four subscales such as: Self-awareness (α = .64, Ω = .64) with items such as "I know how to label my emotions", Self-management and motivation (α = .64, Ω = .65) with items such as "I know how to motivate myself", Social-awareness and prosocial behavior (α = .70, Ω = .71) with items such as "I usually listen in an active way", and Responsible decision making (α = .68, Ω = .70) with items such as "I do not make decisions carelessly". The questionnaire was answered on a five-point Likert type, ranging from 1 (*totally disagree*) to 5 (*totally agree)* and showed good reliability (α = .81, Ω = .82).

The instrument used to measure empathy was the Spanish version of the Basic Empathy Scale (BES) by Jolliffe and Farrington (2006), validated in Spain (Villadangos et al., 2016). It has 20 items grouped in two factors: Affective empathy (α = .76, Ω = .76) and Cognitive empathy (α = .77, Ω = .78). It has a Likert-type response scale ranging from 1 (*totally disagree*) to 5 (*totally agree*) with a good reliability in the current sample (α = .83, Ω = .82).

Substance use subscale scores at wave 1 and wave 2 were used in this study, whereas *SEC-Q* and *BES* scores were used only at wave 1.

Procedure

This was a prospective longitudinal study in which participants were followed up twice (W1 and W2) over two school years. W1 and W2 questionnaires were matched using an anonymous code repeated in each data collection. This anonymous code made it possible to pair data of each participant at wave 1 with their data at wave 2 in order to measure within-individual change. School board directors were contacted to request their participation in this research study. Students were under 18; thus, parental consents were obtained. Participants filled in the questionnaires during their regular classroom hours in approximately 35-45 minutes. Students were informed that participation was voluntary, anonymous and confidential, and that they could withdraw from the study at any time. Data collection was done personally by members of the research team. This study was approved by the Ethics Committee of the University of Cordoba (Spain).

Data analyses

Patterns of substance use were formed through latent transition analysis using SAS 9.4 software Proc LTA macro (Collins & Lanza, 2010). The number of patterns in the dataset was determined using a combination of statistics including G^2, AIC, BIC, and log-likelihood. Participants were classified to each pattern at wave 1 and wave 2 based on their probabilities of "no", "1-2 times" and "more times" answers regarding each substance use. Probabilities of transitions among these patterns from wave 1 to wave 2 were calculated (see Zych et al., 2020 for more details).

The current study analyzed, for the first time, within-individual change in these patterns. To address objective 1 and obtain longitudinal within-individual profiles of substance use, participants were coded as shown in Table 1. After that, the number of participants belonging to each profile was calculated together with the percentage of use of each substance in each wave. Descriptive analyses were conducted to determine prevalence rates of each substance use in different profiles.

Regarding the second objective, once different longitudinal profiles were obtained, a multinomial logistic regression analysis was conducted. It was aimed to test possible predictors of each longitudinal profile of drug use including self-

Table 1 Longitudinal profiles of drug use.

		Wave 2		
		Non-users (0)	Occasional users (10)	Frequent users (20)
Wave 1	Non-users (0)	Non-user (0)	New user (10)	Extreme new user (20)
	Occasional users (1)	Experiencer (1)	Stable occasional user (11)	Ascending user (21)
	Frequent users (2)	Extreme descending user (2)	Descending user (12)	Chronic user (22)

Note. Numbers in brackets are the re-codification of original patterns of use to obtain longitudinal profiles of substance use.

Table 2 Numbers and percentages of participants in each longitudinal profile of substance use.

Profile	Number of participants	Percentage
Non-user	599	68.1
Stable occasional user	112	12.7
New user	56	6.4
Ascending user	37	4.2
Chronic user	35	4
Experiencer	33	3.8
Extreme new user	4	0.5
Extreme descending user	2	0.2
Descending user	1	0.1

awareness, self-management and motivation, social-awareness and prosocial behavior, responsible decision making, affective empathy, cognitive empathy and age. All these analyses were performed using software SPSS version 25.

Results

Longitudinal profiles of drug use

According to latent transition analysis, the best fitting model classified participants into three patterns including non-users, occasional users, and frequent users (two-group model log-likelihood = −3782.87, G^2 = 2050.92, AIC = 2104.92, BIC = 2233.95; three-group model: log-likelihood = − 3599.01, G^2 = 1683.21, AIC = 1771.21, BIC = 1981.48; four-group model: log-likelihood = − 3554.45; G^2 = 1594.10; AIC =1720.10; BIC = 2021.16).

Longitudinal within-person profiles of substance use were obtained by combining wave 1 and wave 2 profiles for each participant. Numbers of participants and percentages of the sample belonging to each profile are shown in Table 2. The most prevalent profile was non-users (65.7%), followed by stable occasional users (13.2%). The least prevalent profiles were extreme descending users (0.3%) and descending users (0.7%). Table 3 shows prevalence rates of each substance use in each profile.

Predictors of longitudinal profiles of substance use

Table 4 shows the results of a multinomial logistic regression analysis that included social and emotional competencies, empathy and age as predictors of different profiles of substance use compared to non-users. Only profiles with more than 30 participants were included in the regression analysis. Thus, extreme new users, extreme descending users and descending users were excluded because they did not have enough participants to conduct the analysis. The results showed that participants with low levels of social-awareness were more likely to be experiencers (OR = 0.47; 95% CI = 0.22-0.99; p = .046). Low levels of responsible decision making and self-management predicted being an ascending user (OR = 0.49; 95% CI = 0.33-0.74; $p < .001$) and a chronic

Table 3 Percentage of each substance use in each longitudinal profile.

	Beer		Wine		Strong alcohol		Tobacco		Cannabis		Other drugs	
	Wave 1	Wave 2	Wave 1	Wave 2	Wave 1	Wave 2	Wave 1	Wave 2	Wave 1	Wave 2	Wave 1	Wave 2
New user	0	56.2	0	78.3	0	62.5	0	25	0	4.3	0	2.1
Extreme new user	0	100	0	64.3	0	100	0	64.3	0	31.4	0	14.3
Experiencer	79.3	0	83.9	0	58.1	0	6.7	0	3.3	0	19.4	0
Stable occasional user	52.4	54.2	57.6	57.6	50	59	15.7	13.5	1.2	6	0	1.2
Ascending user	61.2	92.4	47	67.2	65.7	97	21.5	63.6	3	29.1	3	3
Extreme descending user	100	0	100	0	100	0	100	0	100	0	100	0
Descending user	100	60	80	0	100	80	80	40	0	0	0	0
Chronic user	79.1	86	66.7	73.8	97.7	100	82.1	81	31.2	48.8	16.3	7

Table 4 Longitudinal predictors of each profile of substance use.

	Experiencer			Stable occasional user			New user			Ascending user			Chronic user		
	OR	95%CI		OR	95%CI		OR	95%CI		OR	95%CI		OR	95%CI	
Self-awareness	1.49	0.76	2.92	0.90	0.62	1.34	0.98	0.58	1.65	0.85	0.45	1.59	0.84	0.45	1.58
Self-management	1.18	0.68	2.06	0.87	0.62	1.22	0.79	0.51	1.24	1.03	0.58	1.81	0.54*	0.31	0.92
Social awareness	0.47*	0.22	0.99	0.64	0.39	1.04	1.19	0.61	2.34	0.74	0.32	1.70	0.74	0.33	1.69
Responsible decision making	0.68	0.43	1.06	1.04	0.79	1.37	0.99	0.69	1.42	0.49**	0.33	0.74	0.69	0.45	1.07
Cognitive empathy	1.18	0.62	2.22	0.74	0.49	1.12	1.07	0.61	1.88	1.46	0.66	3.20	0.99	0.46	2.13
Affective empathy	0.54*	0.31	0.92	0.97	0.67	1.39	1.03	0.65	1.64	0.94	0.52	1.71	0.70	0.37	1.33
Age	1.04	0.84	1.29	1.77**	1.54	2.02	1.51**	1.28	1.78	2.52**	1.92	3.32	3.33**	2.41	4.60

Note. all comparisons with non-users as a reference group.
* $p < .05$;
** $p < .01$.

user(OR=0.54;95%CI=0.31-0.92;p=.024),respectively.Agewas alsoapredictorofstableoccasionaluser(OR=1.77;95%CI=1.54-2.02;$p<.001$),newuser(OR=1.51;95%CI=1.28-1.78;$p<.001$), ascendinguser(OR=2.52;95%CI=1.92-3.32;$p<.001$)andchronic user(OR=3.33;95%CI=2.41-4.60;$p<.001$).

Discussion

Substance use is a widespread behavior which can be harmful for adolescents in a crucial period of development (Volkow et al., 2019). Nevertheless, there are still some gaps in knowledge, especially concerning specific longitudinal within-individual profiles of substance use considering its frequency, stability and change, together with protective factors against consumption. Therefore, this study was conducted to determine specific longitudinal profiles of substance use in a sample of adolescents, and to explore if empathy and social and emotional competencies can be longitudinal protective factors against substance use.

Regarding longitudinal profiles of substance use, the majority of the sample reports no use at both waves. This result is congruent with previous studies in which the most numerous group was non-users (Taylor et al., 2017). Despite this large group of non-users, results are worrying, taking into account that almost a third of the students between 9 and 17 years are substance users. The next most prevalent longitudinal profile is stable occasional users, which could be a sign of the normalization of sporadic use among school age children.

Comparing the set of profiles where the frequency of use increased over time (new users, extreme new users, and ascending user) with the set of profiles where substance use decreased (experiencer, descending user and extreme descending user), there is a notable tendency to increase use rather than to decrease it. Adolescents are almost three times more likely to increase the frequency of drug use over time. These results are consistent with the study conducted by Oliva et al. (2008), who found the highest prevalence in the low-use group, followed by ascending use and, lastly, those that decreased their consumption over time. Nonetheless, the sample used by Oliva et al. (2008) had a minimum age of 13, while in our sample the minimum age was 9. These data suggest that longitudinal change in the frequency of use may occur even in young participants. The increase of experimental behaviors and hazardous habits during adolescence could be an explanation of why ascending use is more prevalent than descending use.

In relation to social and emotional competencies as predictors of substance use, a low level of responsible decision-making predicted the role of ascending users. A possible reason could be that this profile does not weigh the possible negative consequences and seeks short-term rewards (Velez et al., 2010). In addition, low levels of self-management are a risk factor to be chronic users, which is congruent with the results by Estévez et al. (2017). A lack of behavioral regulation is closely related to substance abuse. Likewise, low social awareness was negatively associated with sporadic use and experiencers. A plausible explanation could be that difficulties in understanding the mechanisms of social relationships could be related to accepting certain risky behaviors. This result is in line with Parolin et al. (2017), who also found a relationship between low social knowledge

and drug use, but in their study, in participants with addiction.

Results show that participants who score low in affective empathy at wave 1 were more likely to be experiencers. These students could use drugs as a mean to feel part of a group. On the other hand, cognitive empathy was not related to any profile of users. These results are congruent with the study by Ferrari et al. (2014). However, other authors found an increase in affective empathy after using some specific drugs (Dolder et al., 2016; Hysek et al., 2014). Nonetheless, comparisons should be made with caution because these research projects studied clinical samples (Ferrari et al., 2014) or healthy samples but with an experimental design and specific substances (Dolder et al., 2016; Hysek et al., 2014). Future studies could further investigate the relation between drug use and empathy in order to solve these methodological differences. Given that some adolescents show different problem behaviors at the same time (Espejo-Siles et al., 2020; Nasaescu et al., 2020), it is important to study substance use in relation to other problems. Future studies should focus on these problem behaviors from a holistic and comprehensive perspective.

The biggest strength of this study is its longitudinal design, which made it possible to find specific profiles of use over time and to discover predictors of substance use. This study uses a broad sample of children and adolescents, and its results are probably generalizable to other similar contexts. Moreover, we provided information about drug use in 9 to 17 years old participants. Nevertheless, the convenience sampling used in this study has some limitations and future studies should confirm our results with representative samples to make sure that they are generalizable. Although this study uses validated measures with good psychometric properties, reliability of some subscales could be improved. Also, measuring social desirability could be useful to discover possible response bias that may occur in studies with self-reports. New longitudinal studies with more waves of data collection and differentiating profiles according to the type of drug could provide a wider pattern of drug use over time. Also, emerging phenomena such as buying drugs online (Oksanen et al., 2021) should be studied in relation to different patterns of drug use.

Even with some limitations, these results have important implication for policy and practice. Prevention programs against drug use should be implemented from Primary Education in order to prevent early use and delay as much as possible the increase in the frequency of use. These programs should include activities to promote affective empathy and social and emotional competencies, especially self-management, social awareness and prosocial behaviors, and responsible decision making. These competencies could also be promoted in clinical settings where profiles of substance use should be assessed in preadolescence and adolescence.

Funding

The current study was funded by a research grant for the project “School bullying as a determinant of substance use: a longitudinal study of risk and protective factors”, granted by the Spanish Ministry of Health, Consumer Affairs and Social Welfare within the National Plan against Drugs 2019 (reference 2019/016). The first author received a grant for the university faculty training from the Spanish Ministry of Science, Innovation and Universities (FPU19/02907).

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