

The age of onset for alcohol consumption among adolescents: Implications and related variables

La edad de inicio en el consumo de alcohol en adolescentes: implicaciones y variables asociadas

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Abstract

Adolescence is a critical period in the development of addictive behaviors. In particular, the age at which adolescents start drinking is not a trivial matter, given the important consequences that it has. However, relatively little is known about what it is that causes them to start drinking at an ever earlier age. The aim of this paper is to collect new empirical data about the implications of an early age of onset and, at the same time, to identify possible associated variables. Furthermore, the mean age of onset of the different substances is updated by expanding the sample frame of the ESTUDES (14-18 years) to incorporate adolescents aged 12 and 13. The results obtained with a sample of 3,419 adolescents from the Autonomous Community of Galicia ($M = 14.57$ and $SD = 1.76$) reveal that at 13.4 years of age, the age at which adolescents tend to start drinking is lower than suggested by ESTUDES 2016-2017. In addition, those who start drinking earlier are more likely to use other substances, their rates of high-risk consumption are 3 times higher and they are more involved in potentially dangerous practices. Finally, variables such as risk perception and expectations of use yield very limited explanatory capacity, especially if they are compared with those related to drinking within the family or peer group. These results reinforce the need to delay the age of alcohol onset as one of the strategic objectives of prevention policies.

Keywords: Adolescents; Alcohol; Drugs; Age of onset; Related variables.

Resumen

La adolescencia constituye un período crítico en el desarrollo de conductas adictivas. En particular, la edad a la que los jóvenes se inician en el consumo de alcohol no es una cuestión banal, habida cuenta de las importantes repercusiones que posee a diferentes niveles. Sin embargo se sabe poco de por qué cada vez se empieza a consumir de manera más precoz. El objetivo del presente trabajo ha sido recabar nuevos datos empíricos sobre las implicaciones de una edad de inicio temprana e identificar, al mismo tiempo, posibles variables asociadas. Se han actualizado además las edades medias de inicio de consumo de distintas sustancias, ampliando el marco muestral habitual del ESTUDES (14-18 años), incorporando a los adolescentes de 12 y 13 años. Los resultados obtenidos con una muestra de 3419 adolescentes de la comunidad gallega ($M = 14,57$ y $DT = 1,76$) permiten constatar que la edad a la que los adolescentes suelen iniciarse en el consumo de alcohol es menor de lo que sugiere el ESTUDES 2016-2017, situándose en 13,4 años. Además quienes se inician antes en su consumo presentan una mayor probabilidad de consumir otras sustancias, tasas de consumo de riesgo 3 veces superiores y se implican más en prácticas potencialmente peligrosas. Por último, variables como la percepción del riesgo o las expectativas presentan una capacidad explicativa escasa, sobre todo si se compara con otras relacionadas con el consumo del entorno familiar o entre iguales. Los resultados refuerzan la necesidad de retrasar la edad de inicio del consumo de alcohol como uno de los objetivos estratégicos de las políticas de prevención.

Palabras clave: Adolescentes; Alcohol; Drogas; Edad de inicio; Variables asociadas.

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Adolescence is a complex developmental stage in which changes occur at physical, psychological, biological, intellectual and social levels, marking the transition from childhood to adulthood. It is essentially a critical period during which new capacities are acquired and objective and subjective needs specific to this developmental present themselves. All this makes adolescents as a group particularly vulnerable to developing certain high-risk behaviors, among them drug use (Rosabal, Romero, Gaquín & Hernández, 2015). Recent research carried out in Spain has attempted to provide evidence to emphasize the importance of drinking and use of other substances in adolescence, both at a socio-sanitary level in general and for mental health in particular (Bousoño et al., 2017; Carbia, López-Caneda, Corral & Cadaveira, 2008; Díaz Geada, Busto Miramontes & Caamaño-Isorna, 2018; Fonseca, Ortuño, Paino & Muñiz, 2016; López-Caneda et al., 2014), as well as the link between them and the appearance of new behavioral addictions, mainly related to the use of Internet and social networks (Golpe, Gómez, Braña, Varela & Rial, 2017). The research shows beyond doubt that these issues are enormously complex both from an explanatory and an applied point of view (Teixidó-Compañó et al., 2019; Vargas-Martínez, Trapero-Bertran, Gil-García & Lima-Serrano, 2018).

The age at which adolescents start drinking alcohol is not a trivial matter. Numerous studies have pointed out that adolescents who begin drinking earlier have a higher risk of brain damage and neurocognitive consequences (Cadaveira, 2009; Carbia, Cadaveira, Caamaño-Isorna, Rodríguez & Corral, 2017; Zeigler et al., 2005). Moreover, the probability of involvement in numerous risky practices, such as fighting or acts of violence (Gruber, DiClemente, Anderson & Lodico, 1996; Hingson, Edwards, Heeren & Rosenbloom, 2009), worse educational performance (Rothman, Dejong, Palfai & Saitz, 2008), high-risk sexual practices (Donovan, 2004; Stueve & O'Donnell, 2005) or traffic accidents (Hingson, Heeren, Levenson, Jamanka & Voas, 2002) is also higher among those who start drinking early. Another aspect for which the age of alcohol onset raises great concern is that, for many researchers and professionals, alcohol serves as a "gateway" to the use of other substances (Kirby & Barry, 2012; Yu & Williford, 1992). The literature linking the early use of alcohol to a greater likelihood of consuming other substances is extensive (Barry et al., 2016; Ellickson, Tucker & Klein, 2003; Gruber et al., 1996). The greater risk of developing abusive drinking or even a possible disorder after earlier onset has also been documented (Caamaño-Isorna, Corral, Parada & Cadaveira, 2008; Moss, Chen & Yi, 2014).

However, despite the enormous importance that has been attached to the subject, relatively little is still known about what it is that makes adolescents begin drinking alcohol at an increasingly earlier age. While there is ample lit-

erature on the possible variables at the root of alcohol use (Steketee, Jonkman, Berten & Vettenburg, 2013), binge drinking (Golpe, Isorna, Barreiro, Braña & Rial, 2017; Motos, Cortés, Giménez & Cadaveira, 2015) or even the practice of street drinking (Golpe, Barreiro, Isorna, Varela & Rial, 2017; González, 2015), not many studies have specifically focused on attempting to explain the age of onset. Some of them have tried to analyze the differences based on gender. Thus, not only have studies been done showing that boys have a greater propensity for displaying externalizing behaviors (Kessler et al., 2012; Ortuño, Aritio & Fonseca, 2017; Ortuño, Fonseca, Paño & Aritio, 2014), but that they also tend to begin drinking sooner (Sartor, Lynskey, Heath, Jacob & True, 2007; Trim, Schuckit & Smith, 2010). Others have linked early consumption to personal variables such as favorable expectations towards alcohol (Adolfson et al., 2014; Fisher, Miles, Austin, Camargo & Colditz, 2007) or a low perception of risk (Moral, Rodríguez & Sirvent, 2006), while yet others have emphasized the influence of the human environment in terms of both family (Donovan & Molina, 2011; Sher, Walitzer, Wood & Brent, 1991; Trim et al., 2010) and peers (Fisher et al., 2007; Hawkins et al., 1997; Mundt, 2011).

According to the data collected by the latest national survey on drug use in secondary education (ESTUDES 2016-2017) (Plan Nacional sobre Drogas, 2018a), the age of onset of alcohol consumption is just 14, slightly below that of smoking (14.1). With respect to other substances, it should be noted that cannabis is usually tried for the first time on average at 14.8 years and cocaine and amphetamines at 15.1. However, it is conceivable that given the technical-methodological limitations connected with the sample design of ESTUDES itself, these data may not faithfully represent what is actually happening in reality. It is logical to think that if alcohol onset age is assumed to be getting younger and younger, it would be recommendable to expand the sampling frame by incorporating adolescents aged 12 and 13. Although the ESTUDES 2016-17 (Plan Nacional sobre Drogas, 2018a) data on alcohol use invite us to draw positive conclusions regarding the effort made over recent years in terms of prevention, one of the issues that continues to worry professionals and researchers has to do with the early age at which adolescents begin to drink alcohol (Marshall, 2014). So much so that delaying the age of onset was already set as one of the objectives of the *Action Plan on Drugs (Plan de Acción sobre Drogas) 2013-2016* (Plan Nacional sobre Drogas, 2013) (general objective 4) and one of the general objectives of the current *National Strategy against Addiction (Estrategia Nacional sobre Adicciones) 2017-2014* (Plan Nacional sobre Drogas, 2018b). The same can be said of different regional plans, as is the case with the *Galician Plan on Addictive Disorders (Plan de Trastornos Adictivos de Galicia) 2011-2016* (Xunta de Galicia, 2010) (specific objective 1.3).

The present study pursues two fundamental objectives: on the one hand, to provide new evidence regarding the implications of starting alcohol use early, both in terms of habits of use, intensive use and high-risk use of alcohol and drugs in general (assessed through specific tools such as AUDIT or CRAFFT), as well as participation in different high-risk practices; on the other hand, to identify some of the possible variables associated with early onset by trying to compare the explanatory capacity of some personal variables with others that have to do with how alcohol is used in the environment.

Regarding the first objective, the working hypothesis in the existing literature is that the younger the adolescents are when they begin drinking alcohol, the greater the likelihood of them using both alcohol and other substances (Barry et al., 2016) and of having higher rates of intensive and high-risk consumption (Moss et al., 2014), and the more likely they are to be involved in high-risk practices (Donovan, 2004, Gruber et al., 1996). As regards the second objective, the working hypothesis is that the age of alcohol onset is linked to both individual and environmental variables (Fisher et al., 2007), although there is controversy as to which of them is more influential (Blackson & Tarter, 1994; Donovan, 2004).

Finally, although it is not the main objective of the work, it is also a good opportunity to update the onset ages for use of the different substances, incorporating the 12-13 year age range into the sampling frame and, on the other hand, to compare if there are significant variations in this respect in terms of gender.

Method

Participants

To put the proposed objectives into practice, a survey was carried out among the student population in compulsory secondary education (ESO), higher secondary education (Baccalaureate) and vocational training programs of the Autonomous Community of Galicia. For sample selection purposes, a two-stage sampling process was used: by cluster for the selection of first level units (schools) and by quota, according to gender and course year, for the selection of second level units (individuals). A total of 37 schools, both public and private/charter, from the four provinces in Galicia participated in the study, with equal quotas at the population level.

Initially, 3,714 questionnaires were collected. After scrutiny of the database, 295 cases were eliminated, either because the questionnaire was incomplete (15), because they had inconsistent response patterns (22) with serious contradictions in the information collected across different sections, or because they were outside the age range (258). The final sample consisted of a total of 3,419 adolescents (50.6% boys and 49.4% girls) aged between 12 and 18 (M

$= 14.57$, $SD = 1.76$). Of these, 2,236 attended public and 1,183 attended private/charter schools, with 73.3% studying ESO (38.2% in the first phase 35.1% in the second phase), 20.4% higher secondary (Bachillerato) and 6.2% basic vocational training (PCPI) or an intermediate level vocational program (Ciclo Formativo de Grado medio).

Instrument

Data collection was by means of an ad hoc questionnaire prepared expressly for the present study which included a total of 116 items grouped into 3 blocks: (1) the first block was extracted from the 2010 national survey on drug use in secondary education (ESTUDES 2010) (National Plan on Drugs, 2011) and contained questions regarding substance use habits (alcohol and other) during one's lifetime, in the last year and in the last month, as well as questions about the age of onset for the different substances; (2) the aim of the second block was to assess the possible implications of alcohol consumption. To this end, a block extracted from the European School Survey on Alcohol and Other Drugs [ESPAD 2011] (Hibell et al., 2012) was included. It covers participation in different high-risk practices (fights, accidents, unprotected sex, going to ER, etc.) and two screening tools for high-risk use: the Alcohol Use Disorder Identification Test (AUDIT) in its self-administered version (Rial, Golpe, Araujo, Braña & Varela, 2017), with satisfactory internal consistency ($\alpha = .77$), and the CRAFFT Substance Abuse Screening Test validated empirically in the work of Rial et al. (2019) with a Cronbach's α of .74; (3) a third block included questions similar to those in the 2010 ESTUDES and the 2011 ESPAD to assess possible variables linked to the age of alcohol onset that could in some way be interpreted as prognostic factors. The perception of risk was assessed with three items which, although not constituting a scale in themselves, presented acceptable reliability through their internal consistency ($\alpha = .64$) (Pardo & Ruiz, 2001; Prieto & Delgado, 2010). Expectations regarding alcohol use were assessed with a set of 10 items. Exploratory factor analysis (EFA) provided two factors (positive expectations and negative expectations) which jointly explained 64.43% of the variance of the data, the former 37.04% and the latter 27.39%. Each factor comprised five items and both had a high Cronbach's α coefficient ($\alpha_{\text{positive expectations}} = .86$ and $\alpha_{\text{negative expectations}} = .84$). Finally, five items were included to assess alcohol use both in the family environment and by peers, as well as various sociodemographic questions. This questionnaire was also used in the piloting of the study by Rial et al. (2019).

Procedure

The data was gathered in the school classrooms, in small groups, through a questionnaire completed individually by each student, with psychologists experienced in performing this type of task responsible for collecting the infor-

mation. Each subject was informed of the purpose of the study and that the data would be treated in a completely confidential and anonymous manner. Consent and collaboration was obtained from both the school management and the respective parental associations. Participation was completely voluntary and the time necessary for completion of the questionnaire was approximately 25 minutes. The study was approved by the Bioethics Committee of the University of Santiago de Compostela.

Data analysis

After an initial descriptive analysis, a correlation analysis was carried out by calculating the Pearson correlation between metric variables. In the case of quantitative variables, the differences between the three questionnaire groups according to the age of onset were analyzed by applying a one-way ANOVA (with a *post-hoc* Tukey test for the comparison of groups and the partial eta squared coefficient (η^2p) to estimate effect size. In the case of qualitative or categorical variables, chi-square tests were used along with the calculation of contingency coefficients (CC). Finally, a logistic regression analysis was carried out to estimate the associated odds ratios for different variables. The analyses were performed with the statistical package IBM SPSS Statistics 20.

Results

Table 1 shows the prevalences of use for the different substances among adolescents aged between 12 and 18 during their lifetime, in the last year and in the last month. As can be seen, alcohol is the most widely used substance by adolescents (58.7% in the last year and 37.9% in the last month), followed by tobacco (30.4% and 19.9%, respectively) and cannabis (18.9% and 10.7%).

Regarding the average age of onset of the different substances, this is earliest for alcohol and tobacco (13.4 and 13.6 respectively). The first episode of drunkenness takes place at 14.5 years, immediately before the start of cannabis use (14.6). Cocaine and other substances (ecstasy, am-

phetamines and hallucinogens) are those with the latest onset (14.9 and 15.3 respectively). A look at the prevalence of use in under 14-year-olds, an age range not included in ESTUDES, shows that 4 out of 10 adolescents who have tried alcohol or tobacco at some time in their lives (44.8% and 44.1% respectively) did so before age 14, with 22.4% in the case of cannabis. Furthermore, as expected, the incorporation of the 12-13 age range into the sample has caused the age of onset to decrease for all substances.

With regard to gender (Table 2), results show the existence of statistically significant differences in the age of alcohol onset ($M_{boys} = 13.1$ vs $M_{girls} = 13.8$) ($t = -7.27$; $p < .001$), first drunkenness ($M_{boys} = 14.2$ vs $M_{girls} = 14.8$) ($t = -5.25$; $p < .001$), and smoking ($M_{boys} = 13.4$ vs $M_{girls} = 13.8$) ($t = -3.09$; $p < .01$) – particularly in the first two cases – with the boys being those who started earlier.

Implications or associated risks

The correlations shown in Table 3 indicate that the earlier adolescents start drinking alcohol, the sooner they begin to use other substances, such as tobacco. ($r_{xy} = .55$; $p < .001$), cannabis ($r_{xy} = .55$; $p < .001$) and cocaine ($r_{xy} = .44$; $p = .001$). Moreover, a negative and statistically significant correlation between the age of onset and high-risk use, both of alcohol ($r_{xyAUDIT} = -.36$; $p < .001$) and drugs in general ($r_{xyCRAFT} = -.34$; $p < .001$) was also found.

In an attempt to illustrate the importance of the age of alcohol onset on drinking patterns, intensive and high-risk drinking, and different high-risk practices, participants aged between 16 and 18 who had drunk alcohol in the last year were selected and assigned to three groups: those that had first tried alcohol (a) aged between 12-13; (b) between 14-15 and (c) between 16 and 18.

In relation to drinking habits (Table 4), the percentage of those drinking alcohol during the last month is significantly higher among those who had started earlier. Specifically, 84.8% of those who had started drinking alcohol aged 12-13 drank in the last month (compared to 64.1% of those who had started aged 16-18 years). The data also show that an earlier onset age is significantly associated with a more

Table 1. Prevalence of consumption and descriptive statistics for age of onset.

| | Consumption | | | Age of onset | | | | % Users under 14 |
|-------------------------|--------------|---------------|----------------|--------------|------|-------------|------|------------------|
| | | | | 12-18 years | | 14-18 years | | |
| | Lifetime (%) | Last year (%) | Last month (%) | Mean | SD | Mean | SD | |
| Alcohol | 58.7 | 58.7 | 37.9 | 13.41 | 2.16 | 13.62 | 2.02 | 44.8 |
| Tobacco | 34.7 | 30.4 | 19.9 | 13.59 | 1.86 | 13.70 | 2.06 | 44.1 |
| Getting drunk | 36.1 | 34.4 | 16.5 | 14.46 | 1.86 | 14.52 | 1.84 | 22.8 |
| Cannabis | 21 | 18.9 | 10.7 | 14.62 | 1.81 | 14.67 | 1.80 | 22.4 |
| Cocaine | 2.2 | 1.7 | 1.2 | 14.89 | 1.41 | 14.97 | 1.43 | 10 |
| Ecstasy/amph./hallucin. | 2.6 | 2.4 | 1.1 | 15.28 | 1.37 | 15.36 | 1.38 | 6.1 |

Table 2. Comparative age of onset by gender.

| | Boys (Media) | Girls (Media) | t | p |
|-----------------------------|-----------------|------------------|--------|-------|
| Alcohol | 13.1 | 13.8 | -7.27 | <.001 |
| Tobacco | 13.4 | 13.8 | -3.09 | <.01 |
| EGetting drunk | 14.2 | 14.8 | -5.25 | <.001 |
| Cannabis | 14.6 | 14.73 | -1.17 | .22 |
| Cocaine | 14.8 | 15.15 | -1.03 | .30 |
| Ecstasy/amph./ hallucin. | 15.3 | 15.25 | 0.18ns | .85 |

Table 3. Correlation between the age of alcohol onset and other substance use.

| | Age of alcohol onset | |
|--|----------------------|-------|
| | r _{xy} | p |
| Tobacco | .55 | <.001 |
| Cannabis | .55 | <.001 |
| Cocaine | .44 | <.001 |
| Ecstasy/amphetamines and hallucinogens | .40 | <.001 |

intensive drinking pattern, also known as binge drinking. In fact, 44.5% of those who had started drinking alcohol at 12-13 years of age reported having had six or more alcoholic beverages in the same sitting during the last month, compared to 19.1% of those who had started drinking

aged between 16-18. Along the same lines, 53.3% said they had got drunk (compared to 26.7%). The same can be said for tobacco, cannabis, ecstasy/amphetamines or hallucinogens. Regarding cocaine, although slightly higher percentages of use were found in the group of adolescents with early onset, the differences did not reach statistical significance.

With regard to high-risk drinking, the data reveal that the age of alcohol onset increases the likelihood of developing hazardous use. Rates of alcohol and drug abuse in general are shown to be almost three times higher among those who started drinking at 12-13 compared to those who started aged 16-18 years ($\chi^2_{\text{AUDIT}} = 94.54; p < .001$) ($\chi^2_{\text{CRAFT}} = 77.41; p < .001$).

As shown in Table 4, the most prevalent high-risk behavior across the three comparison groups is being driven by someone under the influence of alcohol, but among those who started drinking at 12-13 the percentage is 60.3%, compared to 36.3% among those who started at 14-15 and 28.4% for those starting at 16-18. Statistically significant differences have been found in all risky behaviors explored (except for being the victim of assault or robbery). The percentage in all of them is significantly higher among early starters, although the greatest effect size is found in "being driven by someone under the influence of alcohol" (CC = .23), "getting involved in fights" (CC = .22), "suffering accidents and injury" (CC = .20) and "getting into trouble with the police" (CC = .20).

Table 4. Consumption habits in the last month and high-risk practices by age of onset.

| Hábitos de consumo | Edad de inicio alcohol | | | χ^2 | p | CC |
|---|------------------------|-----------|-----------|----------|-------|-----|
| | 12-13 (%) | 14-15 (%) | 16-18 (%) | | | |
| Alcohol | 84.8 | 72.3 | 64.1 | 24.29 | <.001 | .16 |
| Getting drunk | 53.3 | 33 | 26.7 | 37.91 | <.001 | .20 |
| 6 o more alcoholic drinks | 44.5 | 22.4 | 19.1 | 46.62 | <.001 | .22 |
| Tobacco | 55.3 | 38.6 | 18.9 | 58.93 | <.001 | .24 |
| Cannabis | 35.9 | 19.3 | 6.2 | 58.19 | <.001 | .24 |
| Cocaine | 2.2 | 1.2 | 0.5 | 2.45 | .29 | - |
| Ecstasy/amphetamines /hallucinogens | 3.9 | 0.6 | 1 | 12.35 | .002 | .11 |
| High-risk practices | 12-13 (%) | 14-15 (%) | 16-18 (%) | χ^2 | p | CC |
| Being driven by someone under the effect of alcohol | 60.3 | 36.3 | 28.4 | 53.58 | <.001 | .23 |
| Fights | 35.8 | 20.,2 | 9.1 | 45.94 | <.001 | .22 |
| Accidents or injury | 26 | 14 | 4.1 | 40.75 | <.001 | .20 |
| Parental problems | 15.1 | 9 | 1.5 | 24.13 | <.001 | .16 |
| Poor academic performance | 12.5 | 6 | 3.6 | 14.79 | .001 | .12 |
| Victim of assault/robbery | 3.5 | 4.3 | 2.5 | 1.26 | .53 | - |
| Trouble with the police | 13.8 | 3.3 | 2.6 | 37.07 | <.001 | .20 |
| ER or hospitalization | 7.8 | 3.5 | 2 | 10.20 | .006 | .10 |
| Unprotected sex | 18.5 | 11.7 | 4.6 | 19.77 | <.001 | .14 |
| Regretful sex | 16.4 | 11.4 | 2 | 23.67 | <.001 | .16 |

Associated variables

Perception of risk and expectations of use

As shown in Table 5, adolescents who begin drinking alcohol earlier have a significantly lower perception of risk than those who start later; this holds true in all three indicators used. In terms of the expectations that adolescents have about the effects of alcohol, statistically significant differences have also been found, fundamentally with regard to positive expectations or expected benefits of consumption. Those who started drinking between 12-13 years have significantly higher average scores in all cases: “feeling relaxed” (2.16 vs. 1.93 vs. 1.77), “feeling happy” (2.76 vs. 2.49 vs. 2.26), “forgetting about problems” (2.67 vs. 2.33 vs. 2.03), “feeling more sociable and extroverted” (2.85 vs. 2.71 vs. 2.52) or “having a lot of fun” (3.07 vs. 2.75 vs. 2.48).

The user's environment

With regard to the family environment, Table 6 shows that the highest percentage of adolescents who indicate that both their parents and siblings drink alcohol regularly are found in the early onset (12-13) group, although the differences were only statistically significant for siblings ($\chi^2 = 15.33$; $p < .001$; $CC = .14$). On the other hand, in terms of peer group, the percentage of adolescents reporting that most or all of their friends drink alcohol is significantly higher among those who started drinking between 12-13 (88.4%) in comparison with those who started later (82.3% for those who started between 14-15 and 70.1% between 16-18). The same is true when we look at the frequency with which friends get drunk (60.6%, 43.6% and 34.7%, respectively).

Finally, given that the greatest explanatory capacity of the variables explored (perception of risk, expectations and environment) was found in those connected with peer drinking and, in particular, by siblings and friends, it was decided to perform a logistic regression in order to analyze the extent to which the risk of early alcohol onset increases when peers are also users (Table 7). In order to maximize the differences, the two groups of with extreme starting ages were compared: those who started drinking at 12-13 with those who did so aged 16-18. The results obtained show that the rate of early onset is 2.30 times higher when siblings drink alcohol regularly and 2.77 times higher when most or all friends get drunk.

Discussion

The results obtained in the present study show, firstly, that expanding the sampling frame to 12-18 years of age leads to a downward adjustment in the age of onset estimation for the different substances and to significantly earlier ages than those found in ESTUDES 2016-2017 except in the case of smoking, which hardly changes. It can be seen, for example, that four out of ten adolescents who had tried alcohol did so before the age of 14, as is also the case with tobacco; this is something that has important implications at the level of prevention, requiring intensive work in the early stages of compulsory secondary education or even during the final years of primary education. Research by, for example, Cadaveira (2009), Jacobus & Tapert (2014) or Yuan, Cross, Loughlin & Leslie (2015) has highlighted the

Table 5. Perception of risk and expectations of use.

| Perception of risk | Age of alcohol onset | | | | | |
|--|----------------------|-----------|-----------|-------|-------|------------|
| | 12-13 (M) | 14-15 (M) | 16-18 (M) | F | p | η^2_p |
| 1 or 2 alcoholic drinks almost every day | 1.50 | 1.60 | 1.76 | 4.27 | .01 | .01 |
| 5 or 6 alcoholic drinks almost every day | 2.53 | 2.59 | 2.73 | 5.75 | .003 | .01 |
| 6 or more alcoholic drinks every weekend | 2.18 | 2.37 | 2.59 | 14.62 | <.001 | .03 |
| Expectations | 12-13 (M) | 14-15 (M) | 16-18 (M) | F | p | η^2_p |
| Feel relaxed | 2.16 | 1.93 | 1.77 | 5.78 | .003 | .01 |
| Feel happy | 2.76 | 2.49 | 2.26 | 10.06 | <.001 | .02 |
| Forget my problems | 2.67 | 2.33 | 2.03 | 13.10 | <.001 | .02 |
| Feel more sociable/extrovert | 2.85 | 2.71 | 2.52 | 4.36 | .01 | .01 |
| Have a great time | 3.07 | 2.75 | 2.48 | 16.04 | <.001 | .03 |
| Average POSITIVE EXPECTATIONS | 2.70 | 2.44 | 2.19 | 16.92 | <.001 | .03 |
| Trouble with the police | 1.32 | 1.26 | 1.24 | .27 | .76 | - |
| Jeopardize my health | 2.69 | 2.53 | 2.58 | 1.31 | .27 | - |
| Can't stop drinking | 1.45 | 1.08 | 1.36 | 8.95 | <.001 | .02 |
| Do something I will regret | 2.32 | 2.15 | 2.12 | 1.75 | .17 | - |
| Feel bad | 2.17 | 2.20 | 2.44 | 3.25 | .04 | .01 |
| Average NEGATIVE EXPECTATIONS | 2.01 | 1.84 | 1.94 | 2.50 | .08 | - |

Table 6. *Alcohol use among family and peer group.*

| | | Age of alcohol onset | | | χ^2 | <i>p</i> | CC |
|---------------------------|--------------------|----------------------|-----------|-----------|----------|----------|-----|
| | | 12-13 (%) | 14-15 (%) | 16-18 (%) | | | |
| Mother | Never/almost never | 65.4 | 72.1 | 70.4 | 3.42 | .18 | .06 |
| | Habitually | 34.6 | 27.9 | 29.6 | | | |
| Father | Never/almost never | 37.4 | 44.4 | 49.5 | 6.12 | .05 | .08 |
| | Habitually | 62.6 | 55.6 | 50.5 | | | |
| Siblings | Never/almost never | 46.2 | 53.5 | 66.7 | 15.33 | <.001 | .14 |
| | Habitually | 53.8 | 46.5 | 33.3 | | | |
| Friends who drink alcohol | None/ a few | 11.6 | 17.7 | 29.9 | 24.43 | <.001 | .16 |
| | The majority/all | 88.4 | 82.3 | 70.1 | | | |
| Friends who get drunk | None/ a few | 39.4 | 56.4 | 65.3 | 31.14 | <.001 | .18 |
| | The majority/all | 60.6 | 43.6 | 34.7 | | | |

Table 7. *Calculation of Odds Ratios for peer group consumption.*

| Variable | ONSET AGE | |
|------------------------------|----------------------------|---|
| | Univariate ORP (95% IC) | Multivariate ^a ORP (95% IC) |
| SIBLINGS WHO DRINK | | |
| Never/almost never | 1 | 1 |
| Habitually | 2.34 (1.52-3.61) | 2.30 (1.46-3.63) |
| FRIENDS WHO DRINK | | |
| None/a few | 1 | 1 |
| The majority/all | 3.29 (1.98-5.46) | 1.86 (0.98-3.51) |
| FRIENDS WHO GET DRUNK | | |
| None/a few | 1 | 1 |
| The majority/all | 2.91 (1.96-4.32) | 2.77 (1.68-4.56) |

Note. ORP = odds ratio prevalence; CI= confidence interval;
^aAdjusted for the other independent variables listed in the column.

serious implications that the use of these substances can have in brain development.

Furthermore, the results obtained may reinforce the existence of a “cycle of use” in which three major stages or moments can be identified. The first of these occurs when adolescents begin to drink alcohol, this being the first substance that they experience at 13.4 years on average, immediately followed by tobacco at 13.6. Approximately one year later, the first drunkenness (14.5 years) takes place, closely linked to experimentation with cannabis (14.6 years). A little later (at around 15) they start using other illicit substances, such as cocaine, ecstasy, hallucinogens or amphetamines. There is, therefore, a critical period between 13.5 and 15.5 years of age which sees the onset of different psychoactive substances, with alcohol usually being the first with which adolescents come into contact. According to the results obtained, the age at which this occurs (and it is also important to point out that it is the age which has a greater standard deviation) has an enormous effect on the use of other substances and in drinking pat-

terns themselves. The correlation analysis shows that the earlier adolescents start drinking alcohol, the sooner they begin to consume other substances. This coincides with the approaches of authors such as Kirby & Barry (2012) or Yu & Williford (1992), who point to alcohol as the “gateway” to the use of other substances.

Regarding the implications of onset age, it has been observed that the percentage of adolescents who smoke and use other substances is much higher among those who started drinking earlier. This finding is in line with many other studies, such as Ellickson et al. (2003), Gruber et al. (1996), and Hernández et al. (2009). Similarly, it has also been proven that the percentage of adolescents involved in numerous risky practices (fights, being driven by someone under the influence of alcohol, having regretful sex, accidents or injuries) is significantly greater among those who started drinking earlier, as pointed out by Hingson et al. (2002), and Stueve and O'Donnell (2005). Regarding the greater probability of developing abusive or high-risk drinking patterns, in line with the findings of Caamaño-Isorna et al. (2008), and Moss et al. (2014), the results obtained through the use of AUDIT reveal a 3 times higher rate of alcohol problems among early onset adolescents, to such an extent that 7 out of 10 early onset adolescents tested positive in AUDIT.

Finally, an attempt was made to explore the role that some of the variables highlighted in the literature may play as possible explanatory factors regarding early alcohol onset. Although the results obtained with respect to personal variables, such as risk perception or expectations of use, concur with the literature reviewed, their explanatory capacity is rather limited. Beyond such variables of an individual nature, the results obtained show the importance of the user's environment, especially the peer group. The prevailing patterns of use in the adolescent's reference group exert an important influence on the age of onset of alcohol use, as Gascón et al. (1997) pointed out two decades ago. The rate of early onset is 2.31 times higher

among adolescents when siblings drink alcohol and 2.77 times higher when their friends get drunk. Nevertheless, it is important to point out that the explanatory capacity of these variables remains small without the possibility of establishing cause-effect relationships. It is not possible to determine whether adolescents who start drinking earlier do so because their peers also drink or, conversely, whether they have more friends who drink because they started earlier. This is precisely one of the limitations of this work.

It should also be noted that, by using a sample of adolescents exclusively from the Galician autonomous community, the external validity of the results obtained is limited, as is, in other words, the capacity of generalization to other autonomous communities, especially in terms of the specific estimation of the onset ages for each substance. A further limitation is that all the variables have been self-reported, making it impossible to know with certainty to what extent adolescents may have under- or overestimated their levels of use. However, as various experts in the field of addictive behavior have previously noted, self-report measures have proven to be reliable and even better than other methods when evaluating levels of alcohol and other drug use (Babor, Kranzler & Lauerma, 1989; Winters, Stinchfield, Henly & Schwartz, 1990).

With regard to the possible analysis of correlations between the age of onset of the different substances (not only of alcohol with the rest), despite the fact that these may be of interest, this deviated from the key goal of this study, which was none other than to analyze specifically how the age of alcohol onset is related to the age of onset in the use of other substances, as well as possible implications of this and associated variables. This was the core of the research project and its ultimate purpose. Future studies will enable an analysis of the relationship between the onset ages of other substances with a broader perspective.

Finally, it is important to remember that this research is of a correlational nature, which does not allow causal relationships to be established. Although it may be possible conceptually to “anticipate” which variables could be acting as “predictors” or as “consequences” of the age of onset, only a longitudinal design could confirm this type of cause-effect relationships. There is no doubt that there is still a long way to go in terms of the development and validation of explanatory models regarding the early start of alcohol use. It would be of great interest if future work in this field could incorporate new variables and focus their efforts on the development of parsimonious explanatory models capable of improving current prevention.

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Conflict of interests

The authors of this article declare no conflict of interests.

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