The Relationship between Consumption of Alcohol and Other Drugs and Problematic Internet Use among Adolescents

Relación entre el consumo de alcohol y otras drogas y el uso problemático de Internet en adolescentes

Sandra Golpe*, Patricia Gómez*, Teresa Braña*, Jesús Varela*, Antonio Rial*.

*Universidad de Santiago de Compostela, España.

Abstract

Alcohol and drug use among adolescents has been causing great concern for decades in Spain and in the European Union as a whole. In addition, the technology boom experienced over the last two decades has contributed to the emergence of a new public healthcare issue: problematic Internet use. The increasing importance that both problems have been gaining in recent years has led some authors to analyze the relationship between alcohol and the consumption of other drugs alongside problematic Internet use, and to provide relevant empirical evidence. Based on a sample of 3,882 Spanish adolescents aged between 12 and 18, the results obtained confirm that there is a relationship between the consumption of alcohol (measured by the AUDIT) and other drugs (measured by the CRAFFT and the CAST), and problematic Internet use (measured by the EUPI-a). Problematic Internet users among them not only have more significant levels of substance use, but also a three-times greater chance of developing hazardous drug use (39.4% vs 13.3%). This highlights the need to develop transversal prevention capable of acting on the common variables to both issues, beyond developing programs focused on specific behaviors. In this sense, values-based education and life skills training should be given priority in prevention.

Keywords: Internet; Adolescents; Alcohol; Drug use; Prevention.

Resumen

En España y en el conjunto de la Unión Europea el consumo de alcohol y otras drogas entre los adolescentes viene causando una enorme preocupación social desde hace décadas. Por otra parte, el auge tecnológico experimentado en las dos últimas décadas ha contribuido a la aparición de un nuevo problema sociosanitario: el uso problemático de Internet. El creciente protagonismo que ambos problemas han ido adquiriendo en los últimos años ha llevado a algunos autores a analizar la relación entre el consumo de alcohol y otras drogas y el uso problemático de Internet, aportando evidencias empíricas al respecto. La realización del presente trabajo, a partir de una muestra de 3882 adolescentes españoles de entre 12 y 18 años, ha permitido constatar que efectivamente existe una estrecha relación entre el consumo de alcohol (medido a través del AUDIT) y otras drogas (medido a través del CRAFFT y del CAST) y el uso problemático de Internet (medido a través del EUPI-a). No solo se han encontrado unos niveles de consumo significativamente mayores entre los usuarios problemáticos, sino que la probabilidad de desarrollar un consumo de riesgo de drogas llega a ser incluso 3 veces mayor entre éstos (39,4% vs 13,3%). Ello pone de manifiesto la necesidad de desarrollar una prevención transversal capaz de actuar sobre las variables comunes a ambas problemáticas, más allá de desarrollar programas centrados en conductas específicas. En este sentido, la educación en valores y habilidades de vida debieran ocupar un lugar prioritario en materia de prevención.

Palabras clave: Internet; Adolescentes; Alcohol; Consumo de drogas; Prevención.

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Send correspondence to:
Antonio Rial Boubeta. Facultad de Psicología, C/ Xosé María Suárez Núñez, s/n. Campus Vida- Universidad de Santiago de Compostela. 15782- Santiago de Compostela (España). E-mail: antonio.rial.boubeta@usc.es

The consumption of alcohol and other substances among young people constitutes one of the main public healthcare problems in Spain. Although the levels of consumption of different substances appear to have declined in recent years, prevalence figures remain high, as the data from the latest National Survey on Drug Use among Secondary School Students in Spain [ESTUDES 2014-2015] (Plan Nacional sobre Drogas, 2016) reveal, with 76.8% of students between 14 and 18 years of age having consumed alcohol in the previous year (68.2% in the previous month), 31.4% having smoked tobacco (25.9% in the previous month) and 25.4% having used cannabis (18.6% in the previous month). Other substances such as cocaine, ecstasy, amphetamines or hallucinogens have much lower prevalence figures at below 3%. Regarding risky alcohol consumption, while ESTUDES does not use any screening tool as such, it does offer data on street drinking ('botellón') (which stands at 57.6% in the previous year), binge drinking (32.2% in the previous month), drunkenness (22.2% in the previous month) and risky drinking at the weekend (31.9%). No less worrying is the prevalence of problematic cannabis use obtained through the Cannabis Abuse Screening Test (CAST) (Legleye, Piontek & Kraus, 2011), which amounts to 2.5% of Spanish adolescents between 14 and 18 years of age.

However, the consumption of alcohol and drugs is not the only issue that society faces. The rapid technological advances witnessed over the past two decades has furthered the expansion and massive use of the Internet and social networks. According to data from the National Institute of Statistics (INE) (2016), 95.2% of children in Spain between the ages of 10 and 15 have used the Internet in the last 3 months. This technological boom has contributed to the emergence of a new social concern about how adolescents use the Internet. Despite the innumerable benefits brought about by technological advances, there are many risks that can arise from their misuse (Livingstone, Haddon, Görzig & Ólafsson, 2011; Muñoz-Miralles et al., 2016; Rial, Golpe, Gómez & Barreiro, 2015; Valkenburg & Peter, 2011). Apart from studies warning of the abusive use of the Internet by young people (Blinka et al., 2015; Gencer & Koc, 2012), with uncontrolled access to pornographic, violent, racist and sexist content, there are also those alerting to the many high-risk practices (Garaigordobil & Aliri, 2013; Strassberg, McKinnon, Sustaíta & Rullo, 2013; Wolak, Finkelhor & Mitchell, 2004) related to Internet use, such as cyberbullying, sexting and grooming. Some authors have even gone so far as to discuss the possibility of developing an addiction (Jorgenson, Hsiao & Yen, 2016; Young, 1996) or, at least, problematic Internet use (Anderson, Steen & Stavropoulos, 2016; Shapira et al., 2003). While Internet addiction or problematic use was initially identified primarily as a result of the overuse of the Internet, this approach has given way among both professionals and researchers to a focus which sees the problematic use of the Internet as a different problem that goes beyond the mere time online (Beard & Wolf, 2001; Hansen, 2002). In any case, it is precisely the lack of agreement regarding the conceptualization and operationalization of this problem which is behind the considerable variation in prevalence figures estimated by the different studies. For example, at the national level, the work of Oliva et al. (2012) claims that 0.76% of adolescents and young people have a serious level of internet addiction and 21.9% are moderately addicted, while Gómez, Rial, Braña, Varela and Barreiro (2014) put the prevalence of problem users among compulsory secondary education students at 19.9%.

Both problems (consumption of alchol and other drugs, and use of the Internet), are tha cause of grave social concern today, so much so that they are the focus of the latest edition of the *European School Survey Project on Alcohol and Other Drugs* (ESPAD) (European Monitoring Center for Drugs and Drug Addiction, 2016). Furthermore, the increasing importance that they have been acquiring has led in recent years to different authors concerning themselves with analyzing the relationship between these two problems, both in terms of consumption habits (Evren, Dalbudak, Evren & Demirci, 2014; Lee, Han, Kim & Renshaw, 2013; Rücker, Akré, Berchtold & Suris, 2015). High comorbidity between both, as well as hazardous consumption, especially in the case of alcohol has been found. For example, Ko et al. (2008) or Wartberg et al. (2016) coincide precisely in pointing out that problematic Internet users are more likely to have risky alcohol consumption.

In Spain there is still a dearth of studies analyzing the relationship between the problematic use of the Internet and substance use, and those that have been carried out tend to explore this relationship in a partial way. Thus, for example, the work of Secades-Villa et al. (2014) establishes a link between the time spent online and the frequency of consumption of alcohol, tobacco, cannabis and other illegal drugs among European adolescents, but does not examine the problematic use of the Internet itself, nor the 'hazardous consumption' of drugs with the appropriate instruments. The work of Fernández-Villa et al. (2015), meanwhile, analyzes the relationship between problematic Internet use and the consumption of different substances among university students without finding any association between the two. Nevertheless, the authors themselves acknowledge that this result could be explained by the fact that a classification criterion was used that does not distinguish between cases of occasional or problematic use. In fact, when the relationship with the consumption of alcohol risk is examined in the study, results reveal that problem users are more likely to obtain a positive result in screening. In another study, Gámez-Guadix, Calvete, Orue and Las Hayas (2015) find a positive relationship between

problematic Internet use and the consumption of alcohol risk in adolescents, but do not address the consumption of other drugs.

In short, we are dealing with an issue that has been attracting increasing interest among institutions and researchers worldwide, without, however, producing much evidence to date. This is particularly the case in our country, where most of the work has focused on analyzing the relationship between both problems, but usually with some limitations: either (1) paying attention exclusively to alcohol without taking the consumption of other drugs into acount, or (2) or not assessing hazardous consumption as such by using suitable instruments such as the *Alcohol Use Disorders Identification Test* [AUDIT] (Vent, Source, Saunders & Grant, 1989), the CRAFFT *Abuse Screening Test* (Knight et al., 1999) or the *Cannabis Abuse Screening Test* [CAST] (Legleye et al., 2011), or (3) using samples from university students rather than adolescents, the latter being a key population with regard to prevention.

Consequently, the present work has a twofold objective: (1) to perform a descriptive analysis of the habits of Internet use, high-risk practices and problematic Internet use, as well as consumption habits for the different substances and the hazardous consumption of alcohol and other drugs, and (2) to analyze the relationship between the problematic Internet use and the hazardous consumption among adolescents through the use of appropriate screening tools with proven psychometric properties.

Method

Participants

A selective methodology was employed, consisting of a survey of compulsory secondary education (ESO) and baccalaureate students in the provinces of A Coruña and Pontevedra. For sample selection, purposive sampling was used in an attempt to access as wide and heterogeneous a sample as possible. A total of 15 educational centers in different municipalities took part, both public and private/state-maintained private ('concertado'), both urban and rural.

The initial number of questionnaires collected was 4063, although 62 were eliminated after an exhaustive review process, either because they had an excessive number of missing values (32) or incoherent response patterns (30). In addition, a further 119 cases were eliminated because they were outside the age range under study (12-18 years). Thus the final sample consisted of 3882 adolescents (49.9% males and 50.1% females) aged between 12 and 18 (M = 14.52 and SD = 1.72). Of these, 2669 attended public schools and 1213 were in private or state-maintained private schools, with 74.8% in compulsory secondary education (38% in the first cycle and 36.8% in the second) and 25.2% baccalaureate students.

Instrument

The data were collected through a questionnaire which was specially drawn up for the present study and included questions grouped in four blocks: (1) the first comprises questions of our own creation to assess the habits of Internet use (frequency of use and time spent online) and possible high-risk practices (sexting, online betting, contact with strangers, etc.) (2) a second block was extracted from the ESTUDES (2010) National Survey on Drug Use among Secondary School Students (Plan Nacional sobre Drogas, 2011) to collect information on the consumption habits for both alcohol and other substances; (3) a third block that includes four screening tools: the Alcohol Use Disorders Identification Test (AUDIT) in its self-administered version (Rial, Gómez, Araujo, et al., 2015) to estimate risky alcohol consumption, the internal consistency of which in the present work was acceptable (α =, 82); the Cannabis Abuse Screening Test (CAST) (Legleye et al., 2011) to estimate the risk of cannabis use, with high internal consistency (α =, 85); the version of the CRAFFT Abuse Screening Test translated into Spanish and validated by Araujo et al. (2015), which presented an α of .62, and the Problematic Internet Use Scale (EUPI-a) (Rial, Gómez, Isorna, Araujo & Varela, 2015). Although the EUPI-a is a tool with less of a tradition than other existing ones, it is an instrument adapted to the Spanish cultural context which has been specifically developed and validated for the adolescent population of our country and which has displayed satisfactory psychometric properties, both in terms of internal consistency (α = .87), sensitivity (81%), specificity (82.6%) and construct validity, with a duly tested cut-off point for screening; and (4) a final section collecting information on sociodemographic variables such as gender and age.

Process

The data were collected in the classrooms of each center, in small groups (between 15 and 20 individuals), through a questionnaire that each student completed individually. A team of psychologists with proven experience in the accomplishment of this type of tasks carried out the information collection. All participants were informed of the purpose of the study, as well as the confidentiality and anonymity of their responses. The consent and collaboration of the each center's management as well as the respective parents' associations was obtained. Participation was totally voluntary and questionnaire completion time was approximately 20 minutes. The work was also approved by the bioethics committee of the University of Santiago de Compostela.

Data analysis

A bivariate tabulation was made with the use of Student's *t* tests for the comparison of means and χ^2 contrasts for the comparison of percentages. Correlation analysis was also performed (with Pearson for metric variables and Spear-

man for ordinal variables). Finally, a univariate and multivariate logistic regression analysis, adjusted for gender and age, was performed to predict the high-risk use of alcohol as well as other substances. The analyses were performed using the IBM SPSS Statistics 20 statistical package.

Results

Problematic Internet use and high-risk practices

As shown in Table 1, the use of the Internet among adolescents is widespread: 83% are online every day or almost every day, with 56.4% connecting for a moderate period of time (three hours or less), while 10.8% spend more than 5 hours a day online and 15.9% say they are online "throughout the day". Girls have a higher connection frequency and spend longer online, with 15 being the age when the greatest increase in the use of the Internet is observed, both in terms of frequency and connection time. Furthermore, 63.8% of adolescents are be registered in three or more social networks, with a significantly higher percentage among women (67.3% vs 60.3%), and particularly above the age of 15 (80.6% %). The most common high-risk practices are: contact with strangers (31.9%) and access to websites with erotic content (30.1%). While women more frequently feel threatened, harassed or humiliated online and have been blackmailed by threats of disseminating photos or videos of them with erotic content, boys admit to a greater extent threatening, harassing or humiliating others, contacting strangers, accessing websites with erotic content and placing bets online. Involvement in most of the high-risk practices analyzed is generally greater with increasing age, and rising especially sharply from the age of

Table 1. *Habits of Internet and social network use, high-risk practices and problematic use.*

	Global (%)	Sex		χ^2	Age (years)			χ^2
Connection frequency		Male (%)	Female (%)		12-14 (%)	15-16 (%)	17-18 (%)	
Never/almost never	1.1	1.2	1	8.60*	2.1	0.1	0.5	343.72**
Occasionally during the month	3.2	3.9	2.4		5.4	1	0.8	
Occasionally during the week	12.7	13	12.4		20.7	4.7	4.7	
Every/almost every day	83	81.9	84.2		71.8	94.2	94	
Time online per day								
Less than 1 hour	14	14.5	13.5	65.37**	22.9	5.3	5.6	589.33**
1-2 hours	24.2	26.5	21.8		31.9	17.1	16	
2-3 hours	18.2	19.9	16.6		18.5	19.6	14.3	
3-5 hours	16.9	17.3	16.7		13.2	20.9	19.9	
Over 5 hours	10.8	10.6	11		7.1	13.2	17.4	
All day	15.9	11.3	20.5		6.5	23.9	26.8	
Social networks								
None	7.8	8.7	6.8	20.15**	12.6	3.1	3	477.20**
1 or 2	28.4	31	26		40.5	16.3	16.4	
3 or more	63.8	60.3	67.3		46.8	80.6	80.6	
High-risk practices								
Victim of threats, harassment or humiliation	5.9	4.5	7.4	14.80**	5.9	6.1	5.8	.08
Initiator of threats, harassment or humiliation	4.6	6	3.1	18.92**	3.5	5.7	5	9.93*
Sexting	5.2	4.5	5.8	3.23	1.9	7.9	9.8	88.57**
Victim of blackmail (publishing/ disseminating photos or videos of yours with erotic content)	3	1.9	4.1	14.85**	2.8	3.2	3.3	.70
Accessing erotic websites	30.1	49.9	10.3	717.23**	17.2	40.5	47	302.19**
Online betting	6.7	11.8	1.5	162.51**	4.3	7.9	11.1	40.30**
Contact with strangers	31.9	34.4	29.5	10.57**	23.8	39.8	39.9	114.32**
Meeting strangers	14	14.7	13.2	1.79	8.9	18	20.8	82.01**
Problematic use (EUPI-a)	18.4	16.6	20.4	8.92*	14	22	24.7	50.65**

Note. *p < .05; **p <.001.

15 onwards. Regarding problematic Internet use as such, 18.4% of adolescents exceeded the cut-off point established on the EUPI-a scale (≥ 16), and can thus be considered problematic users. This percentage was significantly higher among girls and in the older age group (17-18). In addition, in order to analyze the relationship between the problematic Internet use and time online, a Spearman correlation analysis was carried out, obtaining a value $r_{xy} = .45$ ($p < .001$). This shows that time online only accounts for 20% of the variance in problematic Internet use ($r_{xy}^2 = .20$).

Consumption of alcohol and other drugs

As shown in Table 2, the most commonly consumed substance among adolescents is alcohol (52.1% previous year, 32.3% previous month), followed by tobacco and cannabis. The results obtained regarding consumption habits in the previous year by gender show that there are only significant differences in relation to smoking, with a slightly higher percentage among girls. Regarding the previous month, statistically significant differences have also been found in the consumption of alcohol, intensive consumption (3 or more alcoholic drinks per sitting and drunkenness) and tobacco, with higher percentages, once again, in the case of girls. There is also a considerable increase in the levels of consumption of many substances with increasing age. The results of screening for hazardous use also show that 19.8% of adolescents drank alcohol (AUDIT), 3.8% consumed cannabis (CAST) and 18% consumed alcohol and other drugs in general (CRAFFT). There were no differences based on gender, although age differences were found, with a significant increase in the consumption of alcohol and other drugs with increasing age.

Relationship between problematic Internet use and consumption of alcohol and other drugs

The relationship between the problematic Internet use and the consumption of alcohol and other drugs was initially verified through an analysis of correlations between the EUPI-a, CRAFFT, AUDIT and CAST scales, all of which statistically significant (r_{xy} EUPI-CRAFFT = 0.39, $p < .001$) (r_{xy} EUPI-AUDIT = 0.36; $p < .001$) (r_{xy} EUPI-CAST = .11; $p < .001$). However, correlation and effect sizes indicate that this

Table 2. *Substance use habits and hazardous consumption.*

	Global (%)	Sex		χ^2	Age (years)			χ^2
Substance use habits (previous year)		Male (%)	Female (%)		12-14	15-16	17-18	
Drinking alcohol	52.1	50.7	53.4	2.74	32.9	68.2	76.9	569.59**
3 or more alcoholic drinks per day	33.1	31.8	34.2	2.31	14.4	47.1	60.9	631.02**
6 or more alcoholic drinks per day	18.1	18.7	17.2	1.34	6.4	25.9	36.8	373.70**
Getting drunk	26.3	25.4	27	1.18	10.1	38	50.8	542.83**
Tobacco	23.4	21.2	25.4	9.2*	11.9	31.2	41.8	300.55**
Marijuana or hashish	14.8	15.3	14.3	0.65	5.9	20.3	30.3	266.76**
Cocaine	0.9	1.1	0.6	1.97	0.6	1.2	1	3.84
Écstasy, amphetamines or hallucinogens	1.1	1.2	0.9	0.89	0.6	1.4	1.8	9.44*
Substance use habits (previous month)								
Drinking alcohol	32.3	30	34.5	8.69*	16.1	43.7	57.8	489.18**
3 or more alcoholic drinks per day	20	18.2	21.8	7.36*	7.1	28.4	41.7	436.12**
6 or more alcoholic drinks per day	8.6	8.9	8.3	0.33	3.1	11.3	19.5	179.36**
Getting drunk	12.9	11.7	14	4.70*	4.5	17.1	29.6	292.58**
Tobacco	16.1	14.3	17.8	8.54*	8	21.3	30.2	209.42**
Marijuana or hashish	8.5	8.6	8.4	0.04	3.6	11.5	17.6	137.98**
Cocaine	0.4	0.4	0.4	0.00	0.4	0.4	0.2	0.81
Écstasy, amphetamines or hallucinogens	0.4	0.3	0.5	0.26	0.3	0.6	0.2	2.61
Hazardous consumption								
AUDIT	19.8	19	20.6	1.37	5.3	30.1	43.8	538.35**
CAST	3.8	4.2	3.4	1.27	1.8	5.5	6.1	40.38**
CRAFFT	18	17.2	18.9	1.64	5.1	26.8	39.3	454.79**

Note. *$p < .05$; **$p < .001$.

Table 3. *Differences in substance use habits among problematic Internet users.*

Substance use habits (previous year)	EUPI		χ^2
	Positive (%)	Negative (%)	
Drinking alcohol	65.7	48.9	62.62**
3 or more alcoholic drinks per day	47.5	29.8	78.87**
6 or more alcoholic drinks per day	27.9	15.7	56.17**
Getting drunk	39.5	23.3	76.03**
Tobacco	35.8	20.4	74.09**
Marijuana/hashish	23.8	12.7	54.26**
Cocaine	1.4	0.7	3.10
Écstasy/amphetamines/ hallucinogens	2	0.8	6.82*
Substance use habits (previous month)			
Drinking alcohol	42.6	29.8	42.13**
3 or more alcoholic drinks per day	29.2	17.8	44.87**
6 or more alcoholic drinks per day	13.5	7.4	25.82**
Getting drunk	20.6	11	46.16**
Tobacco	24.2	14.1	42.22**
Marijuana/hashish	13.3	7.2	26.30**
Cocaine	0.1	0.4	0.56
Écstasy/amphetamines/ hallucinogens	0.9	0.3	2.72

Note. *p < .05; **p <.001.

relationship is relevant only in the case of drugs and alcohol, where it is moderate (> .30) (Weinberg & Abramowitz, 2002).

To analyze this relationship in greater depth, the sample was divided into two groups (problematic Internet users vs. non-problematic users), and their consumption habits in the previous year and the previous month were compared. The results reported in Table 3 reveal statistically significant differences for almost all substances, with rates almost twice as high among problem users.

The same can be said of hazardous consumption, with significantly higher rates among problem users, three times higher in the case of CRAFFT (39.4% vs. 13.3%) (c^2 = 248.66; p < .001). The analysis of the effect size once again reveals that this is a moderate relationship in both alcohol ($CC_{EUPI\text{-}AUDIT}$ = .21) and drugs in general ($CC_{EUPI\text{-}CRAFFT}$ = .25) and practically non-existent in the case of cannabis ($CC_{EUPI\text{-}CAST}$ = .08). Similarly, the mean scores obtained on the different screening scales are significantly higher for problematic users, with an almost identical pattern for effect sizes ($\eta_{EUPI\text{-}CRAFFT}$ = .26; $\eta_{EUPI\text{-}AUDIT}$ = .22; $\eta_{EUPI\text{-}CAST}$ = .08).

Finally, logistic regression analysis (Table 5) revealed that both age and problematic Internet use are risk factors for the development of alcohol and other drug abuse. Specifically, increasing age, the probability of obtaining a positive result in AUDIT (POR = 1.95 [95% CI: 1.83 – 2.08]) and in the CRAFFT (POR = 1.87 [95% CI: 1.75 – 1.99]). With regard to problematic Internet users, these present almost three and four times greater likelihood of developing hazardous use of alcohol and of drugs in general, respectively.

Discussion

The results obtained serve to reinforce some of the findings in ESTUDES 2014-15 (Plan Nacional sobre Drogas, 2016), according to which alcohol remains the psychoactive substance most consumed by adolescents, followed by tobacco and cannabis. Furthermore, the data confirm the trend already noted by other authors (Vargas & Trujillo, 2012; White et al., 2015) regarding the reduction of the gender gap in the consumption of different substances, which is even inverted in the case of alcohol and tobacco. Although the rates found in the lowest age range are apparently small, when carried over to population figures, would mean that between 2000 and 5000 Galician adolescents between 12 and 14 got drunk, smoked tobacco and consumed cannabis in the previous month. These figures are of particular concern in view of the important implications that the consumption of these substances can have on the developing brain, as can be seen in the works of Cadaveira (2009), Jacobus and Tapert (2015), and Yuan,

Table 4. *Differences in hazardous consumption among problematic Internet users.*

Hazardous consumption	EUPI		Contrast
	Positive	Negative	
AUDIT	38.1% Mean = 4.54	15.8% Mean = 1.83	χ^2= 165.92** t = -16.67**
CAST	7% Mean = 0.70	2.9% Mean = 0.28	χ^2= 24.69** t = -4.95**
CRAFFT	39.4% Mean = 1.51	13.3% Mean = 0.62	χ^2= 248.66** t = -18.01**

Note. *p < .05; **p <.001.

Table 5. *Logistic regression models for predicting hazardous consumption.*

	AUDIT		CRAFFT	
Variable	Univariate POR (95% CI)	Multivariate[1] POR (95% CI)	Univariate POR (95% CI)	Multivariate[1] POR (95% CI)
SEX				
Male	1	1	1	1
Female	1.11 (0.94-1.30)	1.11 (0.92-1.34)	1.12 (0.95-1.32)	1.07 (0.89-1.30)
AGE	1.97 (1.86-2.10)	1.95 (1.83-2.08)	1.88 (1.77-1.99)	1.87 (1.75-1.99)
EUPI-a				
Negative	1	1	1	1
Positive	3.28 (2.73-3.96)	2.92 (2.38-3.69)	4.25 (3.52-5.13)	3.90 (3.17-4.80)

Note. POR = Prevalence of odds ratio; CI= confidence interval; 1Adjusted for the other independent variables included in the column.

Cross, Loughlin and Leslie (2015). In terms of hazardous consumption, it is important to note that the overall prevalence figures obtained 'mask' very unequal percentages depending on age range, with rates of up to eight times higher registered in the group of 17 to 18-year olds in comparison with the youngest age group (12-14).

With regard to the Internet, the data obtained show that its use is nowadays widespread among Spanish adolescents. Although both Internet and social network use are more intensive with increasing age, it is noteworthy that between the ages of 12 and 14, seven out of ten adolescents are online daily, and one in four for more than five hours. It should be pointed out, however, that in spite of a positive and significant correlation between the hours that adolescents spend online and problematic Internet use being found, the magnitude of this relationship turned out to be moderate, which shows that problematic Internet use is a different issue, which goes beyond time spent online and whose defining element is the degree of interference it causes in the life of the adolescent (Beard & Wolf, 2001). Moreover, it is observed that the vast majority are members of a social network and almost half of three or more. It is clear, therefore, that adolescents make relatively intensive use of the Internet, with the consequences, both physical and psychosocial, that this can lead to (Randy et al., 2015).

The most frequent high-risk practices are contact with strangers and access to websites with erotic content, which can be of concern when dealing with individuals whose brain maturity does not yet allow them to develop an adequate cognitive, emotional and behavioral response to certain situations (Owens, Behun, Manning & Reid, 2012). With regard to the prevalence of problematic Internet use, this stood at 18.4%. This result is similar to that obtained in other studies carried out on the same population and with the same screening tool as the one by Gómez et al. (2014) and Gómez, Rial, Braña, Golpe and Varela (2017), or that obtained by López-Fernández, Freixa-Blanxart and Honrubia-Serrano (2012) using the *Problematic Entertainment Use Scale for Adolescents*. However, it is important to point out that for both theoretical and methodological reasons there is still a significant problem of comparability between the results of the different studies, which is one of the main challenges to date in this field of research.

Beyond the analysis of the consumption levels of the different substances and the possible problematic use that adolescents make of the Internet, the results obtained also show the existence of a link between both behaviors. This not only confirms the findings of other studies regarding the relationship between problematic Internet use and consumption of alcohol risk (Fernández-Villa et al., 2015; Gámez-Guadix et al., 2015), but also evidence that problematic Internet use is associated with the hazardous use of other drugs. A logistic regression analysis has also shown a significantly higher rate of hazardous consumption among adolescents who make problematic use of the Internet, up to four times in the case of CRAFFT.

Numerous studies until today have highlighted the link between problematic Internet use and substance use (Cía, 2013; Holden, 2001; Sun et al., 2012). This suggests, as proposed in the problematic behavior theory (Jessor, 1991), that different types of deviant behavior might respond to the same determinants. According to this approach, there would be a common "psychosocial propensity" to develop the different problem behaviors defined by personality traits as well as the social context, the perceived environment and the individual's own behavior. Thus, for example, the work of Ko et al. (2008) found that certain psychosocial characteristics such as being a man, a dysfunctional family, having low self-esteem and low life satisfaction were associated with both problematic alcohol consumption and Internet addiction. The main implication of the results obtained at the applied level may be the importance of proposing transversal prevention, beyond approaches or programs focused on specific behaviors, and capable of acting on the variables common to both problem behaviors. Thus, interventions aimed at improving education in values and the learning of life skills could provide a platform on which to develop preventive work, insofar as they

start from an individual-environment interaction model that has been shown to be effective in drug prevention (European Monitoring Center for Drugs and Drug Addiction, 2011; Faggiano, Minozzi, Versino & Buscemi, 2014; Moshki, Hassanzade & Taymoori, 2014).

Finally, the present work has some limitations, the first of which would be the sample used. Despite being based on data from 4000 adolescents, the fact that non-probabilistic sampling was used for their selection and that they originate exclusively from the provinces of A Coruña and Pontevedra limits the external validity of the results. Secondly, it is important to refer to the transversal nature of the work, which prevents causal relationships being established among the variables under study. Finally, mention should be made of the fact that all variables have been self-reported, making it impossible to know for certain to what extent adolescents may have underestimated or overestimated both their levels of consumption and the amount of time they spend online. However, as various experts in the field of addictive behavior have previously pointed out, self-report measures have proven to be reliable and even better than other methods in assessing levels of alcohol and other drug use (Babor , Kranzler & Lauerman, 1989; Winters, Stinchfield, Henly & Schwartz, 1990).

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Conflict of interests

The authors of this article declare that they have no conflict of interest.

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