

# Minors and Online Gambling: Prevalence and Related Variables

Patricia Gómez, Sandra Feijóo, Teresa Braña, Jesús Varela, & Antonio Rial

## Accepted Manuscript (AM)

This is a pre-copyedited, author-produced version of an article accepted for publication in *Journal of Gambling Studies* following peer review. The version of record Gómez, P., Feijóo, S., Braña, T., Varela, J., & Rial, A. (2020). Minors and online gambling: prevalence and related variables. *Journal of Gambling Studies*, 36(3), 735–745 is available online at: <https://doi.org/10.1007/s10899-019-09923-3>

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## Abstract

Substantial access to the Internet by minors has brought about consequences that are not always positive. The increase of online gambling or betting is one of those. Although in most cases online gambling by minors does not result in a disorder, it does imply a higher probability of developing a gambling disorder in adulthood, and it can cause economic, family, school and social problems. The aim of this study, carried out in the Galician region of Spain with a sample of 3772 students aged between 12 and 17 years, was to estimate the prevalence of online gambling in minors; to characterize the profile of online gamblers; to explore the differences in Internet and smartphone usage habits, online risky practices, problematic Internet use and parental involvement between online gamblers and non-online gamblers; and to analyse the relation between online gambling and academic performance. The results revealed that 6.5% of Galician adolescents are online gamblers, a figure that has more than tripled over seven years. 9 out of 10 online gamblers are male, and their mean age is 15. Online gamblers had significantly higher rates of problematic Internet use, active sexting, cyberbullying, or contacting strangers through the Internet. Furthermore, online gamblers had higher scores on impulsiveness, lower scores on assertiveness, and were lacking parental control. These data show that online gambling is not an isolated problem, so prevention should be understood in a comprehensive manner.

**Keywords** Addiction, Adolescents, Online betting, Online gambling, Prevention, Problematic internet use

## Introduction

Recent data on Internet and smartphone use in Spain reflect that 92.8% of minors under 15 years of age accessed the Internet in the last three months, and 69.8% have their own smartphone (Spanish Statistical Office, 2018). This demonstrates that minors are highly exposed to the positive aspects of the Internet (keeping in touch with friends, searching for learning material, easy access to mass media...) but also to the negative (problematic Internet use, sextortion, cyberbullying, online gambling...). These aspects are of concern, particularly when minors are involved because they are in a susceptible period for developing addictive behaviours or other mental health disorders related to the use of Information and Communication Technology (ICT) (Crews et al., 2007; Echeburúa and De Corral, 2010; Kormas et al., 2011).

From a clinical point of view, Internet Addiction has not been yet recognized as such, and it has been suggested to use the term Problematic Internet Use (Gómez et al., 2014; Shapira et al., 2003). Nevertheless, the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) (American Psychiatric Association, 2013) included two disorders related to the Internet. Internet gaming disorder was included in “Result” section as a condition warranting more clinical research and experience before it might be considered for inclusion in the main book as a formal disorder. It is relevant to note that the criteria for this condition are limited to Internet gaming and do not include general use of the Internet or online gambling. Moreover, Gambling Disorder was placed in a new category of behavioural addictions, and it is relevant to take in consideration that this behaviour might be carried out either online or offline.

Some authors have pointed out that a change from traditional in-person gambling to online gambling is occurring, especially among adolescents (Olason et al., 2011). This fact is worrying since numerous authors have already warned of the greater risk and addictive potential of the online context for gamblers (Griffiths and Parke, 2010; Griffiths and Wood, 2000; Olason et al., 2011; Potenza et al., 2011). Furthermore, it is already known that an early age of onset has an impact on increasing the probability of developing gambling disorders in adult life (Gupta and Derevensky, 2000; Secades-Villa and Villa, 1998; Wong, 2010). A research study of the Directorate General for the Regulation of Gambling (2015) found that 44.8% of pathological gamblers in Spain claimed to have started earlier than the legal age for gambling (18 years old), while this percentage was 13.4% in the case of non-risk gamblers. Moreover, it is also known that early initiation in gambling is a powerful predictor of the severity of a gambling disorder (Directorate General for the Regulation of Gambling, 2017), and, even in the short-term, gambling behaviour has a negative impact on the minor’s life, reflected in worse academic performance among underage gamblers (Becoña et al., 2001; Griffiths and Wood, 2000; Messerlian et al., 2004).

Despite the aforementioned risks, adolescents may be attracted to betting or gambling because they are in a developmental stage characterized by sensation-seeking emotions (Carbonell and Montiel, 2013). Moreover, in gambling there is a potential financial reward which adds to the psychological gratification (Ricijaš et al., 2016). And the online format might be a special attraction for them because of their affinity for the digital world (Carbonell and Montiel, 2013), the comfort of it, the simultaneous availability on several different platforms, the ease of preserving anonymity and breaking the law undetected, and because of all of the marketing and advertisement efforts (Wong and So, 2014).

Scientific literature has associated some family variables to gambling, such as family problems and low parental supervision (Carbonell and Montiel, 2013; De Luigi et al., 2018; Secades-Villa and Villa, 1998), as well as some personal variables of the gamblers. Impulsiveness has been found to be related to addictions in general, and to gambling in particular (Canale et al., 2015; Directorate General for the Regulation of Gambling, 2015; Lloret et al., 2016; Secades-Villa et al., 2016). In fact, it is considered as a risk factor for developing problematic gambling or gambling disorder (Sánchez et al., 2016). In relation to self-esteem, some authors associated low levels with problematic gambling (Kaare et al., 2009; Volberg et al., 1997), while other researchers found that the relation was between high levels of self-esteem and gambling, as a result of the gambling experience (Holtgraves, 1988; Kusyszyn and Rutter, 1985). For its part, assertiveness and social skills are two relevant variables in terms of prevention among adolescents in relation to alcohol and other drug use (Anti Drug Agency of the Community of Madrid and European Monitoring Centre for Drugs and Drug Addiction, 2003; Vadrucci et al., 2016). However, little research has been published relating assertiveness or social skills, such as communication skills, to betting or gambling (Takushi et al., 2004).

In terms of prevalence of online gambling in adolescents, various studies reveal very different figures, ranging from 2% (Barnes et al., 2009) to more than 37% (Floros et al., 2013). This variability across studies may be attributed to variations in the methodology, the year and country where it was carried out, and the age range of the samples used. Specifically in our context of Galicia (northwest region of Spain), a report from the Regional Ombudsman of Galicia indicates that in 2010, 1.5% of a representative sample of 2339 compulsory secondary education students visited online betting or gambling sites (Regional Ombudsman of Galicia, 2011). Later, in 2014, the prevalence of online betting or gambling among a sample of 44 051 Galician compulsory secondary education students was 3.8% (Gómez et al., 2017a, b). These figures suggest that online gambling is an increasingly common practice among adolescents, taking into consideration that this prevalence has more than doubled in a period of four years.

The main objective of the present study was to estimate the recent prevalence of online gambling or betting among Galician adolescents. Furthermore, the following objectives were also pursued: to analyse the profile of online gamblers in terms of sociodemographic variables (gender and age) and personal variables (self-esteem, assertiveness, impulsivity and communication skills); to explore the differences in Internet and smartphone usage habits, online risky practices, problematic Internet use and parental involvement between online gamblers and non-online gamblers; and to analyse the relation between online gambling or

betting and academic performance. In this respect, this study seeks to provide empirical evidence of the issue, and to increase the knowledge available to guide future prevention campaigns among adolescents.

## **Methods**

### **Participants**

A selective methodology was used, consisting of a survey of compulsory secondary education and baccalaureate students in the Galician region of Spain (provinces of A Coruña and Pontevedra). Purposive sampling was used, and a total of 3910 participants from 15 secondary schools, both public and private/charter, both urban and rural, took part in the sample.

After an exhaustive review process, 51 questionnaires were eliminated either because they had an excessive number of missing values (30) or incoherent response patterns (21). Additionally, a further 87 questionnaires were eliminated because they were outside the age range under study (12–17 years). Thus, the final sample consisted of 3772 adolescents (50.2% females) aged between 12 and 17 ( $M = 14.41$  and  $SD = 1.64$ ). Of these, 75.9% were in compulsory secondary education, and 24.1% were baccalaureate students.

### **Instruments**

Data were collected through an ad hoc questionnaire. It is comprised of questions to assess their Internet and smartphone usage habits, youth perceptions of parental involvement, and possible online risky practices such as online gambling or betting, visiting porn sites, active sexting, being blackmailed with publishing and disseminating photos or videos of themselves on the Internet, being a victim of online threats, harassment or humiliation (a cybervictim), being a perpetrator of online threats, harassment or humiliation (a cyberbully), or contacting strangers. The 11-item Problematic Internet Use Scale in adolescents (PIUS-a), a screening measure (Rial et al. 2015), was also included, as well as four scales measuring personal variables: self-esteem was evaluated through the Spanish version of the Rosenberg Self-Esteem scale (RSES) adapted by Martín-Albo et al. (2007), assertiveness was measured through the Assertiveness Scale published in the Evaluation Instruments Bank (EIB) by the Anti Drug Agency of the Community of Madrid and European Monitoring Centre for Drugs and Drug Addiction (2003), impulsiveness was assessed with the Spanish version of the Barratt Impulsiveness Scale (BIS-11-A) adapted by Martínez-Loredo et al. (2015), and communication

skills were evaluated with the Communication Skills subscale from the Social skills Scale by Oliva et al. (2011). A final section collected information on sociodemographic variables such as the gender and age of participants, their type of school, as well as their average grade in the preceding school year, and if they had ever repeated a grade.

### **Procedure**

Data were collected in their own classrooms in small groups (around 20 students) through a self-administered paper-and-pencil questionnaire that each student completed individually. Data collection was carried out by a group of psychologists from the University of Santiago de Compostela with extensive experience in this type of work. All students were informed of the purpose of the study both verbally and in writing as part of the questionnaire, as well as of the confidentiality and anonymity of their responses. They also were informed that participation was voluntary, that they were free to complete or refuse to fill the questionnaire, and that the possibility to opt-out was available at any time. This study counted on the consent and cooperation of both school leadership and respective parents' associations. The Bioethics Committee of the University of Santiago de Compostela approved this study.

### **Data analysis**

A bivariate tabulation was carried out using parametric or nonparametric techniques, depending on the nature of the variables: Student's *t* tests for the comparison of means and eta squared coefficient ( $\eta^2$ ) to calculate the effect size in quantitative variables, as well as Chi-square test of independence for the comparison of percentages and contingency coefficient (CC) for calculating the effect size in qualitative variables. All statistical analyses were conducted using IBM SPSS Statistics 20.

## **Results**

Prevalence of online betting or gambling was 6.5%. Although this behaviour was more prevalent among the group of 16–17-years-old students, the mean age of online gamblers was 15.06 years old ( $SD = 1.5$ ), and 34.7% of online gamblers were 14 or younger. Table 1 shows prevalence of online betting or online gambling according to gender and age group of the participants.

**Table 1.** Prevalence of online betting or online gambling according to gender and age group

	% online betting or online gambling	$\chi^2$	<i>p</i>
<b>Age group</b>			
12–13 years old	3.3	39.17	< .001
14–15 years old	6.7		
16–17 years old	9.6		
<b>Gender</b>			
Male	11.5	153.72	< .001
Female	1.4		

In terms of the socio-demographic profile of online gamblers, 88.6% were male, and 11.4% were female. In relation to their age, 17.8% were 12–13-year-old adolescents, 38.6% were ranging from 14 to 15, and 43.6% were 16–17.

Considering a sub-sample that comprises only the 2863 compulsory secondary education students, the prevalence of online gamblers was 5.8%, and the mean age was 14.39 ( $SD = 1.29$ ). Among these students, significantly higher rates of online gambling were found in boys than in girls (10.3% vs. 1.3%;  $\chi^2 = 100.763$ ;  $p < .001$ ).

**Table 2.** Comparison of Internet and smartphone usage habits, parental involvement, online risky practices, and problematic Internet use between online gamblers and non-online gamblers

	Online gamblers (%)	Non-online gamblers (%)	$\chi^2$	CC
<b>Internet and smartphone usage habits</b>				
Daily use	88.6	82.2	5.71	–
More than 5 h per day	35.8	24.9	12.80**	.06
Signed up to more than 5 social networking sites	45.3	26.8	36.16**	.10
At least weekly use of the smartphone in the classroom	37.9	15.8	73.76**	.14
<b>Parental involvement</b>				
Parent–child conflict over their Internet and smartphone use	42.6	46.8	3.69	–
Non-parental control over their Internet and smartphone use	44.6	29.5	22.77**	.08
<b>Online risky practices in the last 12 months</b>				
Cyberbullying victim	7.6	5.8	1.04	–
Cyberbullying aggressor	14.9	3.7	64.50**	.13
Active sexting	10.2	4.7	13.90**	.06
Being blackmailed	6.4	2.7	10.68*	.05
Visiting porn sites	65.9	26.8	160.71**	.20
Contacting strangers	47.9	30.3	31.56**	.09
Meeting strangers	24.6	12.6	27.21**	.08
Problematic internet use	33.8	17.2	39.32**	.10

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

As shown in Table 2, online gambling or online betting was related to several online risky habits or practices. First of all, online gamblers had significantly higher rates of intensive

Internet use (more than 5 h per day) than those of non-online gamblers (35.8% vs. 24.9%). Furthermore, online gamblers had a greater presence in social networking sites (45.3% of them are signed up to more than 5 social networks vs. 26.8% of the non-online gamblers), and a significantly higher smartphone use at school (37.9% vs. 15.8%).

In relation to parental involvement, it is relevant to note that although no statistically significant differences were found about arguments at home because of their Internet and smartphone use, non-parental control rates are significantly higher in online gamblers compared to those who did not use betting or gambling sites (44.6% vs. 29.5%).

Regarding other online risky practices, the online gamblers engaged significantly more in active sexting (10.2% vs. 4.7%), visiting porn sites (65.9% vs. 26.8%), cyberbullying (14.9% vs. 3.7%), contacting strangers (47.9% vs. 30.3%), and even in meeting strangers (24.6% vs. 12.6%). Online gamblers were also blackmailed with publishing and disseminating photos or videos of themselves on the Internet in significantly more cases (6.4% vs. 2.7%). No statistically significant differences were found about being a cyberbullying victim.

Added to these differences was the significantly higher prevalence of problematic Internet use by online gamblers (33.8% vs. 17.2%).

In connection with personal variables, it is of note that online gamblers achieved significantly higher scores on communication skills and impulsiveness compared to those who did not gamble, but significantly lower scores on assertiveness. No statistically significant differences were found in self-esteem (Table 3).

**Table 3.** Personal variables in online gamblers and non-online gamblers

Personal variables	Online gamblers		Non-online gamblers		<i>t</i>	$\eta^2$
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Self-esteem	31.35	5.40	30.94	5.80	- 1.02	-
Communication skills	21.07	8.06	17.54	7.62	- 6.75*	0.021
Assertiveness	16.75	4.36	19.50	3.54	9.42**	0.048
Impulsiveness	69.17	11.99	63.20	10.58	-7.59**	0.061

\**p* < .05; \*\**p* < .001

Finally, statistically significant differences were found in the academic performance between online gamblers and non-online gamblers (*t* = 4.94; *p* < .001). The average grade in the preceding school year was 6.63 (*SD* = 1.66) for online gamblers and 7.15 (*SD* = 1.57) for non-online gamblers. Moreover, there was a significantly higher rate of having ever repeating a

grade among online gamblers compared with those who were not non-online gamblers (28.8% vs. 17.5%;  $\chi^2 = 18.45$ ;  $p < .001$ ).

## Discussion

Minors' access to ICT is a relevant topic due to different problems associated with it, as stressed by numerous authors (Castellana et al., 2007; Echeburúa and De Corral, 2010; Gómez et al., 2017a, b). And online gambling is one of these concerns. Although in many cases online gambling behaviour does not become a disorder, it might imply economic, family, school and social problems for those involved, and it has been shown that online gambling poses a significantly greater risk for developing problem gambling compared to land-based gambling (Canale et al., 2016; Elton-Marshall et al., 2016; Olason et al., 2011). Moreover, online gambling usually correlates with other risky behaviours that jeopardize a healthy biopsychosocial development during adolescence (Carbonell and Montiel, 2016), and certainly online gambling behaviour is necessarily a prelude to the development of an online gambling disorder. For the aforementioned reasons, it is an issue requiring special attention.

The first objective of this research was to determine the prevalence of online gambling in adolescents from the northwest region of Spain (Galicia). Prevalence of online betting or online gambling was 6.5%, or 5.8% while considering only compulsory secondary education students. Although problem gambling is not assessed in this research, these results enable tracking adolescent trends in the last years. Comparing this prevalence with those found in our previous studies, a substantial increase in online gambling behaviour can be observed. Concerning compulsory secondary education students, prevalence has evolved from 1.5% in 2010 (Regional Ombudsman of Galicia, 2011), to 3.8% in 2014 (Gómez et al., 2017a, b), up to this 5.8% in 2016. This means that the percentage of online gamblers has risen and almost quadrupled in seven years. These data are in line with the gradual increase in online gambling also claimed by other authors (Becoña and Becoña, 2018; Olason et al., 2011). Although these percentages could seem small, extrapolating the 6.5% to our regional adolescent population means that around 8000 of them are online gamblers. This is a worrying breeding ground for gambling disorder, given the addictive potential of the online environment (Griffiths and Parke, 2010; Potenza et al., 2011), and because the earlier age of onset, the higher probability of developing gambling disorders in the future (Gupta and Derevensky, 2000; Secades-Villa and Villa, 1998; Wong, 2010).

Other objective of this study was to analyse the profile of online gamblers in terms of sociodemographic and personal variables. Our findings show that 9 out of 10 are male, a result consistent with those found by Becoña et al. (2001), Calado et al. (2017), or Chóliz and Lamas (2017). The mean age of online gamblers is 15 years old, and 1 out of 3 is 14 years old or younger, in contrast to what one might think. Regarding the personal profile, online gamblers have significantly higher scores in impulsiveness, in line with findings obtained by Lloret et al. (2016) and Secades-Villa et al. (2016), and they also have higher scores in communication skills. This fact could be linked to the social dimension of gaming in general (Chóliz, 2008), and of gambling in particular (Wong, 2010). Additionally, online gamblers have lower scores in assertiveness. This might signify lack of personal resources to adequately manage not only online betting or online gambling but also other online risky situations (Dalbudak et al., 2015), influenced by peer pressure. Nevertheless, the reduced effect sizes of these personal variables indicate that it is not sufficient to focus only on personal variables for accurate prevention and intervention.

The present work also examines parental involvement concerning their children's Internet and smartphone use, finding significantly less parental control over online gamblers. In fact, online gamblers are connected to the Internet during significantly more hours per day, and they use their smartphone significantly more frequently at school. Previous research pointed out that lack of parental control is related to higher figures of problematic Internet use (Gómez et al., 2017a, b). At an applied level, these findings suggest a positive interpretation, because educating parents to effectively supervise their children's Internet and smartphone use, to establish norms at home, and to limit their children's frequency of Internet use and total amount of time spent online (Rial et al., 2014) will have multiple benefits in terms of decreasing not only prevalence of online gambling behaviour but also problematic Internet use.

Another interesting finding is the confirmation that online gambling is not an isolated problem. Online gamblers present significantly higher prevalence of problematic Internet use and of being involved in other online risky behaviours. This finding is in line with other researchers' suggestion of identifying related online behaviours to detect different patterns of use (Floros et al., 2013), so it could be said that this is a general maladaptive pattern of Internet use. In this sense, gambling behaviour has been considered as a good indicator of a greater risk situation and generalized vulnerability of the adolescent (Carbonell and Montiel, 2016). Therefore, it is necessary to address this issue from a holistic perspective, understanding the prevention of

online risky practices in a global way instead of focusing on particular behaviours (Gómez et al., 2017a, b; Ybarra et al., 2007).

This study also analyses the relation between online gambling and academic performance. In accordance with previous literature (Becoña et al., 2001; Griffiths and Wood, 2000; Messerlian et al., 2004), online gamblers perform worse, since they have a significantly higher percentage of having ever repeated a grade and a lower average grade in the preceding school year.

There are possible limitations of this work to be considered, the first one being the sample used. Despite having included 3772 adolescents, having used a non-probabilistic sample from two provinces (A Coruña and Pontevedra) limits the external validity of the results. Secondly, the work has a cross-sectional design, thus it is not possible to establish causality relations among variables.

Finally, all the variables have been self-reported, so that it is impossible to know with certainty to what extent adolescents could have underestimated or overestimated their different behaviours, and data might be subject to recall error or social desirability bias. However, as some experts from the addictive behaviours field have previously pointed out, self-reported measures have shown to be reliable and even better than other methods when assessing usage levels and risky behaviours (Babor et al., 1989).

**Funding:** This study was funded by the Spanish National Plan on Drugs (Ref. 2013/046).

**Conflict of interest:** The authors declare that they have no conflict of interest.

**Ethical Approval:** All of the procedures used in collecting the survey data on which this paper relies were in accordance with the ethical standards of the Bioethics Committee of the University of Santiago de Compostela, and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

**Informed Consent:** All participants were informed of the purpose of the study both verbally and in writing, as well as of the confidentiality and anonymity of their responses.

**Human and Animal Rights:** This article does not contain any studies with animals performed by any of the authors.

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