



Article

# Young People's Perception of the Danger of Risky Online Activities: Behaviours, Emotions and Attitudes Associated with Their Digital Vulnerability

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**Abstract:** Digital leisure has become the main reason young people make use of the Internet and social media. Previous research shows the danger of certain activities in the online environment. Of particular concern are those of a recreational nature, which are more socially accepted by young people; among them one can find: online gambling and betting, online shopping and eGames, and the consumption of content on social media. This study aims to identify the behavioural and psychographic variables which impact the probability that young people will perceive the danger of these risky activities. We have carried out a descriptive and causal investigation with non-experimental cross-cutting analysis through a computer-assisted phone survey on a sample of 1500 young people aged between 18 and 35. The results show that all the activities are perceived as dangerous by the majority of those questioned, but a large percentage of young people do not perceive any risk in online gambling, betting and eGames. We have determined several psychographic and behavioural variables to help predict the perception of risk among young people to help define formal and informal policies for reducing their vulnerability in the event of the inappropriate use of the studied activities.

**Keywords:** vulnerability; risk activities; perception of Internet risk; social media; young people; online gambling; betting; eGames; online shopping



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## 1. Introduction

This research analyses young people's perception of risk in the digital environment and the factors associated with their potential vulnerability. Torres-Hernández et al. (2022) relates the concept of online risk to the idea of "damage or harm", and they define it as "any situation that involves the likelihood of a violation of a user's life when surfing the net" (p. 1582). Youth is a period of time when risk perception evolves and increases with age because it is based on the information and experience accumulated by the individual throughout their life (García del Castillo 2012).

The Internet and social media therefore constitute spaces where young people report spending a large part of their time (93% of young people access social media every day and they are also the ones who spend most time connected: 1 h and 28 min) (International Advertising Bureau, IAB 2022). This high frequency and intensity in the use of online environment make them vulnerable to the various dangers that exist on the Internet, especially those hailing from their close and familiar environment (Wolak et al. 2006; Burgess-Proctor et al. 2009; McQuade and Sampat 2008; Smith et al. 2008).

However, as young people mature and improve their digital skills in this environment (García et al. 2014; Lopez-Sintas et al. 2020), their digital vulnerability is reduced, and they become more aware of the dangers they may encounter as they make a more rational use

of the Internet (Fu and Cook 2021; De Frutos Torres and Vázquez Barrio 2012; Labrador and Villadangos 2010).

### 1.1. Young People and the Perception of Risk in the Online Environment

Several authors have studied the risks young people can encounter on the Internet. Specifically, El Asam and Katz (2018) established a classification of four risks (called “High Risk Online Experiences, HROEs), depending on the experience of the young in the online environment: contact risks (such as sexting or grooming); content risks (that which promotes hatred, or which is pornographic or violent); conduct risks (such as online games of chance and gambling); and cyberscams (such as the hacking of accounts or identity theft).

With respect to the above risks, a significant number of authors have carried out research on the specific risks which are apparently most damaging and even punishable associated with the digital ecosystem among young people, such as cyberbullying, identity theft, sexual harassment, sexting, contact with strangers or access to dangerous or harmful content (Keipi et al. 2017; Gámez-Guadix et al. 2016; Kircaburun et al. 2019; Madigan et al. 2018; Harder et al. 2019; Pedersen et al. 2022; Wachs and Wright 2018; Oonagh et al. 2020; Näsi et al. 2014; Schell 2016; Davis et al. 2021; Healy-Cullen et al. 2022).

Following the classification of El Asam and Katz (2018), this paper has focused on the category of “conduct” considered risky which occurs in the online environment, and therefore constitutes a growing phenomenon of our time, above all among the youngest age group (Fioravanti et al. 2012). Specifically, we have analysed five types of conduct inherent to the digital environment. Most of them are notable as recreational and entertaining in nature, such as online gambling, online betting, eGames, compulsive online shopping and abusive consumption of the Internet and social media.

According to the Informe sobre Adicciones Comportamentales (Observatorio Español de las Drogas y las Adicciones 2021), activities such as games involving money, the use of the Internet for recreational purposes, and online and offline videogames are all activities which have become common in our society. “Digital leisure”, i.e., leisure which includes activities that can only be carried out online, has become the main reason behind use of the digital environment among young people (Dirección General de la INJUVE y Observatorio de la Juventud en España 2021). Moreover 89% of young people aged between 18 and 24 use social media solely and exclusively it for entertainment, far more than for information or to understand current events (IAB 2022); this is also the demographic segment that spends the most time playing videogames (Asociación Española del Videjuego 2015). Finally, 63% of active participants of games of chance and sports gambling are within the age range of 18 to 35, with the segment of 18 to 25 years old being the only one which has increased the number of players with respect to a year earlier (8.45%).

The possibility of engaging in these activities through digital means promotes many potentially addictive behaviours: the immediacy of the reward, easy and 24/7 access, anonymity and the intimate environment provided by new technologies; all of these factors facilitate loss of control and can lead to negative consequences which cause serious damage to the health of the people involved and their family, labour and/or personal relations.

Some of these activities have been included by the American Psychiatric Association (APA) in its publication DSM-5 and the World Health Organization (WHO) in its ICD-10 as addictive and risky conduct; such activities include the compulsive and problematic use of the Internet and social media (Young 1999; Griffiths 2000; Brezing et al. 2010; Grant et al. 2010; Kormas et al. 2011; Van der Aa et al. 2009; Salmela-Aro et al. 2017; Helsper and Smahel 2020; Tóth-Király et al. 2021), and the conduct disorder derived from the use of offline and online videogames (Internet Gaming Disorder), as well as compulsive gambling through online gambling (Gambling Disorder) and online betting<sup>1</sup> (Dixon et al. 2015; Lawn et al. 2020; Shaffer et al. 2006). The work of González-Vallés et al. (2021) shows the relationship between “tipsters” (people and betting houses who influence and advise through social networks on the bets they consider most profitable), online sports betting and the high risk of generating addiction among young people.

Many adults begin to engage in these activities at an early age, when minors are most vulnerable and less aware of the risks of many of the activities which they experience in the online environment. It is for this reason that adolescence is a period which is highly susceptible to suffering addictive conduct or other psychological disorders related to the use of one of the information and communication technology (ICT) applications in people's lives (Castellana Rosell et al. 2007).

Some studies have made clear the difficult relationship between some of the risk activities mentioned above. Specifically, the work of Murias et al. (2022) points to the significant relationship between the use and spending of the loot boxes or prize crates<sup>2</sup> in videogames (gaming) and the problems of gambling games, in terms of their presence and seriousness. Other studies have suggested similarities between loot boxes and gambling games and slot machines, as well as their addictive potential (Brady and Prentice 2021; Von Meduna et al. 2020; Drummond and Sauer 2018; Macey and Hamari 2018; Zendle and Cairns 2018; González-Cabrera et al. 2022); or that excessive purchases of videogames increase the risk of psychological disruption and mental anxiety, as well as being a predictor of future dangerous gaming and gambling (Shinkawa et al. 2021; Li et al. 2019). Tuculet and Pedrón (2022) have observed that the levels of galvanic skin response (GSR) in players who open loot boxes are similar to those recorded by people who are gambling or playing games of chance online.

Finally, it is important to note that although compulsive shopping is not included as addictive conduct in the APA's DSM-5 manual, such purchases have been studied by some authors who have investigated the negative consequences they have on the subject's life (Andreassen et al. 2015; Müller et al. 2019; Gori et al. 2022). Moreover, the ease of access to the Internet through a variety of devices has boosted the addiction to shopping online as well (Niedermoser et al. 2021). Specifically, the factors that increase the risk for online shopping are: the ease of accessing a greater number and variety of products with a single click (Niedermoser et al. 2021); the ease of purchasing anytime, anywhere, quickly and without having to physically carry the products bought (Kuss et al. 2018); social anonymity and the associated lack of inhibition, which may foster more excessive behaviour (Lejoyeux and Weinstein 2010; Sun and Wu 2011); and, finally, the dynamic nature of the medium, which frequently generates temptations and repeated stimuli, leading to cognitive overload and loss of self-control (Rose and Dhandayudham 2014).

Along the same lines, and examining the negative effects in more depth, other studies which have demonstrated the relationship between use of the Internet and compulsive shopping have reached the conclusion that users who excessively consume more content on social media make more impulse purchases (Zheng et al. 2020; Lee et al. 2016; Okazaki et al. 2021; Sharif and Khanekharab 2017; Duroy et al. 2014).

Given this situation, it is worth asking whether individuals (particularly young adults) perceive the risks associated with these online activities which may be considered most recreational (such as eGames, compulsive shopping, online gambling and online betting, and use of social media as entertainment), as they do the activities clearly classified as dangerous and harmful (cyberbullying, access to pornography, sexting, etc.), and if this perception could be explained by the behaviour, emotions and attitudes of these individuals to the online environment.

## 1.2. Aims and Hypotheses

The overall objective of this work is to identify the relevant behavioural and psychographic variables associated with the use of social media and the Internet which impact the likelihood of perceiving the dangers inherent to certain risky online activities by young Spanish people aged from 18 to 35.

This overall objective can be broken down into the following specific objectives:

1. Determine whether any risk or danger is perceived among young Spanish adults (aged 18 to 35) in the following online activities: betting, eGames, compulsive shopping, gambling and abusive consumption of content on social media.

2. Propose an explanatory and predictive model of the probability of perceiving risk or danger in each of the above activities based on the behaviour, declared emotions and attitudes of young people with respect to social media and the Internet.

Based on the above objectives, we have proposed the following research hypotheses:

**H1.** *Spanish young adults aged from 18 to 35 perceive danger in these risky online activities.*

**H2.** *The probability of perceiving danger in risky online activities by young Spanish people aged from 18 to 35 depends on their behaviour, emotions and attitudes with respect to social media and the Internet.*

**H3.** *Any negative emotions or feelings which they have when interacting with the Internet and social media make it more likely that young Spanish people aged from 18 to 35 perceive danger in risky online activities.*

**H4.** *The lack of negative emotions or feelings when interacting on the Internet and social media reduces the likelihood of young Spanish people aged from 18 to 35 perceiving danger in risky online activities.*

## 2. Materials and Methods

A descriptive and causal investigation has been carried out based on a cross-cutting analysis with a non-experimental design. The research universe is that of young Spanish adults aged from 18 to 35, which includes adults from the so-called millennial and Z generations, who are linked to the development and mass expansion of the Internet among the general population and characterised as digital natives (Granado Palma 2019).

A computer-aided telephone survey was carried out on 1500 people resident in Spain aged between 18 and 35, selected at random from an online panel. The choice of sample corresponds to the structure of the Spanish population aged from 18 to 35, according to gender, age and autonomous region of residence (Instituto Nacional de Estadística—INE Base 2021). The sample of the participants is therefore composed of 49.1% women, 50.6% men and 0.3% who did not declare their sex, within the following age bands: 18–21 years old (20.6%); 22–25 years old (20.6%); 26–30 years old (28.1%); 31 to 35 years old (30.7%). In the case of our simple random sample, this sample size is subject to a preliminary error of  $\pm 2.58\%$  for a confidence level of 95.5% ( $P = Q = 50\%$  and 2 sigma).

The information was collected in March 2022 through the company Grupo Análisis e Investigación as part of the study “Jóvenes y vulnerabilidad en entornos digitales” (Young People and Vulnerability in Digital Environments) developed for The Family Watch Foundation—Instituto Internacional de Estudios sobre la Familia—by Universidad Complutense de Madrid. The data obtained have been analysed using the statistical package SPSS v25.0 (IBM Corp., Armonk, NY, USA, 2017). Table 1 summarizes the information relating to the data sheet of the quantitative study carried out.

**Table 1.** Quantitative study fact sheet.

Universe	Young Spanish adults aged 18 to 35	
Technique for obtaining the information	A computer-aided telephone survey	
	A structured questionnaire with 43 variables	
Sampling	Final sample size	1500 young Spanish adults aged from 18 to 35 responded correctly to the questionnaire
	Sampling method	By random from an online panel
Analyses and collection of information	Statistical techniques	Simple and cross tabulations, binary logistic regression (hereinafter, the Wald method) with classification table, Hosmer–Lemeshow test with contingency table, and ROC curve
	Software	IBM SPSS v.25
	Fieldwork	March 2022

Source: own work.

### *Measurements*

An ad hoc structured questionnaire was used to collect the information, which includes not only the socio-demographic identifiers of the participants in the research, but variables relating to the nature of the magnitude or characteristic being measured and according to the objectives of the study:

1. Social media and Internet use behaviour by the subjects of the research:
  - a. Frequency and intensity of the daily use of social media;
  - b. Frequency of participation in the following online activities: videogames (console game), betting, eGames, shopping and gambling.
2. Perception of the subjects of the research in terms of absence or existence of risk or danger in the following online activities:
  - a. Betting;
  - b. eGames;
  - c. Compulsive shopping;
  - d. Gambling (casino-type, poker, slot machines, etc.);
  - e. Abusive consumption of social media content.
3. Lack or presence of the following negative emotions and/or feelings of the research subjects when they interact online and on social media:
  - a. Fear;
  - b. Anxiety;
  - c. Lack of respect;
  - d. Insecurity;
  - e. Impotence;
  - f. Feeling of emptiness;
  - g. Social pressure;
  - h. Loss of control over information;
  - i. Shame.
4. Disagreement or agreement of the research subjects in relation to 27 items associated with the following categories of attitudes towards social media:
  - a. General attitudes towards social media and the feelings they generate.
  - b. Attitudes towards the personal image projected on social media.
  - c. Attitudes towards the idealized or falsified image on social media.
  - d. Attitudes towards inappropriate behaviour on social media.
  - e. Attitudes towards the commercial behaviour of companies on social media.
  - f. Attitudes towards responsible behaviour on social media.
  - g. Attitudes towards their own vulnerability on social media.

The choice of activities, emotions, feelings and attitudes analysed is based on the results of the survey EU Kids Online carried out in 2018 on online activities, mediation, opportunities and risks for minors in the age of media convergence ([Garmendia et al. 2019](#)), and on a number of studies and reports on risky cyber-behaviour ([Livingstone et al. 2012](#); [Garmendia et al. 2016](#); [Ramos-Soler et al. 2018](#); [Hernández et al. 2018](#); [Garitaonandia et al. 2020](#); [Osorio-Tamayo and Millán Otero 2020](#); [Galbava et al. 2021](#); [Romera et al. 2021](#); [Andrade et al. 2021](#)).

## **3. Results**

### *3.1. Perception of Risk or Danger in Risky Online Activities*

As can be seen in [Figure 1](#), all the activities analysed are perceived as dangerous by the majority of the research subjects, which corroborates the first hypothesis (H1) of this work. However, around 30% of young people either do not answer or do not perceive any risk in activities such as online gambling and online betting, and 43.5% do not answer or do not perceive risk or danger in eGames ([Figure 1](#)).

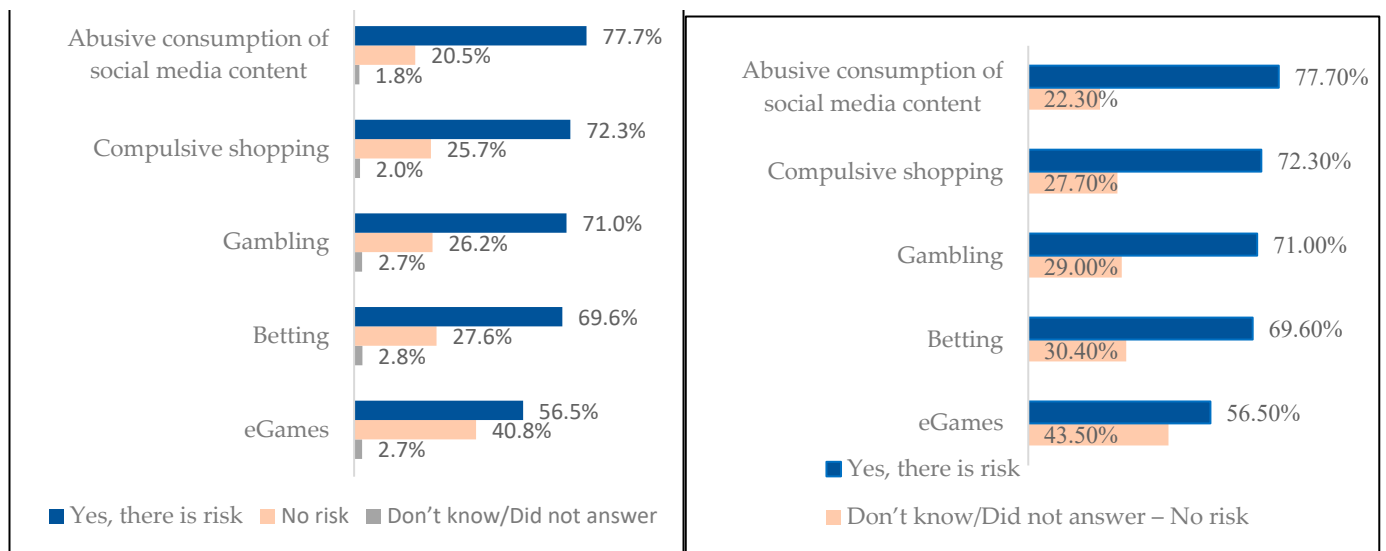


Figure 1. Perception of risk or danger in risky online activities. Source: own work.

3.2. Explanatory and Predictive Models of the Probability of Perceiving Risk or Danger in Risky Online Activities

The first model (Table 2) defines that the probability of perceiving risk or danger in online betting increases with a high level of participation in online videogames and online gambling, or when, on the Internet and social media, the subjects feel a lack of respect, impotence or loss of control of the information, and anger and impotence with respect to the lack of respect. The model also determines that this probability declines when they do not feel social pressure on social media or are annoyed by the cookies they must accept to access certain content. The goodness of fit of the model has been verified by the Hosmer–Lemeshow test (Chi-squared = 7.686;  $p = 0.465$ ), the percentage of cases that the model is capable of predicting correctly (71.4%) and the area below the ROC curve (0.691).

Table 2. Logistic regression model on the probability of perceiving risk or danger in online betting.

Variables in the Equation	B	Standard Error	Wald	GI	Sig.	Exp(B)
High frequency of participation (3 or more times a week) in online videogames	0.481	0.121	15.680	1	0.000 **	1.618
High frequency of participation (3 or more times a week) in online gambling (casino, poker, roulette, slot machines, etc.)	0.510	0.183	7.769	1	0.005 **	1.665
I feel a lack of respect on the Internet and social media	0.623	0.135	21.180	1	0.000 **	1.864
I feel impotence on the Internet and social media	0.361	0.128	7.917	1	0.005 **	1.435
I feel a loss of control over information on the Internet and social media	0.548	0.134	16.798	1	0.000 **	1.730
Social media generate social pressure for me	−0.283	0.136	4.323	1	0.038 *	0.754
I feel anger/impotence in the face of social media messages that lack respect	0.330	0.128	6.657	1	0.010 **	1.391
It irritates me to have to accept cookies to view content	−0.294	0.144	4.178	1	0.041 *	0.745
Constant	−2.382	0.441	29.148	1	0.000 **	0.092

Source: own work. \* significant to 5%. \*\* significant to 1%.

The second model (Table 3) on the probability of perceiving risk or danger in eGames indicates that this probability increases with a high frequency of participation in eGames, online shopping and online gambling, and when the subject feels fear and loss of control over the information on the Internet and social media. The goodness of fit of the model has been verified by the Hosmer–Lemeshow test (Chi-squared = 7.758;  $p = 0.256$ ), the percentage of cases that the model is capable of predicting correctly (61.2%) and the area below the ROC curve (0.659).

**Table 3.** Logistic regression model on the probability of perceiving risk or danger in eGames.

Variables in the Equation	B	Standard Error	Wald	Gl	Sig.	Exp(B)
High frequency of participation (3 or more times a week) in eGames	0.578	0.125	21.246	1	0.000 **	1.783
High frequency of participation (3 or more times a week) in online shopping	0.455	0.142	10.254	1	0.001 **	1.576
High frequency of participation (3 or more times a week) in online gambling (casino, poker, roulette, slot machines, etc.)	0.695	0.183	14.359	1	0.000 **	2.003
I feel fear on the Internet and social media	0.416	0.129	10.356	1	0.001 **	1.517
I feel a loss of control over information on the Internet and social media	0.340	0.115	8.720	1	0.003 **	1.405
Constant	−2.861	0.306	87.649	1	0.000 **	0.057

Source: own work. \*\* significant to 1%.

The third model (Table 4), on the probability of perceiving risk or danger in compulsive shopping, demonstrates that this probability increases when, in the online context, the subjects participate in videogames and shopping with a high frequency; feel impotence, social pressure or loss of control over information; or fear that the published content is inappropriately used; feel anger and impotence about messages that lack respect; and claim that social media are a forum in which anything can be said without fear of consequences. In contrast, the probability of perceiving risk or danger in compulsive shopping is reduced when the subjects do not feel insecurity in interacting on social media and do not feel fear that social media may have a negative impact on them personally and psychologically. The goodness of fit of the model has been verified by the Hosmer–Lemeshow test (Chi-squared = 8.118;  $p = 0.422$ ), the percentage of cases that the model is capable of predicting correctly (73.6%) and the area below the ROC curve (0.705).

The fourth model (Table 5) on the probability of perceiving risk or danger in online gambling (such as casino, poker, slot machines and similar) demonstrates that this probability grows when, in the online context, there is a high frequency of participation in videogames, online betting and online gambling, and subjects feel a lack of respect, social pressure, loss of control over the information and fear that the published content may be used incorrectly. In contrast, the probability of perceiving risk or danger in online gambling is reduced when subjects do not feel annoyance as regards how easy it is to access inadequate or dangerous content from the actual social media. The goodness of fit of the model has been verified by the Hosmer–Lemeshow test (Chi-squared = 4.459;  $p = 0.813$ ), the percentage of cases that the model is capable of predicting correctly (72.9%) and the area below the ROC curve (0.705).

**Table 4.** Logistic regression model on the probability of perceiving risk or danger in compulsive shopping.

Variables in the Equation	B	Standard Error	Wald	GI	Sig.	Exp(B)
High frequency of participation (3 or more times a week) in online videogames	0.272	0.123	4.869	1	0.027 *	1.312
High frequency of participation (3 or more times a week) in online shopping	0.568	0.159	12.772	1	0.000 **	1.764
I feel impotence on the Internet and social media	0.281	0.135	4.330	1	0.037 *	1.325
I feel social pressure on the Internet and social media	0.387	0.139	7.680	1	0.006 **	1.472
I feel a loss of control over information on the Internet and social media	0.760	0.139	29.986	1	0.000 **	2.138
I feel insecure when I interact on social media	-0.342	0.149	5.281	1	0.022 *	0.710
I feel fear when someone incorrectly uses the content I upload onto social media	0.461	0.142	10.565	1	0.001 **	1.585
On social media, anyone may say whatever they want without fear of the consequences	0.368	0.132	7.728	1	0.005 **	1.445
I am afraid that social media may have a negative effect on me psychologically	-0.385	0.148	6.763	1	0.009 **	0.681
I feel anger/impotence in the face of social media messages that lack respect	0.385	0.137	7.894	1	0.005 **	1.469
Constant	-2.894	0.412	49.336	1	0.000 **	0.055

Source: own work. \* significant to 5%. \*\* significant to 1%.

**Table 5.** Logistic regression model on the probability of perceiving risk or danger in online gambling.

Variables in the Equation	B	Standard Error	Wald	GI	Sig.	Exp(B)
High frequency of participation (3 or more times a week) in online videogames	0.438	0.124	12.448	1	0.000 **	1.549
High frequency of participation (3 or more times a week) in online betting	0.586	0.222	6.973	1	0.008 **	1.797
High frequency of participation (3 or more times a week) in online gambling	0.482	0.226	4.542	1	0.033 *	1.619
I feel a lack of respect on the Internet and social media	0.745	0.140	28.500	1	0.000 **	2.107
I feel social pressure on the Internet and social media	0.269	0.136	3.930	1	0.047 *	1.309
I feel a loss of control over information on the Internet and social media	0.545	0.138	15.658	1	0.000 **	1.725
I feel fear when someone incorrectly uses the personal content I upload onto social media	0.297	0.130	5.193	1	0.023 *	1.345
I am annoyed at how easy it is to access inadequate/dangerous content	-0.315	0.147	4.603	1	0.032 *	0.730
Constant	-3.163	0.451	49.231	1	0.000 **	0.042

Source: own work. \* significant to 5%. \*\* significant to 1%.

The fifth and final model proposed (Table 6) refers to the probability of perceiving risk or danger in the abusive consumption of content on social media. According to this model, the probability rises when the frequency of participation in videogames and online betting is high, when, on the Internet and social media, subjects feel a lack of respect, loss of control over information and anger and impotence due to the messages that lack respect, and subjects consider social media a forum in which one should be able to say anything without fear of the consequences. In contrast, the probability of perceiving risk or danger in the abusive consumption of social media content is reduced when, on social media, the subjects do not feel any concern in the face of possible criticism by others about the content published and are not irritated by excess advertising and commercial messages. The goodness of fit of the model has been verified by the Hosmer–Lemeshow test (Chi-squared = 8.127;  $p = 0.421$ ),



the percentage of cases that the model is capable of predicting correctly (78.3%) and the area below the ROC curve (0.713).

**Table 6.** Logistic regression model on the probability of perceiving risk or danger in abusive consumption of social media content.

Variables in the Equation	B	Standard Error	Wald	Gl	Sig.	Exp(B)
High frequency of participation (3 or more times a week) in online videogames	0.369	0.135	7.444	1	0.006 **	1.446
High frequency of participation (3 or more times a week) in online betting	0.603	0.201	8.968	1	0.003 **	1.827
I feel a lack of respect on the Internet and social media	0.555	0.149	13.873	1	0.000 **	1.742
I feel a loss of control over information on the Internet and social media	0.969	0.154	39.580	1	0.000 **	2.634
I feel anxious about the possible criticisms I may receive about the content I publish on social media	−0.401	0.148	7.319	1	0.007 **	0.669
On social media, anyone may say whatever they want without fear of the consequences	0.321	0.143	5.034	1	0.025 *	1.379
I feel anger/impotence in the face of social media messages that lack respect	0.487	0.145	11.319	1	0.001 **	1.627
I am annoyed by the barrage of advertising and commercial messages on social media	−0.589	0.158	13.893	1	0.000 **	0.555
Constant	−1.971	0.490	16.188	1	0.000 **	0.139

Source: own work. \* significant to 5%. \*\* significant to 1%.

Table 7 sums up the behavioural and psychographic variables that have a positive impact, i.e., which increase the probability of perceiving risk or danger in each of the online activities analysed according to the proposed models, when such behaviour, emotions or feelings occur or the subjects have such attitudes in the online context.

**Table 7.** Variables whose values indicating the presence of the value measured increase the probability of perceiving risk or danger in risky online activities.

	Online Betting	eGames	Compulsive Shopping	Online Gambling	Abusive Content on Social Media
I feel a loss of control over the information	+	+	+	+	+
High frequency of participation in videogames	+		+	+	+
I feel a lack of respect	+			+	+
I feel fear when someone makes undue use of the personal content I upload			+	+	
I feel anger/impotence in the face of messages that lack respect	+		+		+
On social media, anyone may say whatever they want without fear of the consequences			+		+
I feel social pressure			+	+	
High frequency of participation in online gambling	+	+		+	
I feel impotence	+		+		
High frequency of participation in online betting				+	+
High frequency of participation in shopping		+	+		
I feel fear		+			
High frequency of participation in eGames		+			

Source: own work.

Table 8 sums up the psychographic variables that have a negative impact, i.e., which reduce the probability of perceiving risk or danger in each of the online activities analysed

according to the proposed models when such behaviour, emotions or feelings do not occur or the subjects do not have such attitudes in the online context.

**Table 8.** Variables whose values indicating the lack of the item measured increase the probability of perceiving risk or danger in risky online activities.

	Online Betting	eGames	Compulsive Shopping	Online Gambling	Abusive Content on Social Media
Social media generate social pressure for me	-				
I feel insecure when I interact on social media			-		
I feel anxious about the possible criticisms I may receive about the content I publish on social media					-
It irritates me to have to accept cookies to view content	-				
I am afraid that social media may have a negative effect on me psychologically			-		

Source: own work.

Thus, the models proposed corroborate the second hypothesis (H2) of this work and suggest that the behavioural and psychographic variables with the greatest capacity to explain and predict risk perception or danger by Spanish adult digital natives in all the risky online activities are as follows:

1. The feeling of loss of control over the information in the case of interactions on the Internet and social media.
2. The high frequency of participation (3 or more times a week) in online videogames.
3. The feeling of lack of respect in the case of interactions on the Internet and social media.
4. The feeling of anger and impotence in the face of social media messages that lack respect.
5. The high frequency of participation (3 or more times a week) in online gambling.

Finally, given the proposed models, the third and fourth hypotheses (H3 and H4) of this work can be corroborated and it may be concluded that the negative emotions and feelings that arise when interacting with the online environment stimulate the perception of risk or the inherent danger of risky online activities, while the lack of such negative emotions and feelings weakens this perception of risk or danger.

#### 4. Discussion

All the activities analysed have been considered risky in our review of the literature. Although they are perceived as dangerous by the majority of the research subjects, it is worrying that around 30% of young people do not answer or do not perceive activities such as online gambling and online betting as risky, and that nearly half of those surveyed (43.5%) do not answer or perceive risk or danger in eGames. Not being aware of or not perceiving danger in such activities increases the vulnerability of young people to inappropriate or irresponsible use.

The models proposed show that there is a greater probability of perceiving risk in a certain activity when the behavioural variable indicates that there is a habitual practice in this activity. Along the same lines, previous studies point to an association between the perception of risk in an activity and the frequency with which such risky activity is practised (Barnett and Breakwell 2001; Martha and Griffet 2007). This may indicate that a greater frequency of use, experience and knowledge of the young people in each of the activities studied lead them to recognise the risks that they may encounter, and thus their perception of risk may be greater.

Moreover, the models indicate the relationship between the probability of perceiving risk in online betting and online gambling with a high frequency of participation in videogames. It is also true that the probability of perceiving risk in eGames is related to

a high frequency of participation in online gambling and compulsive shopping. Several research projects have already demonstrated the relationship between online gambling, online betting and videogames (Murias et al. 2022), and specifically, with loot boxes or micropayments within videogames or eGames, due to the characteristics they share with traditional gambling (Brady and Prentice 2021; Von Meduna et al. 2020; Drummond and Sauer 2018; Macey and Hamari 2018; Zendle and Cairns 2018; González-Cabrera et al. 2022; Shinkawa et al. 2021; Li et al. 2019; Tuculet and Pedrón 2022).

This work has demonstrated how psychographic variables help predict risk perception among young Spanish people, as observed in the work of Andrade et al. (2021) carried out among minors. Specifically, the feeling of loss of control over information on the Internet increases the perception of risk or danger in all the activities analysed. In this respect, having to register on commercial or gambling operators and having to provide personal data, as well as other data related to bank cards, generates a greater feeling of loss of control of information in the digital environment, which makes young people perceive a greater risk in each of the activities studied.

In addition, the fear of misuse of this information by third parties, as well as the social pressure exercised over young people, are two negative emotions that increase the perception of risk in online gambling and online shopping. These activities have a very “social” and even recreational component, and young people often engage in them in the company of their friends or peers, feeling “forced” to participate in them to integrate and form part of the group. Other studies show the key role played by the influence of the network of friends in explaining risky behaviour during adolescence and youth, concluding that adolescents and young people take more risky decisions when they are in the company of their friends than when they are alone (Gardner and Steinberg 2005; Knoll et al. 2015).

Moreover, when young people feel “impotence”, the perception of risk of online betting and shopping increases, as these two activities involve a strong monetary commitment and feeling of “loss of money”.

Finally, a lack of respect is another negative emotion related to the danger that young people perceive in online betting, online gambling and abusive use of content on social media. Specifically, other authors have already made clear that the anonymity offered by the Internet facilitates negative comments which directly attack individuals (Livingstone et al. 2012; Garitaonandia et al. 2020; Keipi et al. 2017; Wachs and Wright 2018). Thus, young people who have experienced a lack of respect in the online environment tend to perceive more danger on social media and to protect themselves more in the face of a possible attack on their person.

Previous studies have shown that young people who have not had negative experiences when carrying out risky activities tend to have less perception of risk (Benthin et al. 1993; Greening et al. 2005). This is along the same lines of the result of this study, which shows that not having experienced negative emotions inherent to this particular activity is associated with not perceiving an inherent risk in this activity. For example, there is a positive significance between not having had an emotional experience of discomfort when accessing dangerous content and not perceiving the risk of online gambling (Model 4). Furthermore, model 5 shows a link between not having had a negative emotional experience (overwhelmed by criticism), and not perceiving the risk of abusive consumption of social media content.

A possible limitation of the study was not having been able to delve qualitatively through discussion groups with young people to study more deeply the emotions felt when performing risky activities in the online environment. For future research, we consider that it would be very interesting to investigate more specifically each of the risk activities analysed from a gender perspective, trying to identify whether there are emotional and psychological differences depending on the profile of the subject. Another possible line of future research would be to replicate the same study but focusing on children, to find out whether the risk perception of different online activities is different depending on the age of maturity of the subject and their online experience. Finally, we also believe that it would

be interesting to study parents' perception of the risk of different online activities and to find out whether there is an association between this perception of risk and the existence of greater parental control over their children.

## 5. Conclusions

The results of the study show that young people perceive risks in all the activities studied, but that there is still a significant percentage who are not aware of the dangers such activities could involve, in part due to the very nature of the activities themselves, as many of them have a recreational component and are very closely related to leisure and personal enjoyment. That is why it is necessary to make young people aware that all activities considered risky may be dangerous if they are not used appropriately. In this respect, education policies are needed to teach the dangers and possible problems of excessive and irresponsible practice, and which promote the use of tools to protect users against potential dangers.

We must accept the reality of young people in the online context, with absolute ease of access and a high frequency of participation in the activities that are the subject of this research. That is why we must assume that they are carrying out risky activities in the digital ecosystem and that it is not possible to prohibit them. This implies that apart from informal policies, formal policies are needed to regulate these activities, as well as ethical conduct and responsible actions between the parties involved in them, such as online betting operators, social media companies and producers of online gaming.

Moreover, some of these policies must be targeted at protecting young people during adolescence, as many of these activities begin at an early age when minors are most vulnerable, as they do not have either the experience or knowledge and skills needed to protect themselves effectively from irresponsible practices on the Internet. As has been shown in this work, the maturity and experience of the subjects in the digital environment are key for their awareness of the risks and to help make them more alert to the possible problems and dangers they may encounter on the Internet.

Specifically, the possibility of playing for money in online eGames (through loot boxes) constitutes the entry point to other types of dangerous behaviour, such as online gambling and online betting, as the minors are in an environment in which they "feel safe", but where the protection barriers are very low, even though the danger or risk of developing harmful conduct is high. In this regard, Spain will be the first European country to regulate loot boxes (unlike other countries such as Belgium, which have assimilated their regulation into their gambling laws), as the Ministry of Consumer Affairs is currently working on a new bill to limit aspects such as spending and access to loot boxes by minors, as well as their advertising. These measures will help protect the most vulnerable subjects from activities of this type, due to the negative consequences they may have.

Moreover, this study is relevant and new because it associates the perception of risk inherent to activities under analysis with the behaviour, emotions and attitudes of young people in the online environment. Having had harmful experiences and having felt negative emotions in the digital context helps young people increase their risk perception, which makes them less vulnerable to abusive commercial strategies by companies and institutions, and encourages greater caution when it comes to providing personal information to third parties whose final use is unknown.

The theoretical implications of the study bring a new perspective to digital vulnerability research by introducing young people's subjective perception of their own vulnerability. If young people can identify the negative emotions they feel when participating in risky online activities, they will be able to learn from their own experiences and protect themselves from dangers. The practical implications would help guide the design of media literacy projects to reduce young people's digital vulnerability. In addition, they can help to raise awareness among commercial stakeholders engaged in these activities (gaming operators, e-commerce and social media platforms, etc.) of the emotional harm they can cause when they do not act responsibly.

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## Notes

- <sup>1</sup> In online gambling, the possibility of winning or losing depends exclusively on chance (such as lotteries, bingo, casino, slots machines, etc.) and its results are random and unpredictable. In online betting, the use of skills and knowledge can provide some advantage over other players, with a certain predictability in the results (Griffiths et al. 2009).
- <sup>2</sup> Loot boxes are articles which provide a random reward in videogames and may be bought with real money (Drummond and Sauer 2018; Macey and Hamari 2018; Zendle and Cairns 2018). The purpose of loot boxes is mainly to offer changes in the appearance of the video game or the character (skins) or provide competitive advantages over other players and progress in the videogame (Pay2Win) (Tomić 2018; Von Meduna et al. 2020).

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