# *The impact of digital practices on the perception of risks and benefits of digital gaming*

**by**

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## Abstract

This study introduces a new multivariate framework around a set of digital practices such as entertainment-oriented uses, information-oriented uses, social-connection uses, and e-commerce uses, and shows that these digital practices are, in fact, important predictors of the positive and negative perceptions of digital gaming. We developed two multiple regression models on a representative sample of the Spanish population. After controlling for socio-demographic factors (age, gender and level of education), our models reveal that gaming-related perceptions of benefits and risks are associated with people's concrete personal experiences with digital games and, interestingly, to the greater or lesser development of their digital practices. We show that the perceptions of benefits with regards to video games are related to more developed digital practices. Conversely, the perceptions of risk are higher in the case of individuals who lack exposure and experiences regarding digital practices.





## Keywords

Digital games, game culture, media effects, media perceptions, digital practices, video games.


## Introduction

In a context of ubiquitous play (AEVI, 2016, AIMC 2018, Kerr 2017, Muriel & Crawford 2018, Zimmerman 2015), the debate about the effects of playable media emerges with force, and it has implications at many levels, from cultural to legislative, from creative to industrial.

In this paper we show that perceptions of benefits and risks of digital gaming among the Spanish population are directly related to how often the respondents play digital games, as well as to the frequency and characteristics of other everyday digital practices in which individuals engage. For this purpose, we carried out a survey as part of the World Internet Project Spain study[1] and in order to ascertain the variables which determine the perceptions of risk and benefit of playing video games, we have constructed a multivariate framework around entertainment-oriented uses, information-oriented uses, social-connection uses, and e-commerce uses.

In short, given that digital gaming is increasingly ubiquitous and is distributed among practically all age groups and across a diversity of socio-demographic characteristics (Eurostat 2016, Kerr 2017, Mäyrä 2017), we investigated the subject using a multivariate approach which analyses perceptions of risks and benefits of video games beyond socio-demographic differences such as age, gender o level of education. In the following section, we examine the theoretical bases and methodologies used in recent studies, which justify our multivariate approach. After that, we propose a set of research questions that seek to deepen in the relationship between perceptions of risks and benefits, socio-demographic characteristics and digital practices of the Spanish population. Then we explain the method followed to carry out the fieldwork and analysis, we offer the results and we discuss them.

## Theoretical context

A huge amount of literature are exploring the effects of the media and also the perceptions that people have about these effects. For our approach to the perception of the risks and benefits of digital gaming, we will summarize the scientific contributions that guide our research in two groups: the literature on the effects, that is, on the risks and benefits of

digital gaming, and the literature on society's perception of those effects.

*Effects: Benefits and risks of digital gaming*

There is a huge body of scholarship focusing on the negative aspects of digital gaming such as psychological disorders (Chappell et al. 2006), aggressiveness (Anderson 2002, Gentile and Gentile 2008), and racist and sexist behaviour (Burgess et al. 2011, Dickerman et al. 2008, Leonard 2003). As Griffiths (2016) asserts, there is some research that shows evidence that excessive video game playing may lead or be related to both negative psychosocial and health or medical consequences such as sacrificing of work, education, hobbies, socializing, time with partner/family, and sleep, increased stress, lower psychosocial well-being, poorer social skills, epileptic seizures, auditory and visual hallucinations, and wrist pain, neck and elbow pain.

Bushman et al. (2015), in a study on the views of media psychologists, mass communication scientists, paediatricians, and parents state that there is some consensus on the causal relationship between playing video games and suffering from the negative effects that they are supposed to have. However, Bowman (2016: 32) points out that new data is challenging some findings related to factors such as isolation or lack of physical fitness among gamers, mentioning that a survey of 7,000 *EverQuest II* players, found players to have lower body mass index scores than the general population, and that a major motivator for their continued play was for social interaction.

Thus, in the study the negative effects of video games, such as aggressiveness or negative psychosocial consequences there is no real consensus among scholars: only 10.1% of researchers recognise a relationship between the effects of digital games and aggression (Coulon and Ferguson 2016: 70). In fact, the study by Quandt et al. (2015), which examines

the opinions of researchers working in game studies, evidenced that there is no clear consensus on the negative effects of video games, but there is some consensus on the benefits of gaming.

In this positive vein, some other research draws attention to how digital gaming —but also gaming in its broadest sense— has beneficial or favorable effects in the context of culture, socialization, active participation or skills. Some research explain and describe how people obtain pleasure and fun as a fundamental tool for cultural reproduction (Huizinga 1955, Sherry 2004); others had research into how creative participation is promoted through video game fan communities (Consalvo 2007, Hills 2002, Wirman 2009) or in what way players socialize and strengthen bonds with their peers and at the same time generate exchange networks (Dondi, et al. 2004, Jansz and Marten 2005, Taylor 2006, Zagal 2010, Muriel & Crawford, 2018). In relation to the skills, some research shows to what degree video games are good tools for situated learning or beneficial practices that promotes dialogue and creation (Gee 2004a 2004b, Lacasa 2011, Mitchel and Savill-Smith 2004, Whitton 2009 and 2014)

*Perceptions: the public debate on digital gaming*

As stated before, researchers have not reached a consensus on the effects of digital gaming, and there is even more debate among the general public. While the scientific debate is driven by the analysis of *evidence* of risks and benefits, public debate on digital gaming is often driven by perception of risks and benefits. The general public's perceptions of the effects of digital gaming emerge through moral panic, third-person effects and social distance effects.

Put briefly, moral panics (Cohen 1972, Goode and Ben-Yehuda 1994, Hall et al. 1978,

McRobbie and Thornton 1995, Thompson 1998) are disproportionate reactions to perceived threats or fears which are not rooted in science. As stated by Cohen:

> Societies appear to be subject, every now and then, to periods of moral panic. A condition, episode, a person or group of persons emerges to become defined as a threat to societal values and interests; its nature is presented in a stylized and stereotypical fashion by the mass media; the moral barricades are manned by editors, bishops, politicians and other right-thinking people; socially accredited experts pronounce their diagnoses and solutions. (Cohen 1972: 9).

Critcher (2006: 7) points out that moral panics are "reaction to changes: bad things are happening which didn't used to. On the other side, the Third-person perception phenomenon (Davison 1983) states that negative perceptions vary with social distance. In this sense, Davison asserts that:

> We are all experts on those subjects that matter to us, in that we have information not available to other people. This information may not be of a factual or technical nature; it may have to do with our own experiences, likes, and dislikes. Other people, we reason, do not know what we know. Therefore, they are more likely to be influenced by the media. (Davison 1983: 9)

In relation to social distance, Ivory and Kalyanaraman (2009) state that the research on perceptions of negative effects points out that social distance plays also an important role: the relationship with, or the knowledge about, a concrete social practice may have an impact on how it is perceived. In the case of video gaming, Przybylski (2013) states that those less experienced with video games are more likely to fear them. The study by

Przybylski shows that perception of violence is not due merely to individual defensiveness or social identity bias caused by moral panics (Critcher 2006, McRobbie and Thornton 1995) or the third-person effect (Davison 1983). Instead, the author states that "those who grew up in a world without electronic games, or lack experience with games, are most likely to endorse the idea that violent games are a material source of society's ills" (Przybylski 2014: 233).

Taking into account the research by Ivory and Kalyanaraman (2009), we can establish that one of the main factors that influence perceptions, and thus our judgements, is the abstraction in the content considered. The perceptions of negative media effects vary depending on the closeness or vagueness in terms of the available information we have in practice (Cohen et al. 1988, Hoffner et al. 2001, McLeod et al. 1997). As a general rule, the less a person plays video games or is in contact with others who play them, the more likely s/he is to perceive video games as risky. To put it another way, the lack of knowledge of a specific practice has implications for the perception thereof, especially as regards the risks and benefits that the practice entails (Holtz 2014).

In summary, there is a great deal of studies that examine perceptions of the risks and benefits in digital gaming. Many studies (Bushman et al. 2015, Chappell et al. 2006, Griffiths 2016, Quandt et al. 2015, Author, 2017) have identified relationships between perceptions of risks and benefits and socio-demographic variables such as gender (male-female), education (low vs high education levels) or age (young versus adults).

Other studies (Ivory and Kalyanaraman 2009, Przybylski 2014) go further and show that these perceptions vary according to people's personal experience or abstract knowledge of video games and not only because basic socio-demographic variables. As stated by

Przybylski, knowledge of video games, or thinking about games in purely theoretical terms, is associated with the perception of risk in the playing video games (2014). From this point of view, we can consider that what unifies a group in terms of their perceptions, abilities, skills, tastes or practices relating to digital culture and video games are not only the classic socio-demographic factors such as age, level of education and gender, but also "certain attributes and experiences related to how they interact with information technologies, information itself, one another, and other people and institutions" (Palfrey and Gasser 2008: 246).

## Research questions

The aim of this paper is to analyse the relationship between some digital practices and the perceptions of risks and benefits of playing video games. To do so, our study is guided by three research questions (RQ):

RQ1: What perceptions does the Spanish population have about video games in terms of their risks and benefits?

RQ2: What is the relationship between the perceptions of risks and benefits of video games and the participants' socio-demographic characteristics?

RQ3: What is the role of digital practices related (entertainment, information, social connection and e-commerce) in the perceptions of risks and benefits of video games apart from the socio-demographic differences observed?

In order to answer these questions, we have designed a construct to define the variables orbiting around digital experience or competence, bearing in mind that they are all part of a

wider social practice that could be defined as digital practice, according to the definition by Reckwitz:

> A routinized type of behaviour that consists of several elements, interconnected to one another: forms of bodily activities, forms of mental activities, 'things' and their use, a background knowledge in the form of understanding, know-how, states of emotion and motivational knowledge. (2002: 249)

The definition of variables around digital experience, and not necessarily around playing video games, enables us to investigate whether there is a significant relationship between this digital experience and perceptions of risks and benefits, bearing in mind that that perception can be observed not only through the information available on the specific practice, but also in the context of which the practice is a part. Based on the questionnaire administered, we have determined that practices in terms of variables that refer to four areas that are directly related to individuals' experience and/or competence in the digital context, and which have a direct impact in terms of playing video games. That areas of uses are: entertainment-oriented uses, information-oriented uses, social-connection uses, and e-commerce uses.



## Method

### *WIP Spain*

The source for the data used in this research is the Spanish chapter of the World Internet Project (WIP), an international project that originated at the UCLA Center for Communication Policy (now the USC Annenberg School Center for the Digital Future) and was founded with the School of Communication Studies in Singapore (Nanyang Technological University) and the Osservatorio Internet Italia at Bocconi University in

Milan, Italy. The World Internet Project Spain is working with data from a biennial survey of a representative sample of the Spanish population. In our research, we specifically considered the data for the year 2013, with the overall aim of producing a diagnosis of the use, knowledge and assessment of the use of the Internet in Spain, at a time when the use of new technologies is increasing in all areas of society.

*Sample*

This article uses data gathered through a survey using a nationally representative random sample of 1,600 people aged 16 and older in Spain. The sampling procedure followed a three-stage selection process with proportional allocation to avoid biases: (1) primary sampling units, municipalities, were randomly selected taking into account the population distribution of the seventeen Autonomous Communities in Spain; (2) secondary sampling units, households from all the provinces belonging to each Autonomous Community, were randomly selected by phone number; and (3) individuals within households were selected taking into account the population distribution regarding sex, age, and size of the municipality. Data was gathered by computer-assisted telephone interviewing (CATI) in December 2013. The margin of error for the total sample is ±2.45%. Table 1 shows the almost even distribution between men and women in the sample (47% of the respondents were men) with an average age of the respondents of 45.18 years old and a standard deviation of 17.61, and an average level of education close to completion of post-secondary education (M=1.83, with a standard deviation of 1.03).



*Measures*

*Socio-demographics and individual-level information*

Participants were asked to provide socio-demographic information regarding gender, age, and educational level. Age was recorded using a six-level ordinal scale (i.e. 16–18, 19–24, 25–

34, 35–49, 50–64, and 65 and over) in order to provide a meaningful interpretation of the observed effects and being able to compare different life stages. The highest level of education successfully completed was recorded according to ISCED 2011 (UNESCO, 2012), using a four-level ordinal scale that includes Primary education, Secondary education, Post-secondary non-tertiary education, and Tertiary education (i.e. bachelor's, master's, doctoral or equivalent degrees).

*Digital practices*

The participants in the research provided information about the frequency of their Internet use for thirteen activities. To that end, an ad hoc Likert scale was used with the following six response alternatives: "never", "less than once a month", "every month", "every week", "every day", and "several times a day". The activities involving use of the Internet were divided into the following four areas:

1. Entertainment-oriented uses:
    - downloading or watching videos,
    - downloading or listening to music,
    - searching for amusing and entertaining content.
2. Information-oriented uses:
    - looking for the definition or meaning of a word,
    - looking for or checking a fact,
    - finding information about a product (a car, a book, technology, etc.)
3. Social-connection uses:
    - posting messages or comments on social media,
    - posting user-created content (videos, photos, text, etc.),

- re-posting and sharing links and content (videos, photos, text, etc.) created by others,
- posting messages and comments in discussion forums.

4. E-commerce uses:

- online banking,
- paying bills,
- shopping online.

Principal Component Analysis (PCA) showed an acceptable four-component structure for these thirteen variables (KMO=0.837 and a significant Bartlett's test, $p<0.001$), explaining 65.56% of the total variance. The Oblimin rotation method with Kaiser normalization provided component loadings ranging from 0.730 to 0.868 (Entertainment-oriented uses), from 0.631 to 0.864 (Information-oriented uses), from 0.712 to 0.862 (Social-connection uses), and from 0.750 to 0.795 (E-commerce uses). Finally, the reliability analysis of the compounded factors showed a Cronbach's α of 0.745 for Entertainment-oriented uses, 0.708 for Information-oriented uses, 0.830 for Social-connection uses, and 0.676 for E-commerce uses.

*Frequency of video game playing*

Those interviewed provided information about the frequency of their use of video games. This was measured using an ad hoc Likert scale according to the following three levels: “never”, “sometimes”, and “habitually”. The question specifically included the possibility of playing video games using various types of digital devices. The question in the questionnaire was therefore: “Do you play or have you played video games on a console, computer, or mobile phone, or games on social media?”.

*Perceived benefits and risks of digital gaming*

Those interviewed reported their level of agreement on a Likert-type scale with five levels ranging from "strongly disagree" to "strongly agree" with eight statements related to the benefits and risks of digital games. Four of these statements presented perceived benefits including "video games stimulate the memory and attention", "learning through play is a natural way to learn", "video games can release stress", and "useful things are learned with video games". Another four statements presented perceived risks including "video games cause anxiety and nervousness", "video games make players isolated", "video games cause addiction", and "violent video games make those who play them behave violently".

PCA showed an acceptable two-component structure for these eight items (KMO=0.785 and a significant Bartlett's test, $p<0.001$), explaining 62.09% of the total variance in perceived benefits (25.84%) and perceived risks (36.25%). The rotated component solution (Varimax with Kaiser normalization) provided component loadings ranging from 0.665 to 0.816, and from 0.690 to 0.890, respectively. Both components also showed an acceptable reliability, with a Cronbach's α of 0.718 and 0.845.

*Analysis*

In order to answer the research questions, we began with a descriptive analysis and by exploring the correlations of our measures. To that end, we calculated various indices based on the scales of the constituent items and the meaning of its theoretical construct. Various tests of statistical significance were used depending on the scale of the variables considered in the analysis: Pearson's $r$ for continuous variables, Spearman's rho ($r_s$) for ordinal variables and pairs of continuous and ordinal variables, the point-biserial correlation ($r_{pb}$) for continuous and dichotomous variables, and phi ($r$) for dichotomous variables and pairs of ordinal and dichotomous variables. These correlation coefficients are shown in Table 1.

We then carried out two multiple linear regressions in order to determine the relationship between the perceptions of benefits and risks of video games, as dependent variables, and the other independent variables considered in the models. The ordinal variables were recoded (dummy coded) for inclusion in the models. Table 2 shows the results, and presents the regression coefficients (B), standard errors (SE), t-tests of significance, and their corresponding standardized versions (Beta), which are useful for determining the relative importance of the different variables in the models. F-tests and $R^2$ values served to evaluate the significance and the overall fit of the two multiple linear regression models.



## Results

### *Descriptive and bivariate analyses*

Table 1 shows that Spaniards appear to have a fairly neutral opinion regarding the benefits of video games (M=3.10, with a standard deviation of 0.95) and appear to be in slight agreement as regards their risks (M=3.81, with a standard deviation of 1.04). As regards digital practices, most respondents use the Internet several times a month, although they do not do so weekly, for Information-oriented uses (M=3.41, with a standard deviation of 1.03), followed by several times a month for Entertainment-oriented uses (M=2.84, with a standard deviation of 1.33), and for Social-connection uses (M=2.51, with a standard deviation of 1.35). Finally, E-commerce uses are performed in a frequency of slightly less than once a month (M=1.97, with a standard deviation of 0.91). Moreover, Spaniards generally play video games, although they report doing so sporadically or infrequently (M=0.64, with a standard deviation of 0.73).

As for relationships between pairs of variables, we first observed that the socio-demographic variables have no significant relationship with the perceived benefits of video

games. On the contrary, the other variables considered in the study present significant positive correlations in all cases. Specifically, Entertainment-oriented uses have the highest association ($r$=0.21, p<0.001), which is higher than Information-oriented uses ($r$=0.11, p<0.001), Social-connection uses ($r$=0.10, p<0.01), and E-commerce uses ($r$=0.09, p<0.01). In this regard, the frequency of playing video games has the same relationship ($r_s$=0.21, p<0.001) as digital practices oriented towards consuming media content.

All the variables considered in the analysis show a statistically significant correlation for the opinion on the risks of video games. The most risks are therefore perceived by older people ($r$=0.21, p<0.001), a view which is shared by the women interviewed ($r_{pb}$=-0.16, p<0.001) and those with a lower educational level ($r_s$=-0.10, p<0.001). All the other variables have values that indicate that the lower the frequency of Internet use, the greater the sensitivity to the risks of video games. In specific terms, the frequency of Entertainment-oriented uses has the strongest association ($r$=-0.28, p<0.001), which is stronger than Social-connection uses ($r$=-0.18, p<0.001), E-commerce uses ($r$=-0.16, p<0.001) and Information-oriented uses ($r$=-0.14, p<0.001). Meanwhile, we also found that people who play video games are less aware of their risks ($r_s$=-0.33, p<0.001) as are those with positive perceptions of their benefits ($r$=-0.13, p<0.001).

The analysis also shows other interesting relationships. The men have more highly developed digital practices related to Entertainment-oriented uses ($r_{pb}$=0.16, p<0.001) and E-commerce uses ($r_{pb}$=0.11, p<0.001). Age also seems to be a determining factor with regard to digital practices, as the youngest respondents consume more entertainment ($r$=-0.52, p<0.001), use social media to a greater extent, make more Social-connection uses ($r$=-0.44, p<0.001), and more Information-oriented uses ($r$=-0.32, p<0.001). Similarly, they also report playing more video games ($r_s$=-0.41, p<0.001). As regards the level of education, a

higher educational level is associated with the development of more advanced digital practices in terms of E-commerce uses ($r_s$=0.32, p<0.001) and Information-oriented uses ($r_s$=0.17, p<0.001).

Finally, taking into account the interrelationships between digital practices and the use of video games, high values were observed for the correlations between all the variables ranging between 0.19 and 0.43 (p<0.001), except for the relationship between E-commerce uses and the use of video games ($r_s$=0.06, p<0.05).



Table 1.

Means, standard deviations, and correlations between the observed variables in WIP Spain 2013 (N=1,600).

| | M | SD | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benefits of video games (1) | 3.10 | 0.95 | - | | | | | | | | | |
| Risks of video games (2) | 3.81 | 1.04 | -0.13*** | - | | | | | | | | |
| Digital practices | | | | | | | | | | | | |
| Entertainment-oriented uses (3) | 2.84 | 1.33 | 0.21*** | -0.28*** | - | | | | | | | |
| Information-oriented uses (4) | 3.41 | 1.03 | 0.11*** | -0.14*** | 0.44*** | - | | | | | | |
| Social-connection uses (5) | 2.51 | 1.35 | 0.10** | -0.18*** | 0.49*** | 0.35*** | - | | | | | |
| E-commerce uses (6) | 1.97 | 0.91 | 0.09** | -0.16*** | 0.15*** | 0.30*** | 0.20*** | - | | | | |
| Frequency of video game playing (7) | 0.64 | 0.73 | 0.21*** | -0.33*** | 0.43*** | 0.19*** | 0.31*** | 0.06* | - | | | |
| Gender (8) | 0.47 | 0.50 | 0.05 | -0.16*** | 0.16*** | 0.06* | 0.01 | 0.11*** | 0.08** | - | | |
| Age (9) | 45.18 | 17.61 | -0.04 | 0.21*** | -0.52*** | -0.32*** | -0.44*** | -0.05 | -0.41*** | -0.04 | - | |
| Education (10) | 1.83 | 1.03 | 0.02 | -0.10*** | -0.04 | 0.17*** | 0.04 | 0.32*** | -0.02 | 0.06* | -0.11*** | - |

Benefits of video games (1)={1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree}
Risks of video games (2)={1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree}
Entertainment-oriented uses (3)={1=Never, 2=Less than once a month, 3=Every month, 4=Every week, 5=Every day, 6=Several times a day}
Information-oriented uses (4)={1=Never, 2=Less than once a month, 3=Every month, 4=Every week, 5=Every day, 6=Several times a day}
Social-connection uses (5)={1=Never, 2=Less than once a month, 3=Every month, 4=Every week, 5=Every day, 6=Several times a day}
Ecommerce uses (6)={1=Never, 2=Less than once a month, 3=Every month, 4=Every week, 5=Every day, 6=Several times a day}
Frequency of video game playing (7)={0=Never, 1=Sometimes, 2=Habitually}
Gender (8)={0=Female, 1=Male}
Age (9)={0=16–18 years, 1=19–24 years, 2=25–34 years, 3=35–49 years, 4=50–64 years, 5=65 and over}
Education (9)={0=Primary, 1=Secondary, 2=Post-secondary non-tertiary education, 3=Tertiary}
* p<0.05; ** p<0.01; *** p<0.001

*Multivariate analyses*

Table 2 shows the result of the two multiple linear regression models considered in this

investigation. It includes model (1), in which the dependent variable analysed is the perceptions about the benefits of using video games and model (2), which uses perceptions about the risks of using video games as the dependent variable. The two models are statistically significant ($F=7.445$ and $F=15.280$, $p<0.001$, respectively), although they have different overall levels of fit. The model developed to study the perceptions of the risks shows a greater explained variation with an $R^2$ of 0.164, while the model analysing perceptions of the benefits has an $R^2$ of 0.088.

The first model of the perception of the benefits of using video games shows no significant effect in relation to gender or the level of education attained. Some of the levels show a statistically significant effect for age, with adults aged between 35 and 49 years (Beta=0.147, $p<0.05$) and people aged over 64 years (Beta=0.138, $p<0.01$) having a greater perception of the benefits of using video games. Likewise, and as would be expected, people who play video games most frequently also have a positive opinion of their benefits (Beta=0.091, $p<0.05$, and Beta=0.221, $p<0.001$, for people who play sometimes and habitually respectively). Interestingly, after statistically controlling for all these effects, Entertainment-oriented uses (Beta=0.161, $p<0.001$) have an effect that is to a certain extent comparable to the frequency of use of video games.

Meanwhile, in relation to perceptions of the risks in the use of video games, the level of education either shows no statistically significant effect, while it is possible to observe a significant relationship with regards to gender which means that after controlling for other effects in the model, women (Beta=-0.111, $p<0.001$) have a more sensitized opinion on the risks of using video games. Age also shows some statistically significant effects, with those aged between 35 and 49 years (Beta=0.153, $p<0.05$) and between 50 and 64 years (Beta=0.155, $p<0.01$) having the most sensitive perception to the risks of using video games.

By contrast, and as above, people who play video games most often observe fewer risks (Beta=-0.156, Beta=-0.239, p<0.001 in both cases, people who play sometimes and habitually respectively). Finally, after controlling for all these effects in the model, Entertainment-oriented uses (Beta=-0.122, p<0.01) and to a lesser extent E-commerce uses (Beta=-0.121, p<0.001) show a statistically significant inverse relationship: the lesser the use, the greater the perceived risk.

Table 2.

Models of the perceived benefits and risks of digital gaming in Spain

| | Benefits of video games | | | | Risks of video games | | | |
|---|---|---|---|---|---|---|---|---|
| | B | SE | Beta | t | B | SE | Beta | t |
| Intercept | 2.294 | 0.196 | - | 11.727*** | 4.286 | 0.201 | - | 21.367*** |
| Gender | | | | | | | | |
| Female | - | - | - | - | - | - | - | - |
| Male | -0.009 | 0.053 | -0.005 | -0.169 | -0.223 | 0.055 | -0.111 | -4.020*** |
| Age | | | | | | | | |
| 16–18 years | - | - | - | - | - | - | - | - |
| 19–24 years | 0.165 | 0.137 | 0.061 | 1.205 | 0.164 | 0.141 | 0.056 | 1.164 |
| 25–34 years | 0.156 | 0.134 | 0.071 | 1.166 | 0.210 | 0.137 | 0.088 | 1.531 |
| 35–49 years | 0.297 | 0.136 | 0.147 | 2.177* | 0.339 | 0.140 | 0.153 | 2.421* |
| 50–64 years | 0.172 | 0.146 | 0.071 | 1.179 | 0.409 | 0.150 | 0.155 | 2.726** |
| 65 and over | 0.416 | 0.156 | 0.138 | 2.665** | 0.288 | 0.160 | 0.089 | 1.801 |
| Education | | | | | | | | |
| Primary | - | - | - | - | - | - | - | - |
| Secondary | -0.115 | 0.112 | -0.049 | -1.020 | 0.120 | 0.116 | 0.048 | 1.030 |
| Post-secondary non-tertiary | -0.071 | 0.106 | -0.037 | -0.668 | -0.027 | 0.110 | -0.013 | -0.249 |
| Tertiary | 0.002 | 0.108 | 0.001 | 0.022 | -0.067 | 0.112 | -0.032 | -0.565 |
| Digital practices | | | | | | | | |
| Entertainment-oriented uses | 0.112 | 0.027 | 0.161 | 4.143*** | -0.092 | 0.028 | -0.122 | -3.296** |
| Information-oriented uses | 0.027 | 0.030 | 0.029 | 0.881 | 0.032 | 0.031 | 0.032 | 1.007 |
| Social-connection uses | -0.017 | 0.023 | -0.024 | -0.720 | 0.001 | 0.024 | 0.002 | 0.061 |
| E-Commerce | 0.046 | 0.032 | 0.045 | 1.413 | -0.134 | 0.034 | -0.121 | -3.969*** |
| Frequency of video game playing | | | | | | | | |
| Never | - | - | - | - | - | - | - | - |
| Sometimes | 0.173 | 0.062 | 0.091 | 2.796** | -0.322 | 0.064 | -0.156 | -5.006*** |
| Habitually | 0.519 | 0.081 | 0.221 | 6.408*** | -0.616 | 0.085 | -0.239 | -7.251*** |
| Model summary | | | | | | | | |
| $R^2$ (Adjusted $R^2$) | 0.088 (0.076) | | | | 0.164 (0.153) | | | |
| F for the model | 7.445*** | | | | 15.280*** | | | |
| Sample size | 1.173 | | | | 1.187 | | | |

* p<0.05; ** p<0.01; *** p<0.001

## Discussion and conclusions

As we have reviewed previously, scientific research on the perceptions of risks and benefits

of digital gaming is frequently controversial and most of the times are related with social-demographic variables. In this regard, there are plenty of research focussing for instance in age, were young people is perceived as a risky population or male individuals are seen as having more racist and sexist behaviours through playing video games.

Instead, we offer an approach to the study of perceptions that provides us with a more complex perspective and gives us the initial framework for interpretation that we have organized according to three research questions.

For RQ1, “”What perceptions does the Spanish population have about video games in terms of their risks and benefits?”, we found that although the Spanish population has a neutral opinion regarding the perceived benefits of video games, they agreed to a slightly greater extent about the risks.

We found contradictory opinions that could give us clues about where to look in order to clarify what activates both negative and positive perceptions. To that end, we asked RQ2: “What is the relationship between the perceptions of risks and benefits of video games and the participants' socio-demographic characteristics?”

In overall terms, and comparing the results obtained, it is possible to establish some differences according to the analysis carried out. A bivariate analysis, which only gives us an initial and most common approximation, shows that there is no statistically significant relationship between individuals' age and level of education and their perceptions regarding the benefits of using video games. However, the multivariate analysis shows a different situation. After statistically controlling for the effects of each variable considered in the model, we find that people aged 35 years and over perceive video games as having

some degree of risk but also as having some benefits. While there is no significant relationship between the perception of risks or benefits among those under the age of 35, both perceptions are higher among those over 35 years old in comparison with the reference group (i.e. 16-18 years old). Meanwhile, the bivariate analysis shows a significant relationship between having a lower level of education and perceiving a greater risk for video games, although this relationship is not observed in the multivariate analysis.

In the bivariate analysis, the variable of playing video games or not provides data that confirm the results obtained in other studies (Ivory and Kalyanaraman 2009, Przybylski 2013 and 2014): contact with video games is directly related to a lower perception of risk and vice versa.

Regarding the multivariate analysis we found that the entertainment-oriented uses have an effect that is comparable to the frequency of use of video games. To sum up, not only playing video games but also entertainment-oriented practices such us watching videos, downloading or listening to music, and searching for amusing and entertaining content are directly related to a lower perception of risk.

Regarding RQ3, "What is the role of digital practices in the perceptions of risks and benefits of video games apart from the socio-demographic differences observed?", the bivariate analysis shows significant relationships between the increased development of the different digital practices considered in this study and the perceived benefits of video games. However, the multivariate analysis shows that after statistically controlling for the independent effects of each of these digital practices, the relationship is limited to Internet uses oriented towards entertainment and playing video games.

In relation to the perception of risks, the bivariate analysis associates the perception of risks with a lower level of digital practices oriented towards entertainment, information, sociability and e-commerce, in contrast to the results of the multivariate analysis, in which the lesser people are mainly immerse in Entertainment-oriented uses (and E-commerce uses as a secondary practice) the greater perceived risk. These results are consistent with the results obtained by Cohen et al. (1988), Hoffner et al. (2001), and McLeod et al. (1997), who argue that the perception of risk is directly related to the information about a particular practice we have at our disposal.

As we have exposed in the results section, the significant achievement of the analysis carried out is that after controlling for the effect of socio-demographic variables, the differences in the digital practices studied (use oriented towards information, entertainment, social connection, e-commerce and the practice of playing video games itself) significantly affect the perception of risks and benefits of digital gaming.

What is relevant, therefore, is that the perception of risks and benefits is influenced not only by the frequency of playing video games, but also by other uses and digital practices. Thus, this study supposes an initial empirical verification of the idea of Palfrey and Gasser (2008) or White and Le Cornu (2011), when, discussing the concept of digital natives, they affirm that perceptions, abilities and skills related to digital culture are not defined strictly by socio-demographic characteristics, but by attributes and experiences related to how people interact with information technologies. What these authors state for digital culture in general, we confirm in relation to digital games. The fact that entertainment-related practices affect the perception of risks and benefits of digital gaming, would suggest that the act of playing (or, in general, the game culture) should not be seen as something isolated, but as part of a system of practices. In this sense, Muriel and Crawford (2018: 19)

have pointed out that game culture is "a system of meaning and a set of social practices locating within a wider social and cultural context". This study is a first step into how game culture has to be understood in context. This approach implies that not only the people who study digital games must embrace other entertainment practices to fully understand game culture, but also researchers and policy practitioners connected to media literacy must integrate digital gaming or ludoliteracy into their programs and proposals, as it has been previously suggested in other works (AUTHOR 2015, AUTHOR 2016).

### Future research and limitations

The study of the impact of digital practices on the perception of risks and benefits of digital gaming has to take into account many variables that have not been analyzed in this research. This situation needs to be improved in future studies by adding new variables to the current digital practices studied, such as skills for managing new digital tools and frameworks, digital identities, finding experts, trusting in digital resources, using and identifying of power existing in different agents, reusing digital content, understanding political actions, using avatars and interactive media and transmedia, and in liminal physical/virtual spaces/places and times/moments.

From another more conceptual point of view, this research has to do with its low statistical significance (explained variation of R2). Nonetheless, it is important to note that this research is related to social sciences, where there are many variables interconnected and it is impossible to try to have high statistical significance always in exploratory studies. Furthermore, the main focus of the research model was not the prediction, but trying to explore, find and show some of the main variables that have importance on benefits and risks of digital games.

Moreover, this research only considers digital gaming as a whole, which means that further research must take into account different genres and platforms, such as mobile, PC, console, and different styles of gaming such as casual and hard-core. It is reasonable to think that each of these different gaming conditions will influence the perception of risks and benefits. Taking into account the specific conditions of the gaming will reveal further complexities in how experience is related to the perception of risks and benefits.

In addition, this exclusively quantitative study needs a qualitative complementary study to provide more nuanced results and complement the results obtained here. In this sense, focus groups and personal interview should improve the current study, by using the current results.



## Notes

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