anales de psicología / annals of psychology
2022, vol. 38, nº 3 (october), 508-517
https://doi.org/10.6018/analesps.504281

ISSN print: 0212-9728. ISSN online: 1695-2294.
https://revistas.um.es/analesps

Women and videogames: What do they play?

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Título: Mujeres y videojuegos: ¿A qué juegan las mujeres?
Resumen: La información sobre el uso de Videojuegos (VJ) en muestras generales refleja fundamentalmente las características de los hombres, por su mayor participación en VJ, dificultando identificar las características de las mujeres y su actividad de juego. Objetivo: Describir el comportamiento lúdico de adolescentes y jóvenes madrileñas y su relación con el desarrollo de problemas de juego. Método: Se aplicó un cuestionario de autoinforme (Gamertest) a una muestra de 1.228 mujeres (12 - 22 años) (*M* = 14.84; *DT* = 2.469), seleccionadas mediante muestreo aleatorio en centros educativos de la Comunidad de Madrid. Resultados: el 51% de las mujeres admite jugar. El perfil típico es una mujer que juega a VJ de forma esporádica y por cortos periodos de tiempo, preferiblemente juegos de Acción y Aventura o Puzles y Plataformas; principalmente en smartphones, en casa y sola, con el propósito de divertirse. Las principales variables predictivas de problemas de juego, identificadas con el Trastorno del Juego de Internet (TJI) en mujeres son: mayor número de horas de uso, participación en juegos de rol multijugador masivo online (MMORPG) y VJ de estrategia. El factor protector más importante es jugar a VJ acompañado. Se discuten los resultados.
Palabras clave: Videojuegos. Mujeres. Trastorno de Juego en Internet. Adolescentes. Jóvenes.

Abstract: The information on the use of Videogames (VG) in general samples fundamentally reflects the characteristics of men, because of their greater participation in VG, making it difficult to identify the characteristics of women and their gaming activity. Objective: To describe the gaming behaviour of adolescent and young women in Madrid, and its relation with the development of gaming problems. Method: A self-report questionnaire (Gamertest) was applied to a sample of 1,228 women (12 - 22 years old) (*M* = 14.84; *SD* = 2.469), selected by randomized sampling in schools in the Community of Madrid. Results: 51% of women admit gaming. The typical profile is a woman who plays VG sporadically and for short periods of time, preferably Action and Adventure games or Puzzles and Platforms, mainly on smartphones, at home and alone, with the purpose of having fun. The main predictive variables of gaming problems, identified with the Internet Gaming Disorder (IGD) in women are: a greater number of hours of use, playing Massively Multiplayer Online Role-Playing Game (MMORPG), and Strategy VG. The most protective factor is playing VG accompanied. The results are discussed.
Keywords: Video game. Women. Internet Gaming Disorder. Teens. Youth.

Introduction

Playing Videogames (PVG) has become the most popular behavior amongst adolescents and young adults (A&Y), displacing habitual behavior during these ages, especially leisure activities. In a smaller percentage of them, PVG is associated with problems. Both aspects, replacing traditional activities and presence of problems associated with PVG, give rise to social alarm. However, Videogames (VG) are not a unique reality, rather there is variety, which at times, makes research comparisons challenging. Multiple classifications of VG have been put forwards, such as that of Laird and Lent (2005) who established 6 categories, or Rehbein et al. (2016), who starting from 32, grouped VG in 8 categories. Nonetheless, there is no classification of references, for which in this study a more up to date classification system will be used, proposed by Labrador et al., (2019a), which distinguishes 13 categories or types of videogames. VG: 1) Action and adventure (*Grand Theft Auto*), 2) Gambling (*Poker*), 3) Driving (*Gran Turismo,*), 4) Sports (*Pro Evolution Soccer*), 5) Strategy (*Starcraft*), 6) Fighting (*Street Fighter*), 7) Massively multiplayer online role-playing games/ Multiplayer online battle arena - MMORPG/MOBA- (*League of Legends*), 8) Music and Rhythm (*Guitar Hero*), 9) Platforms (*Saga Super Mario)*, 10) Puzzles and board games (*Candy Crush)*, 11) Role playing (*World of Warcraft*), 12) Shooting (*Counter-Strike*) y 13) Simulators (*The Sims)*. Descriptive research has been conducted, characterizing those people who play VG and those who have problems with such games, highlighting the important differences in frequency according to gender (Labrador et al., 2019b, López-Fernández et al., 2019, López-Fernández et al., 2020). Men play VG in greater percentages, they spend more time playing and present more associated problems, and they play different VG from women. In this way, in the study of Müller et al. (2015), 60.5% of European adolescents acknowledged playing online VG regularly, nonetheless gender differences were very explicit, as 84.7% of men reported playing, compared to 42.8% of women. In the study of Van Rooij et al. (2014), with Dutch adolescents (13-15 years old), it was found that 60% of men and 13.5% of women played VG. Stevens et al., (2021) conducted a meta-analysis, comparing data obtained from 53 studies between 2009 and 2019. Of the 53 studies, 31 of them provided sufficient information to calculate distinct prevalence rates according to gender (2.5:1 in favor of males compared to females). Only 3 out of 31 studies (9.6%) reported a higher GD prevalence rate among females. However, some surveys reduce such differences, pointing out that 45-48% of VG users are women, (Entertainment Software Association, 2019; Interactive Software Federation of Europe, ISFE, 2019).

In addition, several authors have observed that women spend almost half time playing VG than men. According to Merelle et al. (2017), indicate an average of online PVG of 15 vs. 7 hours per week. On the other hand, Homer et al.,

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(Article Received: 14-12-2021; reviewed: 17-03-2022; accepted: 21-03-2022)

(2012), found an average of 43 vs. 30 hours per week and 6 vs. 4 hours per day. Miezah et al., (2020) showed that the mean time between men and women was 14.18 vs. 8.88 hours/week.

This male overrepresentation, when looking to identify the characteristics of the average player, can fundamentally only represent men. As a consequence, the information on the characteristics of women who play VG (e.g. how many of them play, how do they play, where, what do they play, as well as the gaming problems they present) are usually less known (Leonhardt & Overå, 2021; McLean & Griffiths, 2019), especially in the case of A&Y in Spain.

The reasons for the greater implication of men in PVG are no clear. A few years ago it has been alluded to their greater confidence in their computer skills, in general and in VG in particular (Terlecki et al., 2011), but, in fact, the motivation to play a video game seems to differ across gender but also according to culture (López-Fernández et al., 2019). In Europe, research shows that women are more likely to play games looking for competition with others (Laconi et al., 2017) or with themselves (Lewis and Griffiths, 2011), while men look for coping or success (Laconi et al., 2017). On the other hand, Asian research shows that women play more for social reasons while men play to pass the time (López-Fernández et al., 2019). In America it seems that women play more looking for an achievement or power or to improve their social relationships (López-Fernández et al., 2019)

Additionally, it has been attributed to the fact that VG are generally designed for a male audience, with greater percentages of avatars or male heroes and a strong sexualization of female characters, which can be unpleasant for women, who might find it difficult to identify with them (Lynch et al., 2016; López-Fernández et al., 2019). Furthermore, the games usually chosen by men correspond to categories of Role playing, Strategy, Shooting and Simulation (Gómez-Gonzalvo et al., 2020), which are associated with more time consuming and lengthy games (Rehbein et al., 2015), independently of the gender of the player (López-Fernández et al., 2019).

The extant research on whether there are categories of VG typical of men or women shows mixed results (Gómez-Gonzalvo et al., 2020). Feijoo and García (2017), in a Spanish sample (10-12 years old), found that girls prefer categories such as Platforms, Simulation and Intelligence/mental skills, showing preference for Mario Bross, the Sims or Animal Crossing. Greenberg et al., (2010), in a sample of university students in the United States, found that women showed preference for traditional game categories, such as Platforms and Puzzles, compared to games of Strategy, Simulation and Adventure and Physical (sports, fight, shootings and races/speed). Homer et al. (2012), observed that the percentage of VG preferred by either gender was similar. However, few men showed preference for games considered typically feminine.

Moreover, differences are found in the devices used to play. A survey of the Interactive Software Federation of Europe (ISFE, 2019) showed the devices most used among players are computers (56%), followed by game consoles (50%) and smartphones (48%), portable consoles (17%) and tablets (17%); however, women prefer playing on smartphones and tablets (63%) (Donati et al., 2021), reducing the use of computers to 44%.

In regard to reasons to play, men and women acknowledge that the main purpose is to have fun (Greenberg et al.,2010, Leonhardt & Overå, 2021, Ratan et al., 2021). Men also report playing as a coping strategy or to accomplish success; whereas women would have, as other objectives, distraction or proving their skills to themselves, albeit with less interest in competitive facets (Laconi et al., 2017).

With respect to PVG and the Internet Gaming Disorder (IGD) (APA, 2013) or Gaming Disorder (GD) (ICD-11, WHO, 2018), the prevalence of disorders associated with PVG present very dissimilar figures according to, amongst other variables, the year of the study (before or after 2013, the year of publication of the DSM-5), the definition of the diagnostic criteria of the problem (Internet Gaming Disorder versus addiction to PVG or excessive gaming), or depending on the assessment instrument deployed in the study. Thus, Chia et al., (2020) in a meta-analysis carried out in South Asia found that the percentage of people with problem video gaming were 10.1% (95% confidence interval: 7.3%–13.8%). Rehbein et al. (2015), identified IGD in 1.2% of their sample of students from Germany. Witteck et al. (2016), in Norway, found that 1.4% of players were addicted. Müller et al. (2015), in European A&Y (14-17 years old) found 1.6% had IGD; Laconi et al. (2017) found 2% in France; Mérelle et al. (2017) reported 5.7% of Dutch students; and López-Fernández et al., (2020) estimated between 1-9%, depending on cut-off criteria, age, gender or socio-cultural differences in a Spanish sample. Thereby Feng et al., (2017) remark an increase in the prevalence of IGD in recent years.

Furthermore, problems associated with PVG appear more frequently among men than women (Laconi et al., 2017). Witteck et al. (2016) found men present 2.9 times more problems of VG addiction than women. In a meta-analysis by Gentile et al., (2011), men met IGD criteria 5 times more than women. These results could have been influenced by the fact that games that are more typical of men are those giving rise to more problems. Thus, Lemmens y Hendriks (2016) found a strong association between IGD and games with a theme of Role-playing and Shooting and, on the other hand, a weak association with Puzzles and Action. In general, the most popular VG such as those of Role-playing (especially MMORPG), MOBA (*Multiplayer Online Battle Arena*) and RTS (*Real-Time Strategy*) are also the most associated with VG problems, independently of the gender of the players (Eichenbaum et al., 2015; Laconi et al., 2017; López-Fernández et al., 2019). The strong link between IGD and gaming time (Chia et al., 2020; Griffiths et al., 2016; Kim

et al., 2016), especially considering PVG online (Lemmens y Hendriks, 2016), can also weigh, considering men are those dedicating more time to gaming.

In summary, there is information on PVG on general samples which fundamentally reflects the characteristics of male players, given their greater participation in VG. On the contrary, the information on the use of VG, and, especially, the problematic use in women is limited, with true values hiding behind averages. It appears relevant to study the characteristics of PVG in women and how these relate to the problems associated with VG use. The aim of this research is to describe the way women A&Y in Madrid play VG and the relationship this has with the development of PVG problems.

Methods

Participants

Participant selection was carried out by means of stratified random sampling including schools in the city of Madrid. All participants or their legal representatives signed an informed consent. Of the total number of potential participants, 91% accepted and signed informed consent and were therefore part of the study. The sample comprises 1228 women from 37 different schools. The ages of participants ranged from 12 to 22 years old (M = 14.84; SD = 2.469). The 73.1% of the participants, study compulsory secondary education or a basic degree module, while the remaining participants (26.9%) study bachellor or modules of medium or higher vocational training, which explains why the age of the sample reaches 22 years.

The majority of the girls (68.2%) were in the age range of 12-15 years old, whereas the remaining 31.8% were between 16 and 22 years old. Of the total sample, 626 people (51%) referred to playing videogames (See Table 1.)

Table 1
Sociodemographic characteristics of the sample.

		N	%
Age (years)	*M* (*DT*)	14.84 (2.469)	-
	12 years old	188	15.3%
	13	265	21.6%
	14	220	17.9%
	15	164	13.4%
	16	122	9.9%
	17	96	7.8%
	18	48	3.9%
	19	42	3.4%
	20	30	2.4%
	21	32	2.6%
	22	21	1.7%
Play VG	Yes	626	51%
	No	602	49%

Variables and Instruments

Data collection was carried out with *Gamertest* (Labrador et al., 2019a), an expert self-reported online system to identify PVG in A&Y and detect their problematic use of VG. It includes several sections, of which the following are considered: (1) sociodemographic data; (2) videogaming habits; (3) evaluation of risk level of problematic PVG using the IGDS9-SF (Pontes et al., 2014). Data collection was carried out between 2018 and 2019.

PVG habits. 10 factors were evaluated 1) Gaming (yes/no); 2) Type of games played (13 categories); 3) Games preferred in the last year (select 3); 4) Number of days spent playing videogames per week, 5) Hours of gaming per week (6 intervals); 6) Favourite devices (in order of use: None, Computer or laptop, video console, mobile phone, tablet, television); (7) Favourite places (in order of use: none, in your home, house of friends, school, casino, on the streets/medium of transport); 8) Company to play (in order of frequency: alone; accompanied by someone in person; accompanied by someone online; in group in person; in group online), 9) Habitual form of playing (online, offline or both), 10) Purpose of gaming (having fun/passing the time; meeting people; spending time with friends; sensation of winning; proving my abilities; distracting myself from my problems).

Risk of problems of PVG: Score on the IGDS9-SF. The Spanish version of the scale (Sánchez-Iglesias et al., 2020) is an adapted translation of the original IGDS9-SF (Pontes and Griffiths, 2015); it was translated by two independent people and back-translated into Spanish by two native English speakers. This single-factor scale, based on the DSM-5 (APA, 2013) criteria of IGD, consists of nine 5-point Likert (1 "Never" to 5 "Very Often") items. The total score is the sum of the items scores; the higher the score, the higher the severity of IGD. It showed adequate internal consistency (ω from .778 to .828) and split-half reliability (Rxx from .770 to .822) and a single-factor structure.

Procedure

Five independent evaluators with psychology degrees were trained to administer the *Gamertest*. Data on the student population for the 21 districts of the city of Madrid, including their ages, school year and type of schooling (public school, private school and state subsidized school), was retrieved from the website of the city hall statistics service (Ayuntamiento de Madrid, 2017). Schools were divided into groups by district and type of school, and randomly ordered. Then, for each district and type of school, the first school on the list was contacted through a detailed letter, with a follow-up call soon thereafter, and asked to provide access to the set of classes required by the district. If the school refused or did not reply, the next school on the list was contacted. Once a school agreed to participate in the study, the evaluators delivered informed consent forms to the children's parents/guardians and a date was set for the evaluator to visit

the school to perform the assessment in a classroom chosen using stratified random sampling. After collecting informed consent forms from the parents/guardians, the assessments were administered in groups, using computers in each school's computer room, allowing approximately 30-40 minutes for the students to complete them. Participants' responses were anonymously collected and coded directly in a computerized database.

Ethical issues for this study were audited by the ethics committee of the Universidad Complutense of Madrid, Faculty of Psychology.

Data Analysis

Data analysis was carried out using the *Statistics Package for Social Science* (SPSS V.25), with the use of descriptive statistics of frequency and central tendency to characterise the total sample (N =1228). The presence of possible differences according to age was analysed using two groups as reference: 12-15 years old and 16-22 years old, which represent the age group specific to compulsory secondary education and non-compulsory education respectively. These differences were examined using independent samples t-tests in the case of continuous variables and chi square tests in the case of categorical variables. When habits were examined, patterns and gaming preference, the same contrasts were used, however using the 626 participants (51%) who admitted PVG as reference.

Ultimately, to examine the relation between all variables previously mentioned and the presence of problematic gaming (IGD-9-SF) a stratified or layered multiple linear regression was carried out, in which the first model (model 1) considered "age" and "game used"; model 2 included Model 1 and added "game mode", "purpose of the game", "setting" and "device". Finally, Model 3 added "gaming duration" to Model 2. In the case of categorical variables of two levels, these were transformed into dummy variables in which each category was compared with the remaining ones taken together.

Results

Playing habits in women: Of the total of the 1228 participants, 51% (*N* = 626) admitted having played VG (see table 1.), for which the data available on the way they play is restricted to this sample.

Types of games: the categories that were found to be most played were Puzzles and board games, Action and Adventure, Simulators and Platforms (18%). The categories found to be played the least were Role playing, Shooting and Strategy (See Table 2). When they were asked to pick the three types of VG they considered to be their favorites, the most chosen in the first instance were Action and Adventure, Puzzles and board games and Simulators. The results, found upon dividing the sample in younger or older than 16 years, show significant differences in games preferred, with important relevance in Puzzles (preferred by the eldest) and Platform and MMORPG (preferred by the youngest).

Table 2
Videogames that women reported playing and those they prefer in total by age.

	Played some occasion[1]	VG prefered	VG preferred by age		$\chi^2(p^*)$
		Total[2]	12-15 years old	16-22 years old	
Total	1228	626	435	190	
Action and Adventure	300 (24.4%)	132 (21%)	96 (22.1%)	36 (18.5%)	
Puzzles games	320 (26.1%)	101 (16.2%)	52 (12%)	49 (25.8%)	
Simulators	268 (21.8%)	98 (15.7%)	67 (15.4%)	31 (16.3%)	
Platforms	221(18%)	56 (9%)	47 (10.8%)	9 (4.7%)	
MassivelyMultiplayer online (MMORPG)	131 (10.7%)	52 (8.3%)	42 (9.7%)	10 (5.3%)	
Sports	194 (15.8%)	44 (7%)	34 (7.8%)	10 (5.3%)	37.36; ($p < .001$***)
Music and rythm	162 (13.2%)	38 (6.1%)	29 (6.7%)	9 (4.7%)	
Driving games	202 (16.4%)	33 (5.3%)	11 (2.5%)	14 (7.4%)	
Gambling games	70 (5.7%)	25 (4%)	11 (2.5%)	14 (7.4%)	
Shooters	57 (4.6%)	15 (2.4%)	13 (3%)	2 (1.1%)	
Strategy games	68 (5.5%)	15(2.4%)	10 (2.3%)	5 (2.6%)	
Fighting games	94 (7.75%)	10 (1.6%)	6 (1.4%)	4 (2.1%)	
Role playing games	57 (4.6%)	6 (1%)	4 (0.9%)	2 (1.1%)	

Note: * < .05; ** < .01; *** < .001
[1]*Percentage of use in some occasion using as reference the total of the sample (N = 1,228).*
[2]*Percentage of preference using as reference only those women who had acknowledged playing videogames (N = 626).*

Device to play: mobile phones were found to be the favorite (52.2%). The most frequent is using three devices (see Table 3).

Place where they play: the large majority chose "your house" (81.2%), the rest of the values do not go beyond 6.5%. When segmenting the sample at 16 years, significant differences emerge, with the selection of playing at home being the most popular amongst minors. On the other hand, the older group play more on the streets or in VG centres (See Table 3).

Company when playing: the highest percentage prefer playing alone (62.1%), choosing in second place "physically accompanied by a person" (20.9%). When dividing the sample at 16 years old, significant differences are found in the choice of company ($p < .05$), with greater preference for "playing alone" among adults and on the other hand, minors chose "playing accompanied online" or "in a group" (See Table 3).

Gaming habits. The main result is that there are no differences between playing online and offline. Just 27.2% play only online (See Table 3).

Table 3
Gaming habits according to age group.

	Total $N = 626$	Age range		$\chi^2(p^*)$
		12-15 years old $N = 435$	16-22 years old $N = 190$	
Device				
Pc	88 (14.1%)	57 (13.1%)	31 (16.3%)	
Videogame console	93 (14.9%)	69 (15.8%)	24 (12.6%)	$\chi^2 = 3.203$
Mobile phone	327 (52.2%)	223 (51.1%)	104 (54.7%)	($p = .524$)
Tablet	63 (10.1%)	47 (10.8%)	16 (8.4%)	
TV	55 (8.8%)	40 (9.2%)	15 (7.9%)	
Place				
In your house	508(81.2%)	370 (84.9%)	138 (72.6%)	
Friends' house	32 (5.1%)	21 (4.8%)	11 (5.1%)	
School	26 (4.2%)	18 (4.1%)	8 (4.2%)	$\chi^2 = 20.001^{**}$ ($p < .001$)
Betting houses	21 (3.4%)	9 (2.1%)	12 (6.3%)	
On the street/ conveyance	39 (6.2%)	18 (4.1%)	21 (6.2%)	
Type of company				
Alone	389 (62.1%)	259 (59.4%)	130 (68.4%)	
One person (physically)	131 (20.9%)	88 (20.2%)	43 (22.6%)	
One person (online)	56 (8.9%)	48 (11%)	8 (4.2%)	$\chi^2 = 12.59^{*}$ ($p = .013$)
In group (physically)	26 (4.2%)	21 (4.8%)	5 (2.6%)	
In group (online)	24 (3.8%)	20 (4.6%)	4 (2.1%)	
Connection mode				
Online	131 (20.9%)	96 (22%)	35 (18.4%)	
Offline	170 (27.2%)	113 (25.9%)	57 (30%)	$\chi^2 = 1.637$ ($p = .441$)
Both online/offline	325 (51.9%)	227 (52.1%)	98 (51.6%)	

**Note:* * < .05; ** < .01*

Purpose of the game: the main result is to have fun/pass the time (92%), with no differences according to age (see Table 4).

Playing time. Average days playing per week is 2.58 (*SD*: 1.745), reaching higher percentages in the categories of 1 and 2 days. Only 6.4% acknowledge playing 7 days per week. Average weekly hours are 7.14 (*SD*: 1.138), and it is most common to play one hour or less (44.6%). Only 1.9% of the sample admit PVG more than 20 hours per week (see Table 4).

Scores on the IGDS9-SF. An average of 13.51 (*SD* = 5.17) was found. Only 3 of 1228 women achieved a score equal to or greater than the cut off score of 36 for the IGD, Pontes & Griffiths (2015). If an alternative, less conservative, approach was considered, with 27 as cut off score (which would correspond to an average score of at least 3 points in all the items), the number of cases of IGD would increase to 21, which represents 3.35% of women who reported playing videogames and 1.71% of the total sample.

Table 4
Playing time, purpose and level of problematic gaming in the total sample of women (N = 626) by age.

	Total $N = 626$ N (%)	Age group		χ^2 / t (p^*)
		12-15 years old $N = 435$	16-22 years old $N = 190$	
Purpose				
Having fun	576 (92%)	394 (90.4%)	182 (95.8%)	
Meeting people	1 (.2%)	1 (.2%)	--	
Spending time with my friends	15 (2.4%)	15 (3.4%)	--	
Sensation of winning	2 (.3%)	1 (.2%)	1 (.5%)	$\chi^2 = 9.09$; ($p = .105$)
Showing my skills	12 (1.9%)	10 (23%)	2 (1.1%)	
Distraction from my problems	20 (3.2%)	15 (3.4%)	5 (2.6%)	
Average days spent playing	2.58 (1.74)	2.52 (1.69)	2.72 (1.86)	$t = -1.31$ ($p = .18$)

	Total *N* = 626 *N* (%)	Age group 12-15 years old *N* = 435	 16-22 years old *N* = 190	χ^2 / *t* (*p**)
1 days	214 (34.2%)	150 (34.4%)	64 (33.7%)	
2 days	170 (27.2%)	121 (27.8%)	49 (25.8%)	
3 days	97 (15.5%)	72 (16.5%)	25 (13.2%)	
4 days	59 (9.4%)	40 (9.2%)	19 (10%)	χ^2 = 7.545; (*p* =.273)
5 days	24 (3.8%)	16 (3.7%)	8 (4.2%)	
6 days	22 (3.5%)	10 (2.3%)	12 (6.3%)	
7 days	40 (6.4%)	27 (6.2%)	13 (6.8%)	
Average weekly hours				
Less than 1	194 (44.5%)	83 (43.7%)	277 (44.2%)	
2-5 hours	247 (39.5%)	170 (39%)	77 (40.5%)	
6-10 hours	54 (8.6%)	41 (9.4%)	13 (6.8%)	χ^2 = 4.501; (*p* = .609)
11-15 hours	25 (4%)	15 (3.4%)	10 (5.3%)	
16 or more hours	23 (3.67%)	14 (3.2%)	7 (3.68%)	
Average level of problematic gaming (IGD-9SF)	13.51 (5.17%)	13.74 (5.32%)	12.99 (4.76%)	*t* = 1.67; (*p* = .09)

Note:* ** < .05; *< .01

Variables related with the scores on the IGDS9-SF in women. Table 5 shows a model predicting problems of VG (IGD-9SF), further stratified in three models. The first model includes potential predictors of "age" and "type of game".

Table 5

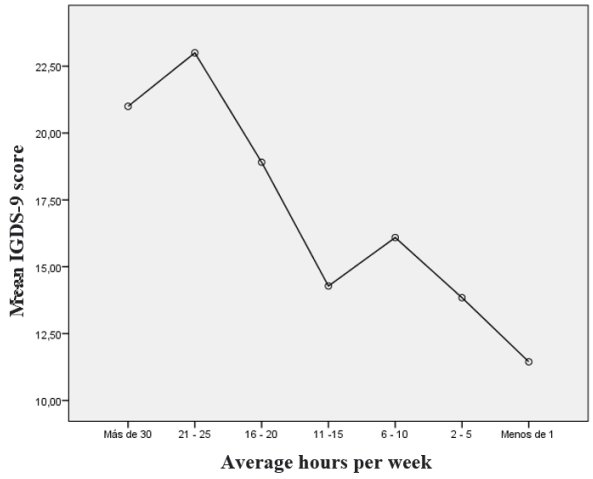
Multiple linear regression in layers of predictors of scores on the IGD-9SF.

IGD9-SF Scores	B (error)	Standard β	*t*	*Sig.*
Model 1	*F* = 6.16; *p* < .001**; $R^{2\ adjusted}$ = .104			
Type of games used				
Gambling	1.376 (.67)	.084	2.055	.04*
Massively multiplayer online (MMO)	2.600 (.52)	.203	4.98	< .001**
Role playing	1.839 (.77)	.102	2.36	.018*
Simulators	1.25 (.41)	.12	3.025	.003**
Model 2	*F* = 4.697; *p* < .001**; $R^{2\ adjusted}$ = .155			
Type of game used				
Gambling	1.504 (.67)	.092	2.24	.025*
Massively multiplayer online (MMO)	2.378 (.52)	.185	4.51	< .001**
Role playing	1.605 (.76)	.089	2.094	.037*
Simulators	1.080 (.42)	.103	2.574	.01**
Game mode				
Accompanied online	-3.598 (1.20)	-.199	-2.975	.003**
Purpose of the game				
Function of distraction	2.719 (1.10)	.093	2.455	.014*
Model 3	*F* = 7.773; *p* < .001**; $R^{2\ adjusted}$ = .257			
Type of game used				
Strategy	-1.312 (.62)	-.079	-2.087	.037*
Massively multiplayer online (MMO)	1.364 (.50)	.106	2.696	.007**
Role playing	1.437 (.71)	.080	1.999	.046*
Game mode				
Accompanied online	-2.876 (1.13)	-.159	-2.531	.012*
Purpose of the game				
Function of distraction	2.324 (1.03)	.079	2.237	.026*
Playing time	1.018 (.11)	.344	9.112	< .001**

Note*: ** < .05 *< .01. Model 1= Age and type of game used; Model 2 = Model 1 + Game mode, purpose of the game, place and device; Model 3 = Model 2+ average time dedicated to playing. The variables or categories of these not included in the table highlight a non-significant predictive power (*p* > .05)

Playing Games of chance, MMORPG, Role playing games and Simulators is a significant predictor of the level of problematic gaming, with an explained variance of 10.4% (adjusted R^2 square = .104). Age was not found to be a significant predictor. Model 2 adds to the variables of Model 1 "game mode" and "purpose of gaming", where the predictor "types of games" remains significant (all $p < .05$). Further, the predictor "playing accompanied by one person online" was added in inverse form, as well as "function of distraction" factor, raising the explained variance to 15.5%. Ultimately, by adding to the previous model the predictor "playing time", the variance of problematic gaming explained by Model 3 is 25.7%. It can be noted that "types of games" such as Gambling and Simulators lose their predictive power, whereas games of MMO, Role playing (which continue to be significant) and Strategy show a significant inverse relationship with problematic gaming. Furthermore, the inverse prediction of "playing accompanied by only one person online" remains significant, as well as the significant direct relationship of "purpose of distraction". As it can be observed in Figure 1, the average problematic gaming is especially high among those women who spend more than 20 hours per week gaming (around 20 points on the IGD9-SF), whereas when "gaming time" is below 5 hours per week, scores on problematic gaming are below 15 points ($F = 26.61$; $p < .001$).

Figure 1
Average scores on the IGDS9-SF in function of the variable "hours".



Discussion

With regard to the main characteristics of PVG in women, of the total sample of women evaluated, 51% admitted playing VG. Spanish A&Y play in similar percentages to those of neighbouring countries, close to 50% in recent studies (Brand et al., 2019; Entertainment Software Association, 2019). This percentage is still below that found in a sample of men (Labrador et al., 2019), although these differences might be reducing (King and Potenza, 2020).

In reference to PVG according to type of game, consistent with previous research, it was found that women play all kind of VG, however, unlike men, they prefer VG which contain less sexualized and violent elements (Action and adventure, puzzles, simulators and platform), they also play VG more typical of men (MMORPG, Fighting, Shooting or Role playing), despite the biases noted on the number of female characters and their sexualization. These data coincide with previous studies on the preference of VG in women (Feijoo and García, 2017; Greenberg et al., 2010; Homer et al., 2012). The discrepancy between VG played and VG preferred is reduced and it probably shows that, sometimes, they play what is available. Differences appear in the VG preferred according to age, those younger than 16 years old play significantly less Puzzles and Games of Chance and more games of Platform and MMORPG, approaching their gaming patterns to those of men, thus, in those under 16 years of age, the gender differences seem to decrease.

In relation to PVG Time spent, average gaming time during the week is limited. The majority acknowledge playing less than 5 hours per week, although 1.9% play more than 20 hours. Gaming time is less than 81 minutes per day in the Australian sample (indicated by Brand et al., 2019). Also, these times are less than those reported by men, whose figures range from 11 (Lucas y Sherry, 2004) to 43 hours per week (Homer et al., 2012). The majority play less than three days per week, although 6.3% admit playing every day. Therefore, on average women dedicate little time to VG; partly due to the fact that they play less VG requiring more time to execute tasks and achieve goals, such as MMORPG, Strategy or Shooting (López-Fernández et al., 2019; Rehbein et al., 2016;). Unlike what was found by López-Fernández et al. (2019), playing online does not associate with playing more hours. No differences were found when dividing the sample at 16 years old, unlike older studies in which greater use of VG was found in preadolescence (Homer et al., 2012), and a decrease in the use of VG was reported starting at 18 years old and, also, in younger age groups (Rehbein et al., 2015). It is possible that these differences reflect the fact that there are more and more VG accessible through Smartphones, devices preferred by women to play VG; and the progressive increase in women gaming (Statista, 2020).

Regarding the main devices used, although the most used devices to gaming in the general population are computers and video consoles (ISFE, 2019), the most used devices by women are mobile phones, followed by tables. Perhaps, this is due in part to the type of VG preferred, which in the case of women are Puzzles, Platforms or Simulators, VG which are frequently played in app formats. These devices and types of games are associated with shorter gaming time.

*Homes were the main place chose to play*s, although this is more the case for those younger than 16 years old, something that appears logical due to greater autonomy with older age, which corroborates with the older group playing more

in VG centres. It should be noted that although they usually play at home, better screens than those of smartphones are not used, such as TV or computers, which instead is more usual for men.

Also, they mainly prefer to play alone rather than playing accompanied, (specially from 16 years old). In case they play accompanied, they prefer physical to online company. PVG in women is not usually a social activity, only 8% play in a group, which justifies, in part, the fear that playing VG leads to a decrease in social interactions.

With respect to the game mode, the majority plays as much online as offline and although it does not reach significant differences according to age, higher averages of online gaming are found among minors. This can perhaps be associated with smartphone games, which can be carried out away from home, consuming data from the adolescent's tariff, who seeks to prevent this scenario.

Furthermore, having fun and passing the time are acknowledged almost as the sole purpose of playing, consistently with earlier work (Laconi et al., 2017). Other factors do not exceed 3% (distracting from my worries).

In summary, the profile of women who play VG moves away from the traditional image of "Gamer", thus they preferably play games of Action and Adventure or Puzzles and Platforms, sporadically and during reduced periods of time, mainly by mobile phone, in their houses or alone, to have fun and pass the time.

Finally, the average value on the IGDS9-SF, 13.51, is low and only 3 out of the 1228 women (.02%) and out of the 626 who played VG (.47%) exceeded the cut-off score of 36 points suggested by Pontes & Griffith (2015), whereas the percentage rises to 1.7% if 27 is used as cut-off. As it was expected the scores found in this sample of women are below those of men, suggesting less problems with the use of VG (Rehbein et al., 2016; Sánchez-Iglesias et al., 2020). In the study of Witteck et al., (2016) men were found to be 2.9 times more likely to have problems with VG than women; in the study of Bonnaire and Baptista (2019), almost 4 times more. This lower prevalence of problems with VG in women probably has to do with the fact that, usually, they play VG which suppose less implication. Also, that their internet use has more to do with other activities, such as social networks, than with VG. Nevertheless, it is an alarming issue, where it is relevant that predictive variables of this problem in women are identified. What appears clear is that, as suggested by the Spanish validation of Sánchez-Iglesias et al. (2020), given the peculiarities of the use of VG among women, it is necessary to use distinct scales according to gender.

With regard to predictive variables of PVG in women, a stepwise regression analysis showed that VG categories, such as MMORPG, Role playing and Simulators and Gambling predict problematic PVG, when only controlling for age. The association between MMORPG and Role-playing with problematic gaming is especially relevant. Players of MMORPG exhibited an average of 16.21 points on the IGDS9-SF, compared to 12.82 exhibited by those who did not play, scores very similar to those of players of Role-playing (16.8), compared to non-players (13.18). MMORPG are games that have been most associated with IGD problems, especially among men (Eichenbaumet al.,2015; Lemmens y Hendriks, 2016). The current study highlights that this problem is also found in women, consistently with the results of López-Fernández et al., (2019). The predictive power of these games stands when including "habits related to gaming" as a possible predictor. In fact, the average score on the IGDS9-SF when they play accompanied by a person online is almost halved than if they play online in a group and significantly lower than in other gaming modes. The purpose of "distraction" was found to be the most relevant risk factor compared to any other gaming purpose (social, having fun, etc.). It appears that, if gaming is used as an emotion regulation mechanism (Aldao & Nolen-Hoeksema, 2010), (using the distraction as a resource that the person uses as avoidance behavior, that is as an emotional "regulator"), it is more likely that problematic patterns arise. A functional relationship of gaming can be established, based on negative reinforcement (relief by distraction) which goes beyond recreational values (positive reinforcement).

As it is to be expected from previous literature (Griffiths et al., 2016; Kim et al., 2016; Lemmens & Hendriks, 2016), time dedicated to videogames was found to be a significant predictor of problematic gaming. Perhaps 20 hours per week could be taken as a point of reference. In the current study a relationship emerges between gaming hours and scores on the IGDS9-SF, independently of the game being carried out in person or online. Furthermore, it does not appear that gaming online supposes longer playing hours as previously found by López-Fernández et al., (2019). Nonetheless, the predictive importance of time spent gaming did not overshadow the purpose of distraction or the protective factor of gaming accompanied by someone online. However, the use of Games of chance and Simulators lost predictive power, with games of Strategy emerging as a protective factor.

Thus, Model 3 suggests prediction of 25.7% of scores on the IGDS9-SF, where average gaming time is the main predictive factor. Higher averages corresponded to higher scores on the IGDS9-SF. Thereafter, playing MMORPG stands out. Furthermore, the negative value of gaming accompanied online and gaming Strategy games should be pointed out. It appears that the relationship which was intuitively considered relevant, number of hours spent playing videogames, is truly important and supported by the results of this study.

In summary, it can be added to the typical profile of a woman who plays VG that they exhibit low scores on the IGDS9-SF, with higher scores associated with longer gaming time and gaming MMORPG. Furthermore, protective factors such as gaming accompanied by someone online or playing games of Strategy are identified.

Knowing the profile of women who use VG, what their habits and preferences are, and above all, the risk factors for developing related problems, will allow adapting prevention

and therapeutic plans. In particular, it seems important to detect when too many hours are dedicated to VGs, especially if these are MMORPGs, trying to promote that the game as something playful and shared.

Limitations of the study

In spite of having a large and representative sample, the population of reference is only from Madrid. It would be convenient to complement this sample, increasing diversity by including participants such as women from other regions of Spain, also covering rural areas and a wider age range. In addition, it would be desirable for the groups of 12-15 and 16-22 to be less disparate in size.

Given the importance of the variable "gaming time", it is probably more descriptive and precise to use the actual values of gaming time as hours per week, instead of grouping them in categories.

Finally, all data was gathered exclusively by means of self-administered online questionnaires, which can cause possible bias in perception or in the answers given by participants. There is no verification of the answers matching the participants' true behavior.

This work has not analyzed whether there are differences in preferences and habits depending on the course or branch they study or the socioeconomic level of the subjects. However, it is considered that this may be an interesting future line of work.

Conclusions

- Women show different gaming patterns from men, especially in the type of games preferred (women prefer Action and Adventure, Puzzles and Board games and Simulators compared to men, who prefer MMORPG, MOBA and Shooting).
- Although age does not show significance, differences were found in the gaming pattern of those younger than 16 years old, a profile more similar to that of men, especially in the type of games preferred and in the favourite gaming mode. Contrasting with results from the literature, gaming time does not decrease with age.
- Women show highly reduced gaming patterns compared to men in time, duration and intensity. This could be due to the fact that games preferred by women demand less time to achieve their goals, and/or that VG more associated with problematic gaming are preferably directed to men.
- Women prefer gaming at home, in a rather solitary way, gaming as much online as offline, with the goal of having fun and passing the time. The majority of them play 1 hour or less per day and no more than 1 or 2 days per week.
- With regard to problematic PVG, 1.71% of the sample presented scores greater than 27 on the IGDSF-9, indicative of possible problems with the use of VG. Time spent playing VG is the factor most associated with this issue, followed by category of VG played (MMORPG, MOBA, Simulators and Gambling).

Notes.- All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. The study was approved by the psychological ethics Committee of the Complutense University od Madrid.

This article does not contain any studies with animals performed by any of the authors.

Informed consent was obtained from all individuals participants and their legal guardians included in this study.

Conflict of interest.- The authors of this article declare no conflict of interest.

Financial support.- No funding.

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