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GIRLS PLAYING VIDEO GAMES AND THEIR DEDICATION TOWARDS GAMES

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Abstract. Numerous works indicate an equal distribution among video game players in regard to gender distribution, yet in literature, there is still not a consensus regarding what a gamer really is and, as a result, the sampling method can be ambiguous bringing into question the real gender distribution among video game player population. In the present paper, we attempt to assert the seriousness with which games are approached by gender based on the hardcore gamer typology, in this regard we draw from the literature classification of gamers into hardcore and casual in an attempt to better understand the gender distribution in video games. In doing so, we used the Casual Hardcore Gamer Assortment scale (CHG) on a sample of 996 video game players. Results indicate a positive correlation between CHG and gender. Based on this correlation we can assume that although girls do play video games there are still differences in their engagement towards these games, girls seem to invest less time and economical resources in video games and take games less seriously when compared to their male counterparts.

Keywords: video games, gamer girl, video games demographics, gaming.

INTRODUCTION

Gamers' population and its dynamic are especially relevant in the present world when video games are the biggest and most profitable entertainment industry (Deleuze *et al.*, 2019; Entertainment Software Association, 2021). According to the Interactive Software Federation of Europe (2020), half of the European Union's population (51%) currently plays video games, which means about 250 million players. Similar to data from the United States, a considerable proportion of players are women, namely 45% (Interactive Software Federation of Europe, 2020). These demographic data provided above have limitations in understanding the real number of girls that really prefer video games as their main method of entertainment. In most reports' gamers are vaguely defined, as is the case in the report from electronic software associations that consider a gamer any person who invested one hour or more per week in video games (Entertainment Software Association, 2020).

The present paper does not discuss the difference in skills between genders in video game skills as we consider that there is nothing to discuss on this topic as numerous studies demonstrate there is no difference in essential abilities required by video games (Walkerdine, 2007; Greenberg, Sherry *et al.*, 2010) like cognitive abilities (Fran & Lori, 2004) or biological one's alike response times (Shen *et al.*, 2016) or multitasking (Lui, Yip, & Wong, 2020). Nevertheless, there is still a prejudice that girls are performing worse than boys in video games (Ruvalcaba *et al.*, 2018; Kaye, Pennington, & McCann, 2018), although this is not true it might influence the demographic of the gamer's population. Girls often need to prove their abilities in competitive games this putting them in a difficult position and reducing the number of girls playing these games (Walkerdine, 2007; Greenberg *et al.*, 2010; Nardi, 2010; Ruvalcaba *et al.*, 2018; Kaye *et al.*, 2018). Studies even indicate that girls are more prone to be exposed to sexual harassment in online gaming compared with boys (Walkerdine, 2007; Ruvalcaba *et al.*, 2018; Tang, Reer & Quandt, 2020). Based on this data, we question the actual number of gamer girls engaged in video games, although there may be an equal distribution among video game players in general, it is very likely that girls avoid those complex games that we usually think of when we imagine a gamer. Moreover, girls

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may tend to avoid online games, those games that are praised for their community and the social elements in them. A hesitation that can be to some degree observed in studies reporting different in-game times between gamer boys and girls, the latter spending less time in games compared to boys (Twenge & Martin, 2020; Leonhardt & Overå, 2021; Barr & Copeland-Stewart, 2022). This reluctance to play online games is unfortunate, as discussed before girls have the same aptitude in games, additionally, they also can be very good teammates in online games there is proof that girls bring advantages in video games especially the group cohesion an essential advantage in competitive group vs group online games (Kim *et al.*, 2017).

We consider the approach of the simple intention to play insufficient towards the real description of the population dynamics, this approach could be misleading and hide the real dynamics of the population such as the number of girls in popular online games. As a solution, we approach the population by distinguishing players based on their dedication to the game, a method to measure the dedication to the game is to distinguish the players according to the typology of the hardcore player (Bosser & Nakatsu, 2006; Poels *et al.*, 2012). A classification that, although controversial, can help us to obtain a better image in the gander distribution among gamers. Hardcore gamers are investing substantial time, economic and emotional resources in video games (Poels *et al.*, 2012; Gheţău, 2022).

It is important to mention that the concept, as we mention, it's in some cases controversial. The concept may not arise naturally in the gaming community, some works suggest that the video game developers supported the classification through marketing campaigns and advertisements as it was favorable economically to have players demonstrate their devotion through economical investments (Kerr, 2006; Braegger & Moeller, 2021). So, even though today the community is largely using the terms, this can be a result of the industry intervention (Braegger & Moeller, 2021).

There are authors that accept the distinction between two types of gamers but contest the characteristic of these types, suggesting that the viewing of games as a hobby should not be the main difference criteria. In doing so, contesting the importance of the involvement in the game, dedication to the game, and the desire for achievement or competition. As a criterion in the identification of those that play digital games as a hobby, authors indicate imaginative play as the main indicator (Nacke, Bateman, & Mandryk, 2014). In line with this conception, a scale dedicated towards identifying the typology of hardcore gamers was composed, in doing so the scale concentrated not only on economic investment but also on emotional and cultural investments and ignore the skill altogether (Gheţău, 2022). Based on the above-mentioned scale, the current paper aims to investigate the prevalence of hardcore gamer characteristics distinguishing between gender.

Methodology

The current paper questions the real number of girls engaged in video games, in asserting their engagement we resort to the typology of the hardcore player, especially because recently this typology concerns especially the seriousness with which the games are viewed by the players in addition to the monetary and cultural investments (Poels *et al.*, 2012; Netzley, 2015; Gheţău, 2022). Based on the possible differences in gaming time among gender reported in previous works (Twenge & Martin, 2020; Leonhardt & Overå, 2021), we also took into consideration the Time Spent Playing.

Data Collection Procedure and Ethical consideration

Data was collected based on an online survey posted online in more than 30 groups and communities that are themed around video games players found on popular social network platforms such as Facebook, Reddit and Twitter. The online survey was been posted with regularity (daily or once every two days depending on the group rules) for two weeks.

Responses were asked for consent at the start of the online questionnaire where we mention that the research is addressing video game players the exact scope of the research was at large explained at the end of the questionnaire. This was been done to not influence their responses or to respond accordingly to stereotypes. Those who do not give their consent at the beginning of the online questionnaire were not allowed to continue completing the questionnaire. Respondents under-aged were directed to a special section where an additional document was posted, they were instructed to print that document and present it to their parents. The discussed document contained an elaborate text that ask parents for consensus and explained in depth the research, if parents agree to the terms, they needed to send the document to the researchers through email. All under-aged respondents from the final sample have parents' approval (their parents follow the steps described), and those who do not were eliminated from the sample.

Measurements

Gender

The gender of the respondents was been asserted on a dummy variant based on a singular item that asks respondents to indicate their gender: men or women. The prevalence of each response option was discussed in the section found above dedicated to sample characteristics.

Hardcore Gamer Characteristics (CHG)

In categorizing the gamer between the two types indicated by the literature, we used the Casual Hardcore Gamer Assortment (CHG) scale designed by Gheţău (2022) and composed of 5 items measurement based on a 5-point Likert scale. Items are based on previous studies, the last two addressing distinguish characteristics of hardcore gamers like economical, emotional, and cultural resources, and the last two items are both investigating time investments. The measurement is based on a 5-point Likert scale. Higher means on the CHG scale indicate that the respondent presents more elements specific to a hardcore gamer. Scale authors have reported a Cronbach's Alpha of .75.

Time Spent Playing

Time spent in playing video games is calculated based on the average between two distinct items: "I spend a lot of time in video games on a day off / weekend" and "I spend a lot of time in video games on a work/school day". Answers vary on a Likert scale in which 1 - strong disagreement and 2 - strong agreement. Both items taken as a scale shows a Cronbach Alpha of .786.

Age

Age was been asserted based on 5 categories: 1) under 18, 2) 18 -25 years old, 3) 26 – 35 years old, 4) 36-45 years old, and 5) 46 – 55 years old.

Sample

The sample on which the analyzes were performed counts 996 respondents, most of them are 75.2% male (N = 749). The most represented age category consists of young people aged between 18 and 25 years with 55.4% (N = 552) of participants indicating an age between these limits, followed by respondents aged between 26 and 35 years with a percentage of 29.6% (N = 295). The age categories with the fewest respondents are: 36-45 years with 6.5% (N = 65) and 46-55 with 1.5% (N = 15). The sample consists of minors, ages under 18 who accumulate 6.9% (N = 69). The sample does not include people older than 56 years.

Table 1. Descriptive data related to the investigated variables

	N	Min.	Max.	Mean	SD
Gender	996	0	1	.75	.432
CHG	996	1.00	5.00	2.8512	.89330
TSP	996	1.00	5.00	3.0788	1.12445

Source: Data generated by the author.

Table 2. Correlation between Gender, Casual Hardcore Gamer Assortment scale (CHG) and Time Spent Playing (TSP)

	CHG	TSP
	.160**	.144**
Gender	.000	.000
	996	996
		.822**
CHG		.000
		996

Source: Data generated by the author. Note: **. Correlation is significant at the 0.01 level (2-tailed); *. Correlation is significant at the 0.05 level (2-tailed).

RESULTS

Descriptive data related to the investigated variables can be consulted in Table 1.

Correlational analyzes were performed between the score from CHG and the following variables: gender, age and game preference. For the present paper, the most important correlation looks at the relations between CHG and gender (dummy variant, 1 – male and 0 – female). Results of the Pearson correlation indicated that there was a significant positive association between gender and CHG ($r(996) = .160$, $p = .000$).

One independent sample T-test was been conducted between the CHG scores and gender where gender is a grouping variable with 1 – males and 2 – female. Results show that there was a significant effect for sex, $t(994) = -5.1$, $p = .000$, men ($M = 2.93$, $SD = .86$) attaining higher scores than women ($M = 2.60$, $SD = .95$).

Another independent sample T-test was been conducted between the TSP variable and gender where the last is a grouping variable with 1 – males and 2 – females. Results show that there was a significant effect for sex, $t(994) = -4.6$, $p = .000$, men ($M = 3.17$, $SD = 1.1$) attaining higher scores than women ($M = 2.80$, $SD = 1.2$).

The box plots in Figure 1 depict SEJH scores related to gender. We can observe a variation where although boys have higher mean scores (N = 749; M = 2.93) than girls (N = 247; M = 2.60), the girls in the extreme have even higher scores than boys.

DISCUSSION

In the current paper we set out to investigate by quantitative methods a possible discrepancy in the demographic data reported by large entities activating in the video game industry. If we talk about playing

video games as the main source of entertainment, based on the data from the present research, at least in the case of girls, there seem to be a significant lower proportion of passionate players (people that play with some degree of regularity). The results are in line with the observations of other papers indicating gender discrimination, harassment and a lack of trust in girls that play video games, especially complex games (Walkerdine, 2007; Winn & Heeter, 2009; Harrison, Drenten & Nicholas, 2016; Bear, 2019; Darvin, Vooris & Mahoney, 2020). Based on this information we can expect many girls to distance themselves from video games and choose other forms of entertainment.

The scale used in the present paper is based on the categorization of players into two types of gamers (hardcore and casual), emphasizing on the characteristics of hardcore player. The scale may be used to designate whether or not a player is passionate as a higher mean on the scale is indicating that the respondent offers greater importance to the specific elements related to a passion for video games. Those specific elements are substantial investment of economical and time resources through video games, a greater cultural implication with video games and a more serious approach of games.

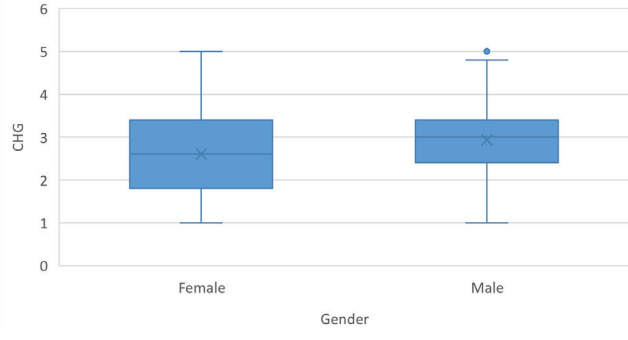

Figure 1. Simple Boxplot of CHG by Gender. Source: Data generated by the author.

In regard to the time spent in games, the present study results are in line with recent reports in the field (Twenge & Martin, 2020; Leonhardt & Overå, 2021; Barr & Copeland-Stewart, 2022), girls seem to spend a significantly lower amount of time in games compared to males.

Moreover, in the present sample, as can be seen in Figure 1, the variation of the scores obtained by the girls is very large. Based on these data, we can assume that in the case of girls, although on average they may be less dedicated to video games, there are some girls that can be seen as very dedicated game players with high scores on the SEJH. In other words, even if they represent a small portion of their population, there are girls that take the games at least as serious as boys. Future more, observing the outliers, there is a probable assumption that among girls are some that in hope of breaking the stereotype are taking their passion for games to extreme, scoring higher on the scale than even the most hardcore male from the sample.

Our approach has considerable limitations, it is a quantitative approach to a sensitive issue but categorizing players based on the typology of the hardcore gamers may not necessarily give us an exact picture. There may be video game enthusiasts that are passionate about video games but do not have elements specific to a hardcore player. Furthermore, the literature based on the typology of a hardcore player may be based on data specific to boys, in the case of girls' other characteristics may be the basis of their passion for games. Additionally, the data collection procedure as well as the small number of girls in the sample is a real problem, especially in a paper that addresses the topic of video game players.

In conclusion, although it is possible for a significant number of girls to play video games occasionally, the number of girls who are passionate about video games and who choose games as their preferred

Table 3. Independent Sample T-test between CHG and Gender variable with group 1: male and group 2: female.

	Levene's		t-test						
	F	Sig.	t	df	Sig.	MD	SE Lower	95% Confidence Upper	
CHG	9.149	.003	5.110	994	.000	.33	.06	.20379	.45784

Source: Data generated by the author.

Table 4. Independent Sample T-test between TSP and Gender variable with group 1: male and group 2: female.

	Levene's		t-test						
	F	Sig.	t	df	Sig.	MD	SE	95% Confidence Lower	Upper
CHG	8.265	.004	4.578	994	.000	.37	.08	.21369	.53430

Source: Data generated by the author.

method of entertainment is, according to our data, not equal to those of boys. Girls that play video games seem to invest less economic, emotional, cultural, and time resources in games when we compare them with their male counterparts. We must emphasize that we base our affirmations on per group means and we must remember that the data also indicate the presence of a number of girls who have very high scores and are therefore as dedicated as boys or even surpass them. Although it has its limitations, this paper confirms to some extent a different picture in terms of the community dimensions of video games, at least we can expect that girls' communities from online video games are considerably smaller than of boys and girls are less involved in video games. This is somehow to be expected as there still are reports that highlight different reception of the gaming community towards girls that are still seen as less competent (Walkerdine, 2007; Winn & Heeter, 2009; Harrison *et al.*, 2016; Bear, 2019; Darvin *et al.*, 2020) even though there are proofs that there is no difference in gaming aptitude (Walkerdine, 2007; Greenberg *et al.*, 2010; Fran & Lori, 2004; Shen *et al.*, 2016) the bad reception and even the presence of sexual harassment (Walkerdine, 2007; Ruvalcaba *et al.*, 2018) can deter girls in playing the most popular video games or take games seriously. More research is still needed to better understand the dynamics of the video games community especially the ones from massive online games.

Conflict of interest

The authors declare no conflict of interest.

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