Social Interactions in Massively Multiplayer Online Role-Playing Gamers

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ABSTRACT

To date, most research into massively multiplayer online role-playing games (MMORPGs) has examined the demographics of play. This study explored the social interactions that occur both within and outside of MMORPGs. The sample consisted of 912 self-selected MMORPG players from 45 countries. MMORPGs were found to be highly socially interactive environments providing the opportunity to create strong friendships and emotional relationships. The study demonstrated that the social interactions in online gaming form a considerable element in the enjoyment of playing. The study showed MMORPGs can be extremely social games, with high percentages of gamers making life-long friends and partners. It was concluded that virtual gaming may allow players to express themselves in ways they may not feel comfortable doing in real life because of their appearance, gender, sexuality, and/or age. MMORPGs also offer a place where teamwork, encouragement, and fun can be experienced.

INTRODUCTION

MASSIVELY MULTIPLAYER online role-playing games (MMORPGs) are fully developed multiplayer universes with an advanced and detailed visual and auditory world in which players create an individualistic character.[1] MMORPGs provide the only setting in which millions of users voluntarily immerse themselves in a graphical virtual environment and interact with each other through avatars on a daily basis.[2] Research suggests that the game-play within these virtual worlds is enhanced because players use them as traditional games as well as arenas in which to explore new relationships, new places, and themselves.[3] Despite the massive amounts of money spent on online gaming, very little research has been carried out regarding the positive social aspects of these games.

Historically, computer gaming has been dominated by adolescent males.[3] During the 1990s, games designed specifically for girls, such as The Sims and Creatures, started to appear. Subsequently, MMORPGs such as EverQuest attracted enthusiastic and significant minorities of female players most of whom were over the age of 30 years.[4] Taylor[5] acknowledges the growing population of women in MMORPGs and recognizes that themes of social interaction, mastery and status, team participation, and exploration are winning factors encouraging more women to play these games.

Much of the debate over the last 30 years has focused on the dangers of computer gaming in the adolescent population, including increased aggression and addiction.[6–12] Research has also been carried out examining the potentially harmful effects playing computer games may have on social development, self-esteem, social inadequacy, and social

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anxiety.[13–15] MMORPGs are very (virtually) socially interactive, but little social interaction in the real world is needed when playing them because, unlike some popular two-player console games such as Mortal Kombat, only one person can play an MMORPG at any one time from a single computer.

Yee[2,16,17] has carried out research into MMORPGs and notes that they allow new forms of social identity and social interaction. Yee's research has shown that MMORPGs appeal to adults and teenagers from a wide range of backgrounds, and players spend, on average, more than half a working week in these environments.[2] In a study by Utz,[18] 77% of respondents reported that they had some sort of relation with other multiuser dungeon (MUD) gamers. MUDs are similar to MMORPGs in that they incorporate role-playing and multiplayer systems with the use of instant messaging, but they differ in that MUDs are mainly text-based and lack the visual representation of the role-playing world. It has also been suggested that college students can develop compulsions to play MMORPGs, leading to social isolation, poor academic performance, and sleep deprivation. In 2004, a survey of over 54,000 American students found 11% of females and 20% of males said their recreational computer use had significantly hindered their performance at college and university.[19] Players can become fixated on their virtual characters, striving to obtain the best armour, experience, and reputation in the game, ignoring that their grades are dropping and their friends have drifted away from them. Yee[20] asserts that students become hooked on the games' elaborate challenges but that many hard-core players are in fact goal-orientated and high-achieving students, not slackers.

Computer games appear to play a role in the socialization of heavy game players, particularly for those who play MMORPGs. Krotoski[3] maintains that MMORPGs encourage group interaction and involvement, flexibility, and mastery, resulting in significant friendships and personal empowerment. It is important to realize that gaming has shown elements of being a compulsive behavior, with players feeling addicted, experiencing a strong impulse to play the games, and finding it hard to resist the games.[21] However, Brian and Weimer-Hastings[7] believe that although some MMORPG players spend over 25 hours a week playing, the fact that they do not seek self-confidence in-game and are not irritated if they cannot play for one day means they are not addicted.

Positive social interaction is paramount in MMORPGs because they require a large number of players to cooperate and work as a team at the same time. MMORPGs also have multiple tasks that require different characters with different skills in order to complete a challenge or quest. This teaches gamers to be dependent on one another, which reinforces their relationships, providing a good understanding of teamwork. Utz[18] explored the aspects of virtual friendship and types of gamers and produced four typologies of gamers:

- *Role-players*: those interested in playing roles;
- *Gamers*: those interested in having adventures and playing games;
- *Virtuals*: those interested either in online meetings with virtual partners and in chatting with them or in development of virtual environments;
- *Skeptics*: those disinterested in most of the features of MUDs, playing for less time per week, and refusing to identify themselves with any group of those playing MUDs.

Bekhtina[22] subsequently identified four basic motivations for playing: (a) curiosity, astonishment, and interest; (b) cognitive stimulation; (c) enjoyment of a different life style in virtual environments; and (d) recreational refreshment.

The purpose of our research was to explore the social interactions that occur both within and outside of MMORPGs. The development of virtual friendships can be very enjoyable for gamers, and anecdotal evidence has suggested they sometimes develop into serious real-life friendships and relationships. Not only do MMORPGs facilitate formation of relationships, they are also windows into and catalysts in existing relationships.[2] Our research also explored attraction between players within MMORPG environments, which to date has not been investigated.

METHOD

Participants

The sample consisted of 912 self-selected MMORPG players from 45 countries. All participants completed an online questionnaire in their own time. Of these participants, 70% were male ($n = 641$), 29% were female ($n = 261$), and 1% did not give their gender ($n = 10$). The sample was aged between 11 and 63 years, with the mean age of 23.6 years ($SD = 7.55$ years). Of the participants who gave their country of residence, 46% ($n = 420$) were from the United States, 26% ($n = 240$) were from the United Kingdom, and 5% ($n = 46$) were from

Canada. Lack of motivation and integrity in Web-based surveys are two potential concerns, but studies have shown that Web-based respondents are typically highly motivated because of self-selection. Furthermore, anonymity does not have an adverse affect on data integrity.[2]

Design and materials

An online questionnaire survey was designed using a university-generated online data collection program (Autoform) and was divided into five sections. The first section asked for information about gender, age, country of residence, and which game was played and how often. The second section asked questions about friendships within the game, attraction to other players, and meeting online friends in real life. The third section covered a number of topics that players might discuss with their online friends and examined the trust between online friends. The fourth section examined the different categories gamers could fit into (categories were taken from Utz's types of players[18] and Bekhtina's four types of motivations for playing[22]). The final section contained eight questions taken from the International Personality Item Pool (IPIP)[23] on extroversion (measured on a six-point Likert scale). A ninth question asked the participants to rate themselves on a five-point Likert scale from "very introverted" (1) to "very extroverted" (5).

Procedure

Following a small pilot study, the questionnaire was posted on over 20 dedicated MMORPG gaming forums and was also e-mailed to a range of students at a UK university. From this e-mail, participants then followed a hyperlink to the questionnaire. The e-mail address of the first author was given for any queries about the study. Participants were informed that participation was entirely voluntary and that the research was conducted according to the British Psychological Society's Ethical Code of Conduct for Psychologists. If participants no longer wished to take part, they simply had to close the Internet browser. All duplicate answers were omitted from the data before analysis. Questionnaires with more than 50% of responses missing were also omitted.

RESULTS

Basic demographics of gamers

Age. The average age of MMOPRG players was 23.6 years ($SD = 7.6$). Female players (25 years) were significantly older than male players (23 years) ($t = -3.5$, $p < 0.001$).

Occupation. The sample comprised a large minority of students (46.7%). The rest of the participants were in the IT industry (10.3%), managerial roles (3.7%), art and design (2.6%), accounting and finance (2.2%), clerical and administration (2.2%), education (2.2%), and health and medicine (2.1%). The remaining respondents were accounted for by 32 other occupations (22.9%) or were unemployed (2.1%).

Most played MMORPGs. The most-played MMORPGs were World of Warcraft (48.9%), City of Heroes (7.6%), Ultima Online (4.5%), EverQuest 2 (4.1%), Lineage II (3.8%), RuneScape (3.7%), Guild Wars (3.1%), and Blade Mistress (3%). Another 58 games were named and comprised the remaining 21.4% most-played MMORPGs. World of Warcraft was significantly more popular among female (60.5%) than male (44.1%) participants ($\chi^2 = 117.3$, $p < 0.001$).

Hours of MMORPG play per week. The mean average time spent playing per week was 22.85 h ($SD = 17.95$). Males (23.3 h) played slightly more hours per week than females (21.7 h), but this difference was not significant ($t = 1.28$, $p = 0.2$). Figure 1 shows the distribution of hours played per week by all players. It indicates that 3.6% of gamers claim to play over 60 hours a week.

Social activities of gamers

Friendships within MMORPGs. Approximately three quarters of both males (76.2%) and females (74.7%) said they had made good friends within the game. The mean number of "good friends" made within a MMORPG for participants was seven. Males were found to have significantly more good friends than females (7.7 versus 3.1; $t = 3.06$, $p = 0.002$). Results showed that females (55.4%) were significantly more likely than males (37.6%) to have met up with online friends in real life ($\chi^2 = 23.1$, $p < 0.001$). Participants were also asked in what situations they were most likely to meet up with other players socially. Table 1 shows the five different categories of situations and the number of times such meetings happened. It should be noted that individuals may have met online friends in one or more situation. Males were significantly more likely than females to meet up with online friends at a LAN meeting ($\chi^2 = 13.5$, $p < 0.001$), but there were no other gender differences.
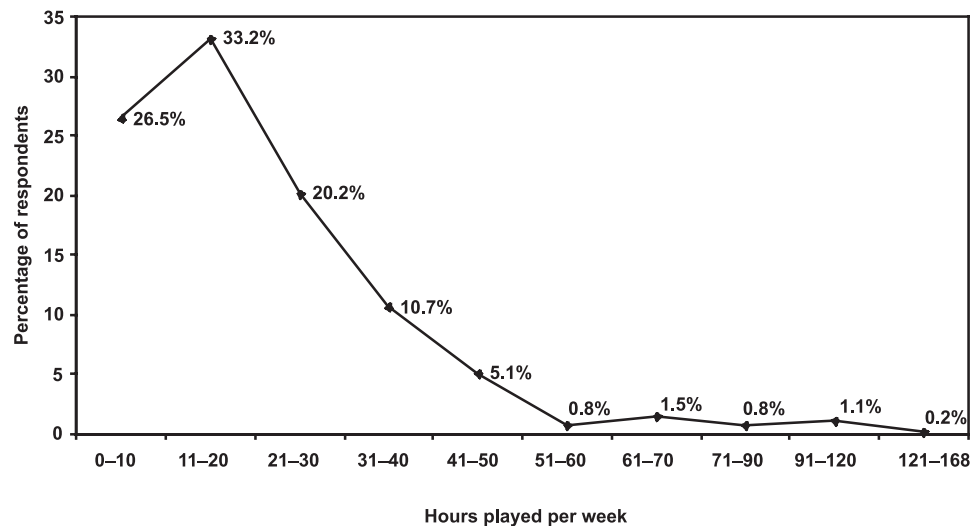
FIG. 1. Mean average weekly playing time ($n = 910$).

Attraction to other players. Of the 912 participants, 851 responded to the question, "Have you ever been attracted to another player?" Almost one third of the sample (31.3%) had been attracted to another player. Females (43.2%) were significantly more likely than males (26.2%) to be attracted to other players ($\chi^2 = 21.3$, $p < 0.001$). When asked if the feeling was mutual, almost half (49.8%) of those who had been attracted to another player answered yes (47.1% males; 53.5% females). Females (15.3%) were also significantly more likely than males (7.7%) to date other players ($\chi^2 = 9.747$, $p = 0.002$) (see Table 2).

Playing MMORPGs with real-life friends and family. Over one quarter of the sample (26.3%) played MMORPGs with family and real-life friends. Female

gamers (33.2%) were significantly more likely than male gamers (23.6%) to play with both family members and real-life friends ($\chi^2 = 22.49$, $p < 0.001$). The mean number of real-life friends with whom the participant's chosen game was played was 4.4. There was no significant difference between males (4.5 friends) and females (4.2 friends) in relation to mean number of real-life friends they played with ($t = 0.833$, $p = 0.41$). Furthermore, there were no significant differences between males (1.4 family members) and females (1.7 family members) in relation to the number of family members they played with ($t = -1.447$, $p = 0.15$).

The effect of MMORPGs on relationships. A very small number of gamers (2.6%, $n = 19$) believed that MMORPGs had a negative effect on relationships

TABLE 1.   SITUATIONS IN WHICH ONLINE FRIENDS HAVE MET IN REAL LIFE

Have met online friends at		Total (n = 703)	Male (n = 447)	Female (n = 246)	Gender unknown	χ^2	Sig.
Guild meet up	n	100	69	30	1	2.261	0.133
	%	23.9%	26.4%	19.9%			
LAN meeting	n	68	57	11	0	13.520	<0.001
	%	15.8%	20.9%	7.2%			
Convention	n	90	56	31	3	0.047	0.828
	%	20.5%	8.7%	19.5%			
Small group	n	184	112	71	1	1.209	0.272
	%	43.1%	41.5%	47%			
With 1 or 2 people	n	261	153	103	5	4.829	0.028
	%						

with those with whom they play the game. Around one fifth of gamers (20.3%) believed that MMORPGs had a negative effect on their relationships with people with whom they do not play the same MMORPG. Two thirds of gamers (67.4%) believed that MMORPGs have a positive effect on their relationships with those with whom they play the game. There were no gender differences.

Online versus offline friendships. Just under half of all gamers (45.6%) believed their online friends to be comparable to their real-life friends; 16.8% said they were not sure. There were no significant gender differences when gamers compared online friends with real-life friends. A small minority of gamers (4.8%) believed their online friends were more trustworthy than their real-life friends; the majority (53.3%) believed their real-life friends to be more trustworthy. The remainder reported online and offline friends to be equally trustworthy (36.7%) or were unsure (5.3%). There were no gender differences in trustworthiness.

Issues discussed among online MMORPG friends. Around two fifths of gamers (39.3%) said they discussed sensitive issues with their online gaming friends that they would not discuss with their real-life friends. Females (46.7%) were significantly more likely than males (36.2%) to discuss sensitive issues ($\chi^2 = 10.9$, $p = 0.004$). Females were significantly more likely than males to discuss family problems, loss of loved ones, sexuality issues, discrimination, and work problems.

Motivations and types of gamer

Types of MMORPG player. Almost two thirds of participants described themselves as "gamers" (60.5%); the remainder described themselves as "role-players" (20.4%), "virtuals" (5.4%), and "skeptics" (2.5%). Approximately 1 in 10 (11.3%) said they did not fit into any of the specified category (see Table 3).

Motivations of MMORPG player. Females (21%) were more likely than males (13.4%) to report their motivation for playing to be "therapeutic refreshment," whereas males (20%) were more likely than females (15.9%) to report playing because of "curiosity, astonishment, and interest" (see Table 3). Significant relationships were also found between the type of player and their motivations for playing. Gamers were significantly more likely to be motivated by curiosity, astonishment, and interest and attention, reasoning, creativity, and problem solving than by other motivations. Role-players were significantly more likely to be motivated by enjoying a different lifestyle in a virtual environment than by other motivations. Around a third of gamers (34.6%) reported they could be more themselves in the game than in real life. There was no significant difference between males (35%) and females (33.3%) in terms of being themselves within the game ($\chi^2 = 1.1$, $p = 0.58$).

Type of gamer and hours played. A one-way analysis of variance (ANOVA) revealed a significant difference between categories of gamer and hours played per week ($F [4, 887] = 2.90$, $p = 0.02$). Mean and standard deviations can be seen in Table 4. Pairwise comparisons using the Tukey HSD post hoc test showed that hours played per week for virtuals were significantly greater than hours played per week for skeptics ($p = 0.02$). Hours played per week did not significantly differ between the other categories of gamer.

TABLE 2. ATTRACTION, MUTUAL ATTRACTION, AND DATING OF PLAYERS COMPARED BY GENDER

		Total		Male		Female		Sex unknown	
		n	%	n	%	n	%	n	%
Have you been	Yes	266	31.3	156	26.2	105	42.3	5	62.5
attracted to	No	555	65.2	416	69.9	136	54.8	3	37.5
another player?	Don't know	30	3.5	23	3.9	7	2.8	0	0
Was the feeling	Yes	144	49.8	80	47.1	61	53.5	3	6
mutual?	No	20	6.9	15	8.8	4	3.5	1	20
	Don't know	125	43.3	75	44.1	49	43	1	20
Physical	Yes	71	10.1	37	7.7	33	15.3	1	12.5
relationship with	No	635	89.9	446	92.3	182	84.7	7	87.5
other player?									

TABLE 3. CATEGORIES OF MMORPG GAMERS AND MOTIVATIONS FOR PLAYING

		Total		Male		Female		χ^2	Sig.
		n	%	n	%	n	%		
	Role player	182	20.4	123	19.5	58	22.8		
	Gamer	541	60.5	400	63.3	137	53.9		
Category of	Virtual	48	5.4	29	4.6	19	7.5	8.827	0.066
gamer	Skeptic	22	2.5	12	1.9	9	3.5		
	None of the above	101	11.3	68	10.8	31	12.2		
	Total	894	100	632	100	254	100		
	Curiosity, astonishment, & interest	168	19	124	20	40	15.9		
	Attention, reasoning, creativity, problem solving	198	22.4	138	22.2	59	23.4		
Motivation for playing	Enjoying a different lifestyle in virtual environment	241	27.3	175	28.2	65	25.8	9.496	0.05
	Therapeutic refreshment	139	15.7	83	13.4	53	21		
	None of the above	137	15.5	101	16.3	35	13.9		
	Total	883	100	621	100	252	100		

Motivation for playing and hours played. A one-way ANOVA revealed a significant difference between motivations for playing and hours played per week (F [4, 876] = 2.66, $p = 0.031$). Mean, standard deviations and confidence intervals can be seen in Table 5. Pairwise comparisons using the Bonferroni post hoc test showed that hours played per week were significantly fewer for players whose motivation for playing was therapeutic refreshment when compared to players who did not fit into any particular motivation ($p = 0.04$).

A significant positive correlation was found between the number of hours played per week and the number of friends within the game ($r = 0.177$, $p < 0.001$). There were no gender differences. A significant negative correlation was found between the effect playing the game has had on relationships with those who do not play the same game and number of hours played per week ($r = -0.221$, $p < 0.001$). The relationship was slightly stronger for males ($r = -0.232, p < 0.001$) than females ($r = 0.178, p = 0.005$). A weak negative but significant correlation was found between age and number of hours played per week ($r = -0.088, p = 0.008$). Finally, there was no significant correlation found between self-reported extraversion and hours played per week ($r = -0.064, p > 0.05$).

TABLE 4. DESCRIPTIVE STATISTICS AND CONFIDENCE LIMITS FOR TYPES OF
GAMER BY AVERAGE NUMBER OF HOURS PLAYED PER WEEK

	Role	Player	Gamer	Virtual	Skeptic	None
Mean (hours played per week)	20.97	23.05	28.63	14.98	24.22	
Standard deviation	18.73	17.07	23.88	10.65	8.24	
Confidence	18.23	23.71	21.61–24.50	21.69 35.56	10.26 19.70	22.59 25.85

TABLE 5. DESCRIPTIVE STATISTICS AND CONFIDENCE LIMITS FOR GAME MOTIVATIONS
TO PLAY AND AVERAGE NUMBER OF HOURS PLAYED PER WEEK

	Curiosity, astonishment & interest	Attention, reasoning, creativity, problem solving	Enjoying a different lifestyle in virtual environment	Therapeutic refreshment	None of the above
Mean	23.23	21.62	22.40	21.04	27.17
Standard deviation	17.46	14.47	16.97	16.46	24.21
Confidence interval	20.57–25.89	19.58–23.66	20.25–24.56	18.28–23.80	23.08–31.26

DISCUSSION

One of the myths surrounding computer game playing is that the games appeal only to children and adolescents. However, the mean age of MMORPG players in this study was 23.6 years, and 28.2% of players were over 25 years. Only one fifth of players (20.6%) were under 18. Yee's[2] findings were similar, with the mean age of MMOPRG players being 26.57 years and 25% of MMORPG players being teenagers. Voiskounsky et al.[24] reported a lower mean age of 21 years for MUD players, and Griffiths and colleagues'[1] study of EverQuest players found a mean age of 27.9 years. It is also worth noting that females in this study were significantly older than males.

Males still dominate the gaming culture, but a notable increase in female gamers appears to be occurring. In 2001, Yee[17] reported that about 84% of EverQuest players were male. More recently, Griffiths and colleagues[1] found 81% of players were male. This study found that male players accounted for 71% of participants and females accounted for 29%. A possible reason for this increase is the wider acceptance of online games that has occurred in recent years, with game design and advertising becoming more targeted toward women, making the games more appealing and accessible to them. It has been suggested that women are drawn to MMORPGs because they enjoy gaming within social communities that encourage exploration of an environment with others as a team, allowing for the opportunity to play out different aspects of self-identity in a safe setting and supporting the pleasure associated with success.[3]

The mean number of hours spent playing per week in this study was 22.85, similar to the 22.72 hours per week reported by Yee.[2] A weak but significant negative correlation was found between player's age and hours played per week. It suggests that the older the player, the less time per week he or she plays. Krotoski[3] found that female gamers in the United Kingdom play an average of 7.2 hours per week, whereas this study found that female gamers in the United Kingdom play for an average of 18.2 hours per week, and men in the United Kingdom play for 28 hours per week, illustrating that either females are gaming for longer than they did in 2004 or MMORPGs are more popular than other games among females.

The most popular MMORPG in this study was World of Warcraft (WoW), which currently has over 6 million subscribers worldwide. Over 48% of participants named this their favorite game. WoW was significantly more popular among females than males. Gender differences in popularity could be due to the nature of the games. For instance, first impressions of Lineage II suggest that it is a lot less socially interactive and less visually stimulating than WoW, which might indicate that females prefer social interaction and visual effects more so than males.

Previous research has made assumptions that gamers are socially inactive. However, the study showed that 76.2% of male and 74.7% of female players had made good friends within the game. This suggests that MMORPGs are highly socially interactive. Furthermore, the mean number of good friends made within a MMORPG was seven, with males making significantly more online friends than females. Four fifths of participants (80.8%) reported that they enjoyed playing the same game with real-life friends and family. Both Yee[17] and Utz[18] reached similar findings in that 80% of male and 77% of female players play MMORPGs with someone they know.

Two fifths of participants (39.3%) said they would discuss sensitive issues with their online gaming friends that they would not discuss with their real life friends. Females were more likely to do so, suggesting that online relationships provide an outlet to safely discuss serious matters that may be difficult to talk about with real life family and friends. One of the advantages of online friendships is anonymity, and while online, some people self-disclose or act out more frequently or intensely than they would in person. The appeal of discussing issues such as sexuality lies in the ease and anonymity with which online seekers can obtain advice and reassurance, particularly regarding sensitive topic.[26] Because of the age range of players, it is very easy to obtain advice from people who have more life experience. However, Suler[25] notes that dissociative anonymity ("you don't know me") and invisibility ("you can't see me") will cause people to self-disclose more than they ordinarily would, which might explain why such a high proportion of players discuss sensitive issues online but not in real life.

The study showed that 42.8% of participants had met with online friends in real-life situations, again suggesting that online gaming is a social activity or facilitates social activity. Females were significantly more likely than males to meet online friends in real life. Meeting with other players was not limited to occurring only in the players' local neighborhoods. An interesting finding regarding gender differences is that male players make more friends online, but females are more likely to meet with online friends. Females are also more likely to talk about sensitive issues with online friends, to be attracted to other players, and more to date others players in real life. These gender differences could suggest that while men do form friendships with a number of players, women actually form emotionally stronger friendships, with the ability to discuss sensitive issues, to meet with friends, and to physically date other players.

Another interesting finding was that 31.3% of participants had found themselves attracted to another player (26.2% males compared to 42.3% females). The presence of mutual attraction was just under 50%. This finding suggests that MMORPGs offer a safe environment for players to become emotionally involved with others. Overall, 10.1% of players had developed a physical relationship with another player, again indicating that online gaming can be a highly sociable activity. Significant positive effects on relationships were found, especially with those gamers who played with close friends and partners. Two thirds of participants (67.4%) believed that MMORPGs had a positive effect on their relationships with those with whom they play the game.

Yet another interesting finding was that some players felt "more themselves" during game play. It was found that the number of hours played per week were significantly greater for players who felt more themselves in game than for players who did not feel more themselves in game, suggesting that those players who spend many hours per week in these virtual worlds actually feel more themselves when they are immersed in them rather than in the real world. This finding could be explained by the disinhibition effect[26] and by the tendency for players to act out more frequently and intensely to self-disclose more while online than they would in person. Players revealed that that they feel more themselves online because they are not judged by their appearance, gender, age, or other personal information.

One in five participants (20.3%) believed that playing MMORPGs had a negative effect on their relationships with people with whom they did not play. To support the possibility that playing MMORPGs for many hours a week has a negative effect on relationships with those who do not play the same game, a significant but weak negative correlation was found between the effect playing the game has had on relationships and the number of hours played per week. The relationship was slightly stronger for males than females, possibly because more time spent playing online means less time available to spend with real-life friends and family.

A potentially serious consequence that may occur from playing MMORPGs is addiction. Griffiths and colleagues[27] propose that adolescents may be more vulnerable than adults to online video gaming addiction, although there is probably a difference between those who play excessively and those who are addicted.

It should also be noted that MMORPGs can be as goal-oriented or as casual as the player's desire,[3] and part of the appeal is the opportunity to create an in-game experience that is unique and individual. The possible negative effects of the games must not be ignored, nor should they be blown out of proportion. This study has revealed many aspects of MMORPGs that were not known before. MMORPGs can be extremely social games, with high percentages of gamers making life-long friends and even partners. As well as making good friends online, 81% of gamers play with real-life friends and family, suggesting that MMORPGs are by no means an asocial activity, nor are the players socially introverted. The virtual world that these games offer

allows players to express themselves in ways they may not feel comfortable doing in real life because of their appearance, gender, sexuality, age, or other factors. They also offer a place where teamwork, encouragement, and fun can be experienced.

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