Social Interactions in Online Gaming

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ABSTRACT

This paper briefly overviews five studies examining massively multiplayer online role-playing games (MMORPGs). The first study surveyed 540 gamers and showed that the social aspects of the game were the most important factor for many gamers. The second study explored the social interactions of 912 MMORPG players and showed they created strong friendships and emotional relationships. A third study examined the effect of online socializing in the lives of 119 online gamers. Significantly more male gamers than female gamers said that they found it easier to converse online than offline, and 57% of gamers had engaged in gender swapping. A fourth study surveyed 7,069 gamers and found that 12% of gamers fulfilled at least three diagnostic criteria of addiction. Finally, an interview study of 71 gamers explored attitudes, experiences, and feelings about online gaming. They provided detailed descriptions of personal problems that had arisen due to playing MMORPGs.

Keywords: Gaming, Gaming Addiction, Gender Swapping, Massively Multiplayer Online Role Playing Games, Online Gaming, Online Socializing, Social Interaction

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 (Griffiths, Davies, & Chappell, 2004). This is the only setting where millions of users voluntarily immerse themselves in a graphical virtual environment and interact with each other through avatars on a daily basis (Yee, 2007). 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 (Krotoski, 2004). 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.

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

Yee (2001, 2006, 2007) 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 they spend on average more than half a working week in these environments. In a study by Utz (2000), it was found that 77% of respondents reported that they had some sort of relation with other Multi-User Dungeon (MUD) Gamers. 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 (American College Health Association, 2005). Players can become fixated on their virtual characters, striving to obtain the best armour, experience and reputation in the game, ignoring the fact that their grades are dropping and their friends have drifted apart.

It is clear to see that computer games appear to play a role in the socialisation of heavy game players particularly for those who play MMORPGs. Krotoski (2004) maintains that MMORPGs encourage group interaction and involvement, flexibility and mastery, resulting in significant friendships and personal empowerment. It is important to realise that gaming has shown elements of being a compulsive behaviour, with players feeling addicted, experiencing a strong impulse to play the games and finding it hard to resist the games (Griffiths & Davies, 2005).

Positive social interaction is paramount in MMORPGs because they require a large number of players to cooperate together 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 that reinforce their relationships, providing a good understanding of teamwork. The purpose of the research here is to examine 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.

To date, there has been relatively little research into massively multiplayer online role-playing games (MMORPGs). This paper briefly overviews five studies by the authors (Griffiths, Davies & Chappell, 2004; Cole & Griffiths, 2007; Hussain & Griffiths, 200, 2009; Grüsser, Thalemann, & Griffiths, 2007). In all studies outlined below, 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. In the case of the surveys, if participants no longer wished to take part they simply had to close the Internet browser. All players were guaranteed anonymity and confidentiality.
METHOD (STUDY 1)

Participants

540 online gamers who played *Everquest* took part in the survey. Since one of the study’s main aims was to explore demographic factors, further details about participants (e.g., age, gender etc.) are given in the results section.

Design and Materials

An online questionnaire survey (using an ‘in-house’ designed tool called *Autoform*) was used to examine basic demographic factors of online computer game players (i.e., gender, age, marital status, nationality, education level, occupation, etc.). It also asked questions relating to playing frequency (i.e., amount of time spent playing the game a week), playing history (i.e., how long they had been playing the game, who they played the game with, whether they had ever gender swapped their game character), the favourite and least favourite aspects of playing the game, and what they sacrifice (if anything) to play the game.

Procedure

An online questionnaire was publicised and placed at three online fan sites of one of the most popular online computer games (*Everquest*). To target *Everquest* players, the sites chosen were http://www.everlore.com, www.eq.thesafehouse.org and www.eqvault.ign.com. It is here that the authors established contact with the players. Once players visited the hyperlink address to the questionnaire, they simply clicked their selections and pressed the submit button at the end of the page.

RESULTS (STUDY 1)

Gender, Age, Nationality and Marital Status

Of the 540 players who filled out the questionnaire, 431 were male (81%), 99 were female (19%). Ten participants did not specify their gender. Two-thirds of players (67%) were under 31 years of age (8% of the sample were aged 12 to 17 years, with 59% of the sample aged between 18 and 30 years). The remainder were aged between 31 and 40 years (22%), 41 and 50 years (8%), and over 50 years (3%). The mean age of the sample was 27.9 years of age (SD = 8.7 years). Over three-quarters of the players (77%) were from North America (USA and Canada). European players accounted for one-fifth of the sample (20%) with almost two-thirds of these coming from the UK (12% of total players). Over half of players were single (55.5%), with a further 1.5% being separated and 3% divorced. Just under a third of players were married (30%) with another 10% living with their partner.

Education and Occupation

Most players were current university students studying for an undergraduate qualification or already had one (29%). A significant minority had postgraduate qualifications (13%). Of those without any kind of higher education, 23.5% had college schooling up to 19 years of age, and 20% had schooling up to 16 years of age. A further 14% claimed they received no education after 11 years of age with the remaining few claiming they had no formal education whatsoever (0.5%). Just over a quarter of all players had jobs in the information technology/computing sector (28.7%), and one fifth of players were students (20%). These were by far the two most prevalent occupational categories. The remainder consisted of professionals (e.g., lawyer, doctor etc.) (7.4%), armed/emergency forces (6.9%), education (3.3%), finance (2.4%), health (e.g., nurses) (1.3%), homemaker (1.3%), manual work (e.g., gardener, labourer) (0.7%), office work (e.g., secretarial) (4.3%), self-employed (3.5%), service industries (e.g., retail, restaurants etc.), (3.9%), and tradesmen (e.g., plumber, electrician etc.) (2.8%). There were also those who listed other jobs not on the list (6.5%) and those who were unemployed (6.9%).
Playing History

The mean time they had been playing was 27.2 months (SD = 12.14 months). More specifically, players reported having played for 6 months or less (8.1%), 7 to 12 months (9.4%), 13 to 18 months (7.9%), 19 to 24 months (17%), 25 to 30 months (15%), and 31 to 36 months (24%). A further 18.6% claimed to have been playing over 3 years. Players were also asked if they played *Everquest* with friends. Over three-quarters (75.6%) claimed that they did. Another question asked if they played with their partner and over one quarter (25.2%) claimed they did. Players were asked if they had ever played a different gendered character. Results indicated that 60% of players had at some time gender swapped while gaming online. The mean playing time per week was 25 hours (SD = 14 hours). More specifically, players reported a wide range of hours played per week. These were up to five hours (3.2%), 6 to 10 hours (12.9%), 11 to 15 hours (11.7%), 16 to 20 hours (24.5%), 21 to 25 hours (9.5%), 26 to 30 hours (14.6%), 30 to 40 hours (14.5%), 40 to 50 hours (5.4%), and over 50 hours (4%). It was also noted that four individuals in this latter category claimed to play for over 70 hours a week.

Favourite and Least Favourite Features of Online Gaming

Players were asked what their single most favourite feature of playing *Everquest* was. By far the most popular reason was that *Everquest* is a social game (24.6%). Other popular favourite reasons included being able to group together with others (10.2%), being part of a Guild membership (10%), and the fact that there was no end to the game (10%). Almost one-fifth of players (18.7%) claimed that their least favourite part was the immaturity of other players. This was closely followed by selfishness of other players (15.4%).

Sacrificing Other Activities to Play

Players were asked what part of their life they sacrificed most in order to play *Everquest*. Over one-fifth of the players (22.8%) said that nothing in their life was sacrificed in order to play the game. Just over one quarter (25.6%) said they sacrificed another hobby or pastime. In order to play the game other players said they sacrificed sleep (18.1%), work and/or education (9.6%), socialising with friends (10.4%), socialising with partner (5.4%), and family time (4.6%).

DISCUSSION (STUDY 1)

This was the first academic study of online computer game playing that had collected primary data. The findings reported here correspond with the study of secondary data previously collected by the authors (i.e., Griffiths, Davies, & Chappell, 2003) that games are predominantly played by males. In *Everquest*, the male population in this study accounts for 81% of the sample. This is similar to the 85% reported by Griffiths et al. (2003). However, there appears to be increasingly more female gamers, with almost 20% of the players being female. It has been pointed out (Griffiths et al., 2003) that computer games are no longer aimed at the adolescent audience. This study confirms such assertions as the average age of players was nearly 28 years old. Almost two-thirds (59%) of players were aged between 18 and 30 years. There were approximately equal numbers of young adolescent players and those aged between 41 and 50 years. These findings are similar to those of Griffiths et al. (2003), although there appears to be a slightly greater age spread. More specifically, the current study appears to have a greater percentage of both younger and older players.

This study showed that ‘single’ people (55.7%) tend to predominate the computer gaming world. It could perhaps be speculated that having a partner or other commitments reduces the amount of time that an *Everquest* player can do other activities. Everquest is a game that requires a lot of dedication. Players must therefore “make time” to play this game. However, it was found that almost 30% of players were married. It could be that a people’s partners
will get involved with computer games so that they have a common interest. For instance, in this study just over a quarter of the participants played with their partners (i.e., 63% of all players with partners).

*Everquest* is not like normal “stand alone” games (Griffiths et al., 2003) and take a take a lot of dedication and time. The mean playing time per week (25 hours) suggests that a lot of time is invested by a majority of players. Furthermore, there were a large minority of players (9.3%) that claimed they played for more than 40 hours per week (with a few claiming to play over 80 hours a week). The results also showed that almost two-thirds of players (60%) had gender swapped at some point in their *Everquest* playing.

The biggest appeal for those that play online computer games is that they are social. It is therefore not surprising that almost a quarter of the sample (24.6%) said that social contact with other players is their favourite feature of the game. When combined with ‘grouping’, over a third of the players favourite reasons for playing (35%) were for social reasons. This is a bigger figure than in the previous study by Griffiths et al. (2003) who reported only 23%. Both studies’ findings directly contradict previous speculations that computer games are a socially isolating. Three-quarters of the sample claimed they play with real life friends. This is a positive factor indicating that those who engage in role playing games may no longer be associated with the introverted

It was clear that many players seriously impinge on some aspect of their life in order to play *Everquest* at the level they do. Just over a quarter (25.6%) say that they sacrifice another hobby or pastime. This appears unproblematic as it is up to them what they spend their leisure time on. However, almost one-fifth of players sacrificed sleep in order to play the game. This is a potentially large number of players having their routines and daily life interrupted due to the lack of sleep the night before. Other activities that are sacrificed may also be problematic including the displacement of work and/or education, and sacrificing time with partner and/or family.

**METHOD (STUDY 2)**

**Participants**

The sample consisted of 912 self-selected MMORPG players from a total of 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 (S.D. = 7.55 years). Of the participants who gave their country of residence, 46% (n = 420) were from the USA, 26% (n = 240) were from the UK, and 5% (n = 46) were from Canada.

**Design and Materials**

An online questionnaire survey was designed using a university generated online data collection programme (*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.

**Procedure**

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. Questionnaires with more than 50% of responses missing were also omitted.
RESULTS (STUDY 2)

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 ($X^2 = 23.1, p < 0.001$). Males were significantly more likely than females to meet up with online friends at a LAN meeting ($X^2 = 13.5, p < 0.001$) but there were no other gender differences.

Attraction to Other Players

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 ($X^2 = 21.3, p < 0.001$). 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 versus 53.5% females). Females (15.3%) were also significantly more likely than males (7.7%) to date other players ($X^2 = 9.747, p = 0.002$).

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 ($X^2 = 22.49, p < 0.001$). The mean number of real life friends the participants chosen game was played with 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 with those who they play the game with. Around one-fifth of gamers (20.3%) believed that MMORPGs had a negative effect on their relationships with people who they do not play the same MMORPG with. Two-thirds of gamers (67.4%) believed that MMORPGs have a positive effect on their relationships with those who they play the game with. 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 with 16.8% saying 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, with the majority (53.3%) believing 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.

Friendship and Play Frequency

A significant positive correlation was found between 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 were no significant correlation found between self-reported extraversion and hours played per week ($r = -0.064$, $p > 0.05$).

**DISCUSSION (STUDY 2)**

Previous research has made assumptions that gamers are socially inactive. However, the study showed that 76.2% of males and 74.7% of females 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.

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 discuss serious matters in a safe manner which may be difficult to talk about with real life family and friends. One of the advantages of online friendships is anonymity, and whilst 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. Due to the age range of players, it is very easy to obtain advice from people who have more life experience. However, Suler (2004) notes that ‘dissociative anonymity’ (“you don’t know me”) and ‘invisibility’ (“you can’t see me”) will cause people to self-disclose more, which could 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 up 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 to meet online friends in real life compared to males. Meeting other players did not just occur in the player’s local neighbourhoods. An interesting finding with regards to gender differences is the fact that male players make more friends online, but females are more likely to meet up with online friends. Females are also more likely to talk about sensitive issues with online friends, be attracted to other players, and more likely to date other players in real life. These gender differences could suggest that whilst men do form friendships with a number of players, women actually form more emotionally strong friendships, with the ability to discuss sensitive issues, to meet up 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 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. This again indicates 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 who they play the game with.

**METHOD (STUDY 3)**

**Participants**

One hundred and fifty seven participants completed an online questionnaire. Thirty-eight participants were eliminated for being under
the age of 18 years, resulting in a sample of 119 participants. There were 83 males (69%) and 32 females (26%), with four participants not specifying their gender. The participants ranged in age from 18 to 69 years (mean age = 28.5 years; SD = 9.6 years). The majority of participants were from the United States (73%), followed by those from the UK (8%) and Canada (3%). Participants were recruited from online gaming forums that were specifically for online gamers.

**Design and Materials**

An online questionnaire survey was used in the present study for the collection of both quantitative and qualitative data. A specially designed piece of online questionnaire software (Autoform) was used for the collection of online data. The online questionnaire asked questions on basic demographics of online gamers (i.e., country of residence, gender, etc.). It also asked questions relating to typical online videogame playing behaviour (i.e., the amount of time spent playing online per week), and reasons for playing (i.e., for entertainment, for stress relief, etc.). There were also specific questions on particular aspects of playing history (i.e., whether they had ever gender swapped their game character) and Likert-scale questions relating to the effects of online gaming (i.e., whether they played online in order to avoid feeling anxious).

**Procedure**

Following a small pilot study, an online questionnaire was publicised and placed on various gaming forums hosted on well-known gaming sites. These sites were http://www.Allakhazam.com, http://www.eqvault.ign.com, http://www.womengamers.com, and http://www.whitewolf.com. Postings inviting gamers to take part in the study were placed in the off-topic forums. All participants were informed about the purpose of the study (i.e., to examine various psychosocial effects of online gaming). Once gamers visited the hyperlink address to the questionnaire, they were given clear instructions on how to fill in the questionnaire.

**RESULTS (STUDY 3)**

**Typical Playing Behavior**

Participants were asked about the amount of times per week they played online video games. A large minority of gamers (41%) played 4 to 6 times a week and almost two in five gamers (39%) played 7 to 10 times a week. A tiny minority of gamers (2%) played more than ten times a week. On average males played online nearly seven times a week compared to the females nearly five times a week. Gamers were also asked about the average length of each game playing session. The results revealed that a large minority of gamers (47%) spent 210 minutes or more per playing session. One fifth of gamers (20%) played between 150 and 209 minutes per session. The mean playing time per week by gamers was 17.46 hours. There was a significant correlation between the number of times gamers played per week and the length of time per session ($r = 0.39, p < .05$). Female gamers played longer per session ($M = 198$ minutes), than male participants ($M = 186$ minutes), although the finding was not significant ($t[112] = -0.509, p > 0.05$: Effect size, $r = 0.40$).

**The Effect of Online Gaming on the Lives of Gamers**

Over two-thirds of gamers (68%) said that online gaming had a “stimulating” effect, where a stimulating effect was when online gaming had either a social, challenging and/or interactive effect on gamers. Players were also asked a question asking if online gaming satisfied their social needs that were not satisfied in the real world, and if ‘yes’ to say why that was the case. Almost two-thirds of gamers (63%) said online gaming did not satisfy their social needs, although very few participants gave reasons as
to why this was the case. However, 28% said online gaming satisfied their social needs that were not satisfied in the real world. In relation to the absorbing effects of online gaming, half of the gamers (50%) said that they felt as though they were absorbed into a different virtual environment when they played online.

Socialising in Online Gaming

Just over one in five gamers (21%) said they preferred socialising online compared to offline. More two-thirds of gamers (67%) said they preferred socialising offline compared to online although very few participants gave explicit reasons as to why. Significantly more male gamers (60%) than female gamers (19%) stated that they would rather spend time with friends in an offline environment rather than online ($X^2[4] = 11.57, p < 0.001$; Odds ratio = 1.1). In relation to online communication, significantly more male gamers (40%) than female gamers (6%) stated that they found it easier to converse online rather than offline ($X^2[4] = 17.65, p < 0.001$; Odds ratio = 0.36). The majority of gamers (59%) said they did not play online to escape from other things. One third of gamers (34%) agreed or strongly agreed they used gaming as a way of changing their mood compared to 44% who disagreed or strongly disagreed.

Gender Swapping

Results revealed that the majority of gamers (57%) had gender-swapped their game character. This included over half of all males (54%) and more than two-thirds of females (68%). This finding was significant ($X^2 [4] = 18.16, p < 0.001$; Odds ratio = 2.1).

DISCUSSION (STUDY 3)

The present study examined some of the psychosocial consequences and effects of online gaming, particularly in relation to socialising and gender swapping. Results showed that two-thirds of gamers did not find the socialising aspects of online virtual worlds to be more pleasant and satisfying than offline socialisation. However, those gamers who thought otherwise provided good reasons as to why they thought the virtual worlds were more pleasant and satisfying. For example, the socialising aspect of the online virtual worlds was seen as a laid back means of communication and saw them as places where “everyone could speak their mind” and where “everyone will still be heard.” This suggests that the virtual world is a place of equality, and together with the breakdown of visual social cues, may explain why one in five gamers found them more pleasant and satisfying than offline socialisation. These findings are consistent with the arguments of Morahan-Martin (1999) who asserts the ability to change identity online is a liberating experience because it can change the way people are perceived by trying out different ways of presenting yourself and interacting with others. These findings are also consistent with the findings of Study 1 showing that the social and co-operative elements of MMORPGs are the main reasons why people like them.

The study also found that two-fifths of gamers said that they played online to escape other things. Furthermore, a third of gamers (34%) stated that they used online gaming to change their mood. These characteristics may be indicative of a tendency for some gamers to use online gaming as a mood modifier. The gamers may also undertake online gaming as a means of coping with problems in their everyday lives. These findings support Jacobs’ (1986) General Theory of Addiction that suggests people who play excessively are either over-or under-aroused and use online gaming, or other reinforcing behaviours, as a means of escape and to relieve depressive states. Research by Wood and Griffiths (2007) found that escape was the prime characteristic of the gambling experience that facilitated the continuation of problem gambling. This feeling of escape may be used as a maladaptive coping strategy (Wood, Gupta, Derevensky, & Griffiths, 2004). It can be speculated that online gaming may be used as an alternative method of coping in that some gamers will use it to
distract themselves from having to deal with daily problems. Further research is needed in order to support this assertion.

In assessing some of the psychosocial effects of online gaming, the study found that two-thirds of gamers said online gaming had a stimulating effect. The gamers provided a variety of reasons for this, such as the challenging and exciting aspects of role-playing online, the level of interactivity with other players, and the opportunity to meet new friends online. Just over a quarter of gamers stated that online gaming satisfied their social needs that were not satisfied in the real world. They provided some interesting reasons. For example, one participant said that she relied on online gaming as an entertaining way to socialise with long distance relatives and friends. For others, online gaming provided a medium to interact with people on an intellectual level without having to prove his ability before speaking. Contrary to the findings of Lo, Wang, and Fang (2005), the gamers in the present study showed no signs of having experienced any sort of deterioration in real world interpersonal relationships. Rather they were more functional individuals who maintained contact with real world friends and relatives in a more complex manner online.

The present study also attempted to explain why gamers engage in ‘gender swapping’ and whether this has an effect on video game stimulation. Previous research has not considered the reasons as to why people gender swap. Overall, 57% of the sample said they had gender swapped their character (similar to findings of Study 1 that reported 60% gender swapping in their sample). Significantly more females than males had gender swapped their character. This can be explained by the reasons provided by participants who gender swapped in order to prevent unsolicited male approaches on female characters. Some gamers engaged in gender swapping as an experiment. What makes these findings important is that in most instances, the gamer has the opportunity to choose the gender of his or her character and to develop other aspects of their character before they begin to play. Choosing to gender swap may have an effect on the gamer’s style of play and interaction with other gamers and could even have an effect on guild membership.

**METHOD (STUDY 4)**

**Participants**

The study sample comprised 7069 gamers (94% male; mean age: 21.11 years, SD=6.35). Subjects answered two online questionnaires concerning gaming behaviour and associated variables as well as aggressive behaviour and violent attitudes.

**Materials**

Two online questionnaires were developed incorporating basic demographic questions along with an ‘addiction’ scale modelled after key symptoms of a dependence syndrome as outlined in WHO’s ICD-10 (World Health Organization, 2000).

**Procedure**

Participants were recruited in cooperation with an online gaming magazine. Participants answered two online questionnaires concerning gaming behaviour and associated variables as well as aggressive behaviour and violent attitudes. Participants who fulfilled at least three of six dependence criteria with regard to their gaming behavior were assigned to the group of pathological gamers.

**RESULTS (STUDY 4)**

Data analyses revealed that 840 subjects (11.9%) of the total sample fulfilled at least three criteria of addiction concerning their gaming behaviour. Pathological gamers (M= 4.70, SD= 4.03) differed significantly from non-pathological computer gamers (M= 2.49, SD= 2.22) regarding daily hours of playing (F (1, 5609)= 475.28,
p < .01) with a moderate effect size (f = .29). Compared to non-pathological gamers (M = 1.64, SD = 2.00) pathological gamers (M = 4.60, SD = 3.33) showed significantly higher (F (1, 6258) = 1242.02, p < .01) “expected relief of withdrawal symptoms when gaming” with a strong effect size (f = .45). In addition, pathological gamers (M = 5.84, SD = 2.91) showed also significantly higher (F (1, 6479) = 934.61, p < .01, f = .38) “craving due to the expectation of a positive outcome of gaming” than non-pathological gamers (M = 3.10, SD = 2.31). Furthermore, aggressive behaviour reported in pathological gamers (25.7%) and non-pathological gamers (10.7%) differed significantly (X^2 (1, n = 5218) = 109.23, p < .01) as well but just with a small effect size (w = .14). Regression analysis revealed that the factor “excessive gaming” explained only 1.8% variance of aggression.

DISCUSSION (STUDY 4)

In this study, nearly 12% of participants complied with three or more modified criteria for addiction and were therefore considered to be pathological gamers. This rate seems rather high, even if one takes into account the specific sample (all participants were active gamers). Nevertheless, findings of other studies report even higher rates – at least in adolescence (Griffiths & Hunt, 1995; 1998; Griffiths, 1997). A significant group difference but moderate effect size regarding the time spent daily with gaming has been found. More important, findings point to the fact that gaming has an addictive potential that is also mirrored by addiction-related cognitive components like significantly stronger positive outcome expectancies (Marlatt & Witkiewitz, 2005). Given that such cognitions are dysfunctional in the long term and maintain addictive behaviours, our findings suggest that cognitive components may be considered in therapy of excessive behaviours that meet core symptoms of addiction. Furthermore, there is only weak evidence for the assumption that aggressive behaviour is interrelated with excessive gaming.

To identify subgroups, further studies should include the kind of games favoured by excessive gamers (Carnagey & Anderson, 2005). In conclusion, the addictive potential of gaming should be taken into consideration especially in adolescents whose leisure activities comprise gaming to a large extent. Cognitive-behavioural interventions which focus on developing self-observation skills with regard to the function of gaming (e.g., “playing the hurt away”) and outcome expectancies seem to be appropriate in treating excessive gamers.

METHOD (STUDY 5)

Participants

A total of 71 online gamers (52 males and 19 females) participated in the study. The participants ranged in age from 18 to 54 years (mean = 26 years, SD = 8.4 years). Most of the participants were from the USA (n = 32), followed by the UK (n = 19), Canada (n = 5), and Netherlands (n = 4), although seven other countries were also represented among the remaining participants (n = 11). The mean gaming time per week was 18.9 hours. The mean years of gaming experience was 4.7 years. Gamers were categorised into three gamer types: (1) casual gamer (play 15 hours a week or less; n = 39); (2) regular gamer (play more than 15 hours and up to 30 hours a week; n = 21); (3) excessive gamer (play more than 30 hours a week; n = 12).

Design and Procedure

Participants were recruited in response to recruitment posts on various online gaming forums and in-game posts in the World of Warcraft MMORPG. The sample was therefore self-selecting. Participation was voluntary and no incentive was offered for participation. Semi-structured interviews were conducted over a four-month period (October 2007 to January 2008). The interviews were carried out (synchronously) via MSN Messenger (an online chat facility) or (asynchronously) via email and analysed using thematic analysis. The researcher
allowed gamers to speak for themselves (i.e., the emergent themes were participant led rather than researcher-led). Each interview lasted approximately 75 minutes. Thematic analysis is a flexible method for identifying, analysing and reporting themes within qualitative data. This method can offer a rich description of the data set and is very useful for summarising large bodies of data.

RESULTS (STUDY 5)

Six main themes emerged from the analyses of the interview transcripts. These were: (1) online gaming and integration into day-to-day lives, (2) online gaming, excessive play and problems, (3) addiction, (4) psychosocial impact of online gaming, (5) online gaming, dissociation and time loss, and (6) online gaming and the alleviation of negative feelings and mood states.

Online Gaming and Integration into Day-to-Day Lives

The theme of online gaming and integration into day-to-day lives revealed how gamers fitted their online gaming into their lives. Many gamers said that they played in their free time after work, school, college or university (n=43; 33M, 10F). Others said they integrated their online gaming by playing with friends (n=3, all male) whilst some gamers said that they played during work hours (n=5; 4M, 1F). A few gamers (n=3; 1M, 2F) played with their spouses or romantic partners. This is contrary to many beliefs that gamers lose control of their lives. The findings showed how gamers did not have a problem with their jobs and playing MMORPGs. There was no real conflict between work and leisure time as they worked and played in the same location. Integrating online gaming into their lives was very simple for them.

Online Gaming, Excessive Play and Problems

A majority of the gamers interviewed stated that their game playing is excessive (n=27; 20M, 7F) or was excessive (n=13; 11M, 2F). Only a few gamers said that their game playing was not excessive (n=4; 2M, 2F). The remainder of gamers did not comment upon this issue. There was a high degree of awareness of game playing being excessive for those who said that they played excessively. The findings showed how the social aspects of MMORPGs can have the negative impact of causing excessive game playing. The virtual world was seen as a place to waste time that led to excessive playing for some gamers. Gamers talked about the raiding, levelling up, and belonging to a guild. These were factors that caused excessive playing.

Addiction

Online gaming was seen as potentially addictive by some gamers (n=14; 10M, 4F). The results highlighted the potential addictiveness of MMORPGs as viewed by the players themselves. The social interaction, competition, and the in-game tasks were some of the triggers to addiction according to these gamers.

Psychosocial Impact of Online Gaming

The vast majority of gamers (n=50; 35M, 15F) highlighted the positive effects of online gaming and there were many different aspects that were touched upon. However, a majority of the gamers (n=45; 37M, 8F) also commented upon the negative effects of MMORPGs. The gamers had many positive experiences with MMORPGs and there were many other beneficial uses of MMORPGs. However, many of the gamers also noted potential negative effects, most notably the experience of losing friends to MMORPGs – an issue that would appear to require further research.

Online Gaming, Dissociation and Time Loss

Gamers were asked whether they experienced detachment from real-life or whether they lost track of time and if they played longer than intended. Just under a third of gamers expe-
rienced detachment (n=22; 17M, 5F). Over a third of gamers experienced time loss and said they played longer than intended (n=25; 16M, 9F). The results showed the immersive properties of MMORPGs that caused detachment in some gamers. This appeared to be an appealing feature of MMORPGs. The results also showed that gamers experienced time loss to such an extent that some gamers set an alarm to alert them of the time. The level of involvement that is required when playing a MMORPG was seen as a reason for time loss.

**Online Gaming and the Alleviation of Negative Feelings and Mood States**

Analysis demonstrated how gamers used online gaming to alleviate negative feelings that in turn brought positive feelings. Just under a third of gamers (n=22; 13M, 9F) spoke about how they removed negative feelings such as stress, anger, and frustration by playing MMORPGs. The results showed how gamers utilised MMORPGs to relieve very strong negative feelings that can be difficult to relieve in some cases. Gamers used MMORPGs as a release and as a medium to ‘step away’ away from everyday problems.

**DISCUSSION (STUDY 5)**

Results also showed that most gamers planned their gaming around their daily education, work and/or home tasks. The results show that gamers tend to manage and integrate their MMORPG playing into their lives but that a few play along with friends and partners. These findings were similar to those of Study 2 that found that 26% of their sample played MMORPGs with family and real-life friends. The findings also show similarity to that of Whang and Chang (2005) who explored the lifestyles of online gamers and compared their real-world lifestyles with their values and attitudes in the virtual world.

The study also found that more than half of the gamers (n=40) thought their game playing is or was excessive. Only four gamers specifically said that their game playing was not excessive. The gamers who said that their playing was not excessive saw their online gaming as a hobby. From the findings, online gaming appeared to facilitate excessive play to a high extent. The findings showed that gamers were aware of their game playing behaviour and for many their playing was excessive. Specific aspects of MMORPGs were highlighted as causing excessive play that could lead to adverse health effects for some gamers (such as missing meals and not exercising regularly). Future research should try to assess the extent of excessive playing using a quantitative measure. There were also some insights into online gaming as an addiction. A fifth of gamers (n=14) thought MMORPGs were addictive. These findings support the findings of Study 4 that found that 12% gamers met at least three addiction criteria. However, the present study does not claim that the gaming behaviour of the participants is related to dysfunctional social behaviour. Conversely, in regards to the present findings, the qualitative data on excessive playing and addiction needs to be supported with quantitative data.

The study was distinctive in terms of collecting data on the positive and negative effects of online gaming. More than two-thirds of gamers (n=51) commented upon the positive effects of online gaming. Some of the positive effects included meeting new people, learning about new cultures, facilitating teamwork, and building friendships. It was also seen as a good tool for teaching cooperation, typing, reading comprehension, economics and mathematics. Interestingly, online gaming was also seen as a medium that allowed people to exercise their imagination and could teach teamwork and planning skills. Such positive effects lend support to the collaborative learning approaches that focus on problem and experienced based learning and to the literature showing online games can be educationally useful (de Freitas & Griffiths, 2008).

This study did not set out to find findings that can be generalised. It was a qualitative study and thus emphasised the gathering of rich, elaborate, meaningful data. The semi-structured interviews conducted via the use of
**GENERAL DISCUSSION**

These studies revealed a variety of attitudes and experiences of gamers. It showed the positive and negative effects of online games, gender differences, and online and offline use of gaming technologies by gamers. The anonymity provided by the data collection methods could also explain the willingness of gamers to disclose highly personal and sensitive information. The lack of non-verbal and paralinguistic cues may have contributed to the high levels of self-disclosure (particularly in Study 5). Furthermore, past online research has shown high levels of self-disclosure from participants and reduced levels of social desirable responses (Joinson, 1999).

It is also important to recognise the limitations of these studies. Firstly, self-report measures raise questions about the truthfulness of responses that must be taken into consideration. Secondly, some of these studies had relatively small samples when compared against previous online research that has obtained much larger samples. Thirdly, all the participants in all the studies were self-selected and may not have been representative of the population of online gamers. Finally, the data collected came from specific forums. This raises the issue of how representative these MMORPGs and their players are. Thus, further research would need to gather data from a larger number of forums that cater for more MMORPGs.

One of the most important features of MMORPGs is the social communication that occurs between gamers. In the studies presented here, many online gamers enjoyed the socializing aspects of online virtual worlds, but as much as gamers enjoyed the time they spent online, they enjoyed real-life social activities more. Further research that focuses on both the positive and negative effects of socializing in online gaming is clearly required. Future research could take a more qualitative approach to data analysis by making use of such techniques as Interpretative Phenomenological Analysis (IPA). Eatough et al. (2006) used IPA in their study to examine how individuals perceived *Everquest* in the context of their lives. They managed to gather valuable data by making use of IPA. This type of methodological approach would be useful in examining online gaming experiences such as excessive use or to examine how players construct meaning in online virtual worlds. IPA could also be used to understand how gamers express themselves when they create their own characters and identities.

Further research could also examine why enhanced social interaction occurs in MMORPGs. There are many possible explanations such as greater anonymity online, the fact that the importance of physical appearance is greatly reduced, and/or that gamers have greater control over the time and pace of their interaction (McKenna & Bargh, 2000). Further research could also perhaps examine how gender swapping may affect guild membership when members of the guild discover that one of the members is not who they say they are. Alternatively, research could be carried out to see whether gender swapping has an effect on the gamer's gender identity or gender role when they are not playing online.

**REFERENCES**


Mark Griffiths is a Chartered Psychologist and Europe’s only Professor of Gambling Studies at Nottingham Trent University. He is Director of the International Gaming Research Unit and has won many awards for his work including the John Rosecrance Research Prize (1994), International Excellence Award for Gambling Research (2003), Joseph Lister Prize (2004), the Lifetime Achievement Award for Contributions to the Field of Youth Gambling (2006) and the NCPG Research Award (2009). He has published over 250 refereed research papers, three books, more than 65 book chapters, and has over 1000 other non-refereed publications.

Zaheer Hussain is a Lecturer in Psychology at the University of Derby and teaches on a number of modules including Psychology in Practice, Research Methods and Analysis, Animal Learning and Cognition and Individual Differences. He did his PhD on excessive gaming while working at the International Gaming Research (Nottingham Trent University) and has published papers on various aspects of online gaming including excess, addiction and gender swapping in journals such as CyberPsychology and Behavior, International Journal of Mental Health and Addiction and Electronic Commerce Research.

Sabine Grusser was a Professor and psychologist at the Charité-Universitätsmedizin Berlin. She died unexpectedly in 2008 aged 44 years and is sadly missed by all her research colleagues.

Ralf Thalemann is a psychotherapist at the Charité-Universitätsmedizin Berlin. He did a PhD examining various aspects of online addiction (including online gaming) with the supervision of recently Dr Sabine Grusser. He has published widely in such journals as Behavioral Neuroscience, CyberPsychology and Behavior, and Wiener Klinische Wochenschrift.

Helena Cole was a student and did both her Bachelors and Masters Degrees at Nottingham Trent University with particular interest in online gaming and cyberpsychology. She is hoping to further pursue her research interests by doing a PhD in the area of cyberpsychology.
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