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Online computer gaming: a comparison of adolescent and adult gamers

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Abstract

Despite the growing popularity of online game playing, there have been no surveys comparing adolescent and adult players. Therefore, an online questionnaire survey was used to examine various factors of online computer game players ($n = 540$) who played the most popular online game *Everquest*. The survey examined basic demographic information, 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. Results showed that adolescent gamers were significantly more likely to be male, significantly less likely to gender swap their characters, and significantly more likely to sacrifice their education or work. In relation to favourite aspects of game play, the biggest difference between the groups was that significantly more adolescents than adults claimed their favourite aspect of playing was violence. Results also showed that in general, the younger the player, the longer they spent each week playing.

Introduction

To date, most of the research on adolescent computer game playing has tended to concentrate on the more negative aspects such as excessive play and addiction (e.g. May, 1994; Griffiths & Hunt, 1998; Greenberg, Lewis, & Dodd, 1999; Salguero & Moran, 2002), the effects of playing aggressive games (e.g. Anderson & Morrow, 1995; Griffiths, 1998; Anderson & Bushman, 2001) and the medical and psychosocial consequences (e.g. Funk, 1993; Griffiths, 1997; Anderson &

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Bushman, 2001). Massively multiplayer online role-playing games (MMORPG) are the latest Internet-only computer gaming experience. This game form is a fully developed multiplayer universe with an advanced and detailed world (both visual and auditory). The most popular (and largest) of these MMORPG is Sony Online Entertainment's *Everquest* which reports of having over 400,000 people playing it (Sony Online, 2002). On each server there are typically around 2000 players at any one time.

The game allows a range of identities (and genders) to be explored by playing a character created by the player. Character identity creation typically involves a number of dimensions such as gender, race, profession and deity alignment (morality). Such choices can directly influence the style of play and the reception of the character to the game. As a result each character can be played as good or evil, a friendly or unfriendly race and a profession that is seen as a team player or more of a loner. Once in the virtual world, the players can either group or play solo. The social communication is via on-screen text. This can either be done privately (between two individuals or within a group of up to six players) or across the 'zone' that includes all players in the zone. Zones are different areas within the game on the same server. Inter-zonal communication is possible through Guilds and private text messages.

With the advent of the new, visually rich, virtual online worlds, an opportunity exists to explore the psychology of players who engage in this new form of entertainment as well as the psychology of players within the world itself. Before such research can be undertaken, there is a need to establish some "benchmark" data on which future research can build. At present we know very little about who plays online computer games.

In an attempt to establish some benchmark data, a previous study by the authors (Griffiths, Davies, & Chappell, 2003) collated data from two online gaming fan sites for *Everquest* players—*Everlore* (www.everlore.com) and *Allakhazam* (everquest.allakhazam.com). Each of these sites conducts a regular poll where one question is asked. Griffiths, Davies, and Chappell (2003) examined every poll question on both fan sites from their inception (in 1999) up until June 2002. Socio-demographic data showed that the majority of players were male (approximately 85%). Over 60% of players were older than 19 years. The vast majority of the players were North American (73% American and 8% Canadian) and players had a wide variety of education. Thirty-three percent of the sample was still at an educational establishment including those currently in middle school (3%), high school (14%), college (14%), and graduate school (2%). Of those who were in employment, 23% had a high school diploma, 33% had an undergraduate diploma, 7% had a Masters degree, and 2% had a doctoral degree. The data provided evidence that the game clientele was very much an adult profile and suggested a different picture to the stereotypical image of an adolescent online gamer.

Griffiths, Davies, and Chappell (2003) acknowledged that the major weakness of this study was its reliance on secondary data. Each individual question from the poll sites had a different sample. Therefore, the rationale for the following study was to collect primary data from one sample of online game players. Furthermore, one of the aims was to examine any differences between adolescent and adult players. As this study was exploratory, there were no specific hypotheses. However, it was envisaged that findings from this study using primary data would be similar to that found in the previous study using secondary data. The next section outlines the areas that were examined.

Method

Participants

Five hundred and forty online gamers who played *Everquest* took part in the survey. The participants were a self-selected sample consisting of those individuals who completed an online questionnaire at *Everquest* fan sites. For the purposes of the study, an adolescent was defined as a person who was 19 years of age or younger. The total sample consisted of 16% adolescents ($n = 88$). The mean age of the adolescent sample was 17 years (S.D. = 1.66) with an age range of 12- to 19-years. The mean age of the adult sample was 30 years (S.D. = 7.97) with an age range of 20–70-years. Before the collection of data, the authors made an implicit assumption that all players would be over 18 as players need to pay by credit card to subscribe to the game. However, half of the adolescents (below the age of 18 years; $n = 42$) must have got family or friends to subscribe on their behalf or used other forms of payment not restricted to adults.

Design and materials

An online questionnaire survey (using an 'in-house' designed 'auto-format) was used to examine basic demographic factors of online computer game players (i.e. nationality, education level, 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

Since there has been little research on who plays online computer games, an exploratory 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 www.everlore.com, www.eq.thesafehouse.org and www.eqvault.ign.com. The *Everlore* site was used as the prime target because of its larger audience and previous feedback from pilot work by the authors. *Everlore* is a subsite within the rpglore.com family of websites dedicated to supporting the role-playing Internet games. The other sites chosen were also dedicated *Everquest* sites. Each fan site had similar structured features (e.g. help guide, maps, forums etc.). These forums are a convenient way to communicate information between players (like a pin up notice board for everyone to see). 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. The data were then captured to allow it to be analysed in SPSS format for convenience.

Each hour hundreds of messages are passed on amongst the players within the forum. This means that older messages are 'pushed to the back', and are not in the forefront. Therefore, to keep the postings up to date, the authors had to go back every few days to each site to refresh the advertisement for participant recruitment. This was done by adding a new message to whichever discussion was taking place. All players were informed how long the form would take, what the

project was about, and what was being investigated. Anyone who wished to quit the survey or not be part of it could do so by simply shutting down the browser. Advice on filling the form out was also given along with lots of examples. An email address of the third author was also supplied for any queries concerns etc. All players were guaranteed anonymity and confidentiality.

Results

Demographic variables

Gender

A gender breakdown of adolescent versus adult online gamers showed that the percentage of males in the adolescent group (93.2% male; 6.8% female) was higher than the adult group (79.6% male; 20.4% female). This was a highly significant difference ($X^2 = 9.071, \text{d.f.} = 1, p = 0.003$) in gender breakdown between the two groups.

Nationality

In a question relating to gamers' nationality, the adolescents came from seven different countries. These were the US (77.3%), Canada (10.2%), UK (8%), Australia (1.1%), Denmark (1.1%), Pakistan (1.1%) and Italy (1.1%). The majority of the adult gamers originated from 5 out of 21 different countries. These were the US (69.8%), UK (10.5%), Canada (6.6%), Germany (2.1%) and Sweden (1.6%). The remaining 16 nationalities of adult gamers comprised the remaining 9.4% of the sample (Australia, Austria, Belgium, Denmark, Finland, France, Guam, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Singapore, and Switzerland). By collapsing down the nationalities to North American and non-North American, results show that there were significantly more adolescents among the North American sample (18.7% vs. 9.6%; $X^2 = 5.28, \text{d.f.} = 1, p < 0.022$).

Educational level

Table 1 shows the educational level of adolescent versus adult gamers. Although by definition, adolescents are unlikely to have engaged in university study until they are 18 years, there appeared to be a high level of school drop out amongst this particular sample with over one-third of the adolescents (35.2%) having dropped out of school by 11 years of age (this seems abnormally high

Table 1
Education and schooling level of adolescent and adult gamers

Educational level	Adult ($n = 437$)	Adolescent ($n = 88$)
School (up to 11 years of age)	7.1%	35.2%
School (up to 16 years of age)	19.5%	25%
College (17–19 years of age)	24.5%	21.6%
Undergraduate education	33%	14.8%
Postgraduate education	15.4%	1.1%
No formal education	0.5%	2.3%

and it was probably the case that most adolescents who ticked this box interpreted the question as having up to eleven years of schooling).

Other socio-demographic variables

Other variables were examined including marital/relationship status and occupation. These data are not reported in any detail as they are somewhat obvious. For instance, 97.7% of the adolescent sample were single compared to 46% of the adult sample (the remaining 2.3% of adolescents responded "living with partner"). None of the adolescents were married compared to 36.6% of the adult sample. With regards to occupation, the vast majority of adolescents were still in education or unemployed (77.3%) compared to 17.4% of adult gamers.

Game playing variables

Playing history

Players were asked how many months they had been playing *Everquest*. The mean time adolescent gamers had been playing was 24.77 months (S.D. = 11.78 months) compared to adult gamers who had been playing 27.71 months (S.D. = 12.18). More specifically, players reported having played for 6 months or less (adolescents 6.8%; adults 8.2%), 7–12 months (adolescents 15.8%; adults 8%), 13–18 months (adolescents 9%; adults 7.4%), 19–24 months (adolescents 21.5%; adults 16.1%), 25–30 months (adolescents 11.2%; adults 15.4%), and 31–36 months (adolescents 26.1%; adults 23.4%). A further 9% of adolescents and 20.4% of adults claimed to have been playing over 3 years. Age was then used as an independent variable (five age group levels: less then 20 years, 20–25 years, 23–25 years, 26–28 years, and over 28 years) and how long they had been playing *Everquest* as a dependent variable (see Table 2). The results clearly showed a linear trend. Fig. 1 shows that older players reported having been playing for more months than

Table 2
Play history (mean number of months) and play frequency (mean number of hours a week) of online gamers by age

Age group	*N*	Mean (months)	S.D.
Playing history			
<20 years	88	24.8	11.8
20–22 years	70	26.2	12.4
23–25 years	77	26.1	13.2
26–28 years	70	28.2	11.9
>29 years	214	28.6	11.8
Playing frequency			
Age group	*N*	Mean (hours/wk)	S.D.
<20 years	83	26.3	16.2
20–22 years	67	29.1	16.2
23–25 years	73	26.2	12.3
26–28 years	70	22.6	12.9
>29 years	211	23.4	12.5

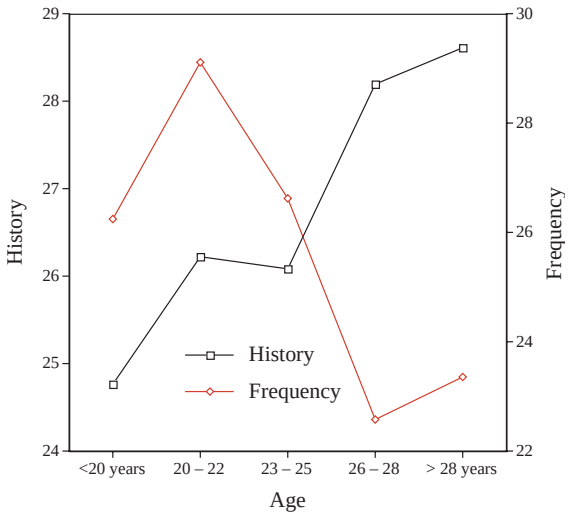

Fig. 1. Relationship between age and play frequency (hours a week, $n = 504$); and age and play history (number of months played, $n = 514$) in online gamers.

younger players. The contrast testing this linear trend was significant [$F(1514) = 6.88, p < 0.01$]. Deviations from this linear effect did not approach significance ($F < 1$).

Players were also asked if they played *Everquest* with friends. Over two-thirds of adolescent gamers claimed they did (69.3%). This was slightly lower than the adult gamers where three-quarters (76.2%) claimed that they did ($X^2 = 1.853$, d.f. $= 1, p = 0.173$). Players were asked if they had ever played a different gendered character. Results indicated that 45.5% of adolescent players had at some time gender swapped while gaming online. This was significantly lower than the adult gamers where 61.8% claimed they had gender swapped ($X^2 = 8.078$, d.f. $= 1, p = 0.004$).

Play frequency

Players were asked how many hours (on average) they played *Everquest* each week. The mean playing time per week for the adolescent gamers was 26.25 h (S.D. = 16.1 h) compared to adult gamers who played for 24.7 h (S.D. = 13.34). More specifically, players reported a wide range of hours played per week. These were up to 5 h (adolescents 4.5%; adults 2.7%) , 6–10 h (adolescents 9%; adults 12.8%), 11–15 h (adolescents 13.6%; adults 10.8%), 16–20 h (adolescents 18.2%; adults 24.7%), 21–25 h (adolescents 10.2%; adults 9%), 26–30 h (adolescents 14.8%; adults 14%), 31–40 h (adolescents 12.5%; adults 14.2%), 41–50 h (adolescents 2.2%; adults 5.7%), and over 50 h (adolescents 9.1%; adults 2.5%). It was also noted that three adolescents and 6 adults in this latter category claimed to play for over 70 h a week. As with playing history, age was used as an independent variable (five age group levels: less then 20 years, 20–25 years, 23–25 years, 26–28 years, and over 28 years) and how often they played *Everquest* as a dependent variable (see Table 2). Overall, age was related to frequency, i.e. amount of time per week spent playing online [$F(4499) = 3.23, p < 0.05$]. However, the relationship was not linear. Fig. 1 shows an unusual pattern with the three younger groups playing more frequently than the two older groups. The three youngest groups did not differ significantly from each other but the mean play frequency of

Table 3
Favourite aspects of playing *Everquest* among adolescent ($n = 88$) and adult ($n = 452$) gamers

	Adolescent (%)	Adult (%)	X^2	p
Social features	44.3	54.5	3.02	0.052
Violent features	17.0	4.8	17.18	0.000
Playing alone features	5.7	6.6	0.11	0.481
Game-specific features	21.6	21.5	0	0.543
Other features	11.4	12.6	0.1	0.456

Note: All d.f.s = 1.

the three younger groups was significantly larger than the mean play frequency of the two older groups [$F(1499) = 10.86, p < 0.001$].

Favourite features of online gaming

Players were asked what their favourite features of playing *Everquest* were. Once all the responses were collated, each feature was coded in one of five ways. These were (1) playing for social reasons (e.g. social contact with others, being able to assist others, being a Guild member etc.); (2) enjoyment of violence (e.g. hand-to-hand combat, player versus player options etc.); (3) being able to play alone (i.e. soloing); (4) game-specific features (e.g. character role-play, casting magic, no end to the game etc.); and (5) other features (e.g. exploring, strategic thinking, character building etc.). Results showed that the most popular features among both adult and adolescent players were the social features. Results also showed that significantly more adolescents who specifically state that violence is their favourite aspect of game play. Table 3 provides a complete breakdown of results.

Least favourite features of online gaming

Players were also asked what their least favourite features of playing *Everquest* were. Once all the responses were collated, each feature was coded in one of six ways. These were (1) playing for social reasons (e.g. team play, being able to assist others, etc.); (2) enjoyment of violence (e.g. hand-to-hand combat, player versus player options etc.); (3) being able to play alone (i.e. soloing); (4) game-specific features (e.g. the death penalty, camping, character role-playing, slow levelling etc.); (5) dislike of other players (e.g. selfish players, immature players etc.); and (6) other features (e.g. exploring, strategic thinking, character building etc.). To some extent, the results were the opposite of favourite aspects of play with significantly more adults not liking the game violence. Most of the dislikes concerning online gaming centred upon very specific bits of the game. Table 4 provides a complete breakdown of the results.

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 both the adolescent (21.6%) and adult (21.1%) gamers said that nothing in their life was sacrificed in order to play the game. In order to play the game other players said they sacrificed another hobby or pastime (19.3% adolescents; 27.5% adults), sleep (19.3% adolescents; 18.5% adults), work and/or education (22.7% adolescents; 7.3% adults), and socialising with

Table 4
Least favourite aspects of playing *Everquest* among adolescent ($n = 88$) and adult ($n = 452$) gamers

	Adolescent (%)	Adult (%)	X^2	p
Social features	3.4	3.4	0	0.644
Violent features	3.4	18.6	12.47	0.000
Playing alone features	6.8	3.2	2.61	0.1
Game-specific features	44.4	35.2	2.60	0.069
Player dislike factors	35.2	34.6	0.015	0.497
Other features	6.8	5.0	0.462	0.322

Note: All d.f.s = 1.

friends, family and/or partner (12.5% adolescents; 20.8% adults). Further analysis revealed that adults were significantly more likely to sacrifice socializing than adolescents ($X^2 = 3.24, \text{d.f.} = 1, p < 0.045$), and that adolescents were significantly more likely to sacrifice their education or work ($X^2 = 19.48, \text{d.f.} = 1, p < 0.000$). There were no other significant differences between the two groups.

Discussion

Although the number of variables examined was limited, the study did provide some interesting results. The number of adolescents who play *Everquest* is predictable given that the game itself is geared towards the older player. In order to play the game, players have to pay a subscription (traditionally by credit card). The fact that most adolescents do not have a credit card would explain the lower numbers who played the game. However, this may change as Sony has introduced a game card that enables players who cannot have a credit card to play the game (similar to a mobile phone top up card). There were significantly more males among the adolescent group although males were predictably predominant in both groups. This may be in part due to the extensive violence within the game (i.e. a player has to fight to level). In addition, the *Everquest* packaging always has a female character on it (which is more likely to appeal to males).

Given that *Everquest* first started in the US, uses US terminology, and there is a predominance of US servers worldwide (over 80%), it was perhaps unsurprising that the nationality of players in both groups were predominantly North American. However, the results did reveal that there were significantly more adolescents in the North American sample compared to the rest of the world (18.7% versus 9.6%). Although there are significant differences between the two groups in terms of educational level, they are entirely self-evident given that many of the adolescents are not old enough to be at university. Furthermore, other socio-demographic variables such as marital status and occupation produced self-evident results given the group comparison.

Given that *Everquest* has only been available to play since 1999, it was perhaps unsurprising that there was only small differences between age groups in their playing history (i.e. the number of months they had been playing the game). However, in terms of weekly play, results demonstrated that adolescents played slightly more than adults. However, by breaking up the age

bands, results showed that play frequency was generally associated with age (i.e. the younger the person, the more hours a week they play) although this was not linear (see Fig. 1). There are a number of reasons that could account for this. Adolescents are more likely to have more disposable leisure time and have less other responsibilities than adults. They may also have far more flexibility in their weekly schedules in which to play the game.

The group comparisons on game playing variables produced a lot of significant differences. In relation to gender swapping, there was clear evidence that adolescents engaged in significantly less gender swapping than adults (45.5% adolescents versus 61.8%). One possible explanation may be that adolescents (who were almost all male in this sample) prefer very masculine type characters (e.g. Warriors). They may be insecure about their own identity in the offline world and may still be developing their own identity. Only one adolescent female (1.1%) had ever played a male character compared to 39 adolescent males (11.5%) who have played a female role. In the adult group over half of males (52.2%) said that they had gender swapped compared to only 9.6% of female adults. Females were significantly less likely to gender swap in both groups. This may because females do not want to contradict gender stereotypes surrounding aggression and violence.

An examination of favourite and least favourite aspects of *Everquest* also revealed some very significant differences. Although both groups' favourite aspects related to the social aspects of playing, more adults (54.5%) than adolescents (44.3%) preferred these aspects (although this just failed to reach significance). The biggest difference between the groups was that significantly more adolescents than adults claimed their favourite aspect of playing was violence. This was also demonstrated in the least favourite aspects with significantly more adults than adolescents reporting that violence was their least favourite feature. There were no other significant differences between the groups.

Given that the weekly play frequency for both groups was quite high, it was unsurprising that various aspects of their lives were sacrificed. Just over one-fifth of both groups stated that nothing was sacrificed in order to play *Everquest.* However, this does mean that almost 80% of both adults and adolescents reported sacrificing at least one thing in their lives in order to play at the level that they did. Adults were significantly more likely to sacrifice social events whereas adolescents were significantly more likely to sacrifice their education or work. If this is a true reflection of what is sacrificed, then there is some cause for concern for the adolescent group as the sacrificing of education or work may have more severe repercussions than sacrificing other parts of their lives. Almost one-fifth of both groups said they sacrificed sleep in order to play. This too may have repercussions for both groups on productivity in other areas of their lives.

The findings relating to excessive play here suggest that some online gamers may be experiencing addictive like experiences similar to findings in other types of video game play (e.g. Griffiths & Hunt, 1998) and is an area for further research. It could be that because of both the competitive and co-operative aspects of the game, that *Everquest* is perhaps more addictive than console video games where gamers play against the machine rather than other people. Furthermore, based on offline video game play, it may be the case that adolescents are more vulnerable to online video gaming addiction than adults. However, the data presented here can neither confirm nor deny such a speculation and further study is again needed. Finally, it is worth noting that Charlton's (2002) factor analytic study of computer addiction showed a blurring of distinction between non-pathological high engagement and addiction. Therefore, it could

alternatively be the case that there are very excessive online gamers who show few negative consequences in their life. However, this study suggests that both adult and adolescent high engagement players do appear to have at least some negative consequences in their lives.

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