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Unmasking the Avatar: The Demographics of MMO Player Motivations, In-Game Preferences, and Attrition

Over the past 5 years, I have collected quantitative and qualitative data from over 35,000 MMORPG players through online surveys. This study has been an academic project from the start and has never been commercially funded. In the following article, I present quantitative findings on the basic demographics of MMORPG players¹ as well as the demographics of motivations, in-game preferences, and player fatigue. The data presented allow game developers to understand how the gender and age of current generation MMORPG players interface with their motivations for playing, their in-game preferences, and their rates of attrition.

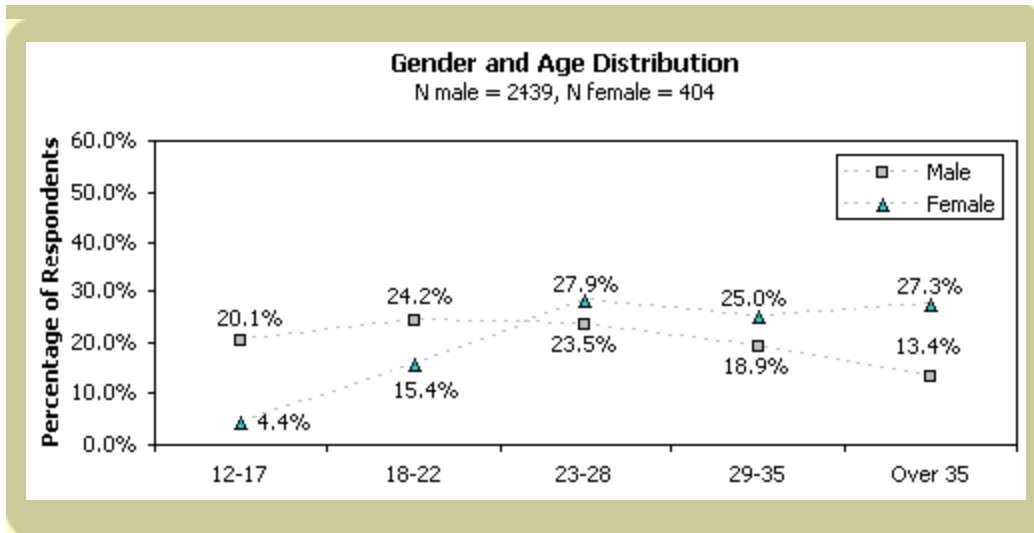
Overview of Methodology

Respondents were invited to participate in a new survey about every 2 months. These surveys were publicized on major portals of the most popular MMORPGs in the US. These online portals included: the Lore network, the Stratics network, and the Vault network, among others. MMORPGs that have been specifically targeted in the study were: *EverQuest*, *Asheron's Call 1 & 2*, *Dark Age of Camelot*, *Star Wars Galaxies*, *Ultima Online*, *City of Heroes*, *ShadowBane*, *Anarchy Online*, and *Final Fantasy XI*, although players from other MMORPGs were free to participate in the surveys. Typically, between 2000-4000 respondents would complete the surveys in each phase.

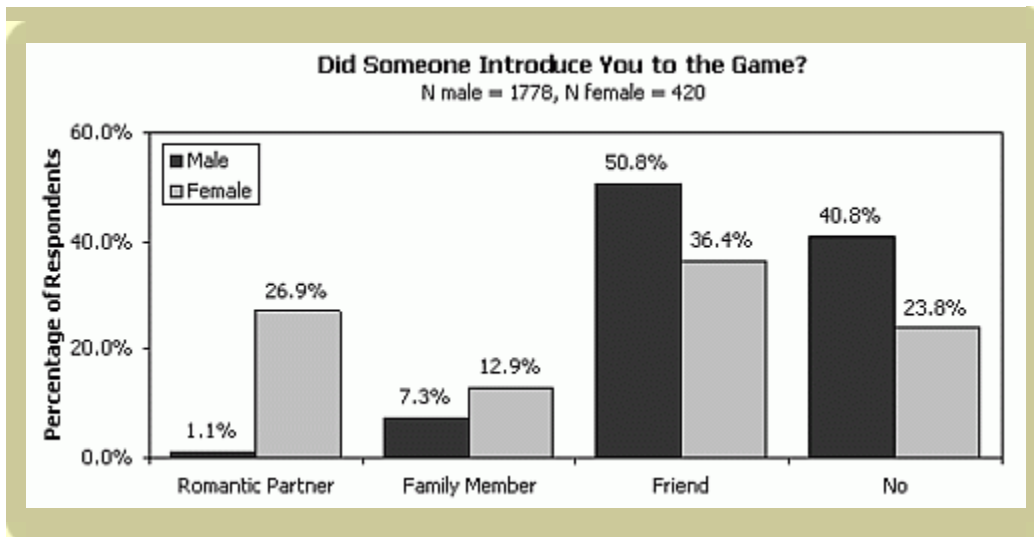
The main caveat for developers is that surveys of current gamers are bound to the architecture of current games, rather than games that could exist. Therefore, attitudes of current gamers do not project onto attitudes of potential gamers that are untapped by the current architectures that are available on the market. The data presented in this article does, however, allow estimations of how the demographic composition of a particular game might influence the desires and evolution of a particular game. It also may help show how the design of a particular game will attract a different demographic composition.

Demographics of MMORPG Players

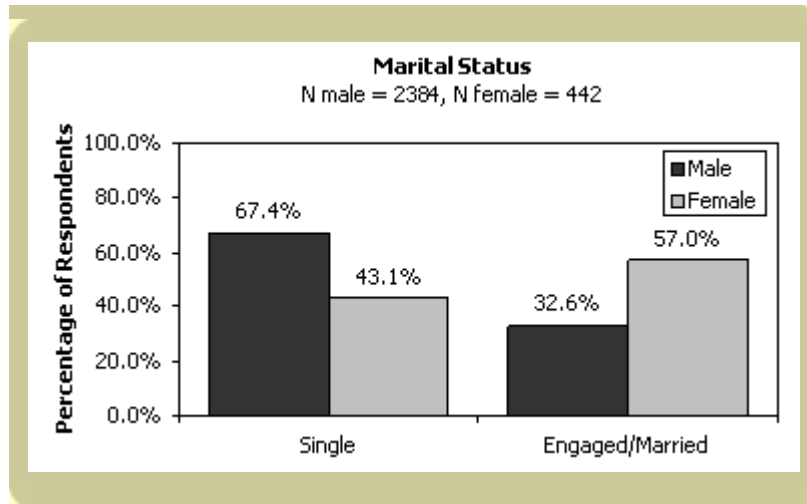
About 15% of respondents were female (N = 5547). This ranged from 8% to 18% depending on the game. The average age was 26.6 (N = 5509, SD = 9.19). The lower and upper quartile for age were 19 and 32 respectively. In other words, only about 25% of MMORPG players are teenagers. An interesting finding was that female players are typically older than male players.



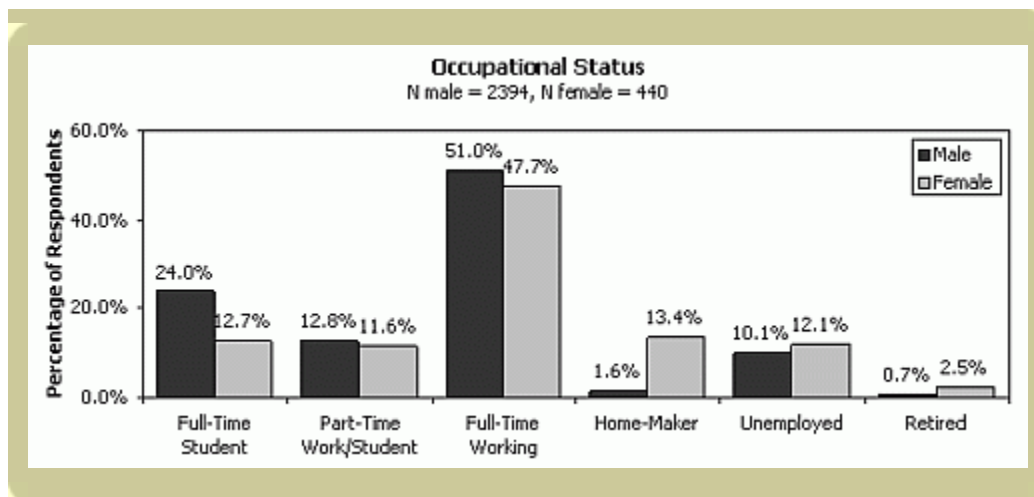
This is likely due to the different means of entry into the game. Female players are much more likely than male players to have been introduced to the game by a romantic partner. Because engaged and married couples tend to be older than single men and women, this skews the age of female players higher.



Thus, while 36% of MMORPG players are married, there are significant gender differences. Again, this is probably due to the different means of entry into the game.

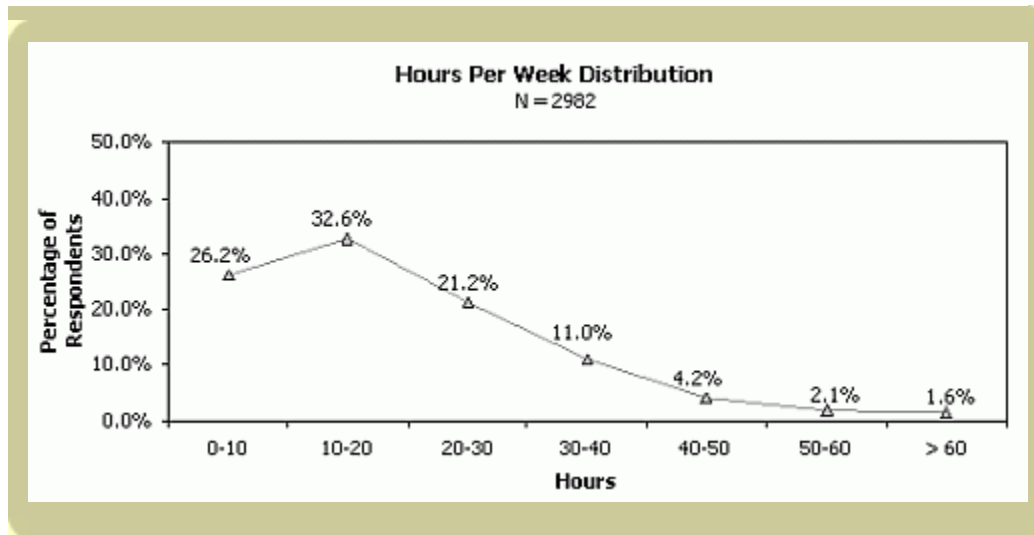


Overall, 50% of MMORPG players are working full-time, while 22% are full-time students, and 12% are part-time students/workers. The following chart highlights how MMORPGs are a very unique environment, in that you would almost never, in real life, find high-school students, housewives, retirees and early adult professionals together in any sort of collaborative decision-making task. And yet in MMORPGs, most ad-hoc combat or adventure groups are probably an interesting assortment of people from very different real-life roles and positions.



The prevalence of MMORPG players who also full-time workers makes it even more striking, in terms of the time the average player invests in the game. The average MMORPG player plays about 22 hours per week – a little over half a work week. About

61% of players have spent at least 10 hours continuously in an MMORPG (N = 3445). This finding is even more surprising given that there is no correlation between age and hours played per week ($r = -.04$). In other words, the appeal of MMORPGs is comparable for both a high-school student and middle-aged professionals.



Also of interest are players who play with a romantic partner or with a family member. About 16% of male players ($n = 1589$) and 60% of female players ($n = 311$) play with a romantic partner, while 26% of male players and 40% of female players play with a family member.

But the above demographic data does raise questions about why players become so invested in these environments, and whether most players are playing for the same reason, or whether they are playing for very different reasons that map onto gender and age.

Motivations For Playing

Understanding MMORPG players is fundamentally about understanding why they are playing the game. While [Bartle's Types](#) are well-known, the model's lack of empirical grounding is a significant weakness. For example, Bartle postulates two axes and four resulting player types (8 altogether in his newer model), but unfortunately, it is not clear that reality divides up neatly, simply just because we postulate that it does. Thus, while it seems intuitive that members of raid-oriented guilds are both Achievers and Socializers (as opposed to Achievers who are loners and avoid belonging to guilds), these two types are on opposite quadrants in Bartle's model. And if the axes denote different modes of relating to the game environment, then it is not clear how this could be possible, or whether these axes are indeed meaningful.

A resulting problem is that a reliable assessment tool cannot exist without a reliable model of player types, and without reliable ways of understanding who is a Socializer and who is not a Socializer, a model doesn't offer much guidance. For example, Socializers are proposed to enjoy role-playing and chatting. But what if these two components are not actually correlated? In other words, Bartle's Test (not created by Bartle) might simply be creating the appearance of types instead of measuring them because the test bases categories on false dichotomies and associations.

In fact, Bartle's sub-division of the existing types into 8 types merely exposes the weakness of this paradigm of categorizing players. There is no reason why people would fall naturally into 4, 8 or even 16 buckets, and there is no reason why someone should be excluded from the Achiever bucket just because they fall into the Socializer bucket. After all, just because someone likes to play the piano doesn't automatically mean they don't like water polo. Instead, it makes more sense that a player could score high or low on some set of primary motivations, and that their score on any one motivation doesn't constrain their other scores in any way. This is the paradigm that the following work is based on.

Instead of starting with an a priori framework, several survey phases were focused on developing an empirical model of player motivations. A list of possible reasons players might be motivated was generated based on existing models, such as Bartle's Types, or anecdotal information from previous surveys. Example statements included:

- 1) How much do you enjoy helping other players?
- 2) How often do you make up stories and histories for your characters?
- 3) How important is it to you to level up your character as fast as possible?
- 4) How much do you enjoy competing with other players?

Respondents then indicated their answer to each of these statements on a construct-specific 5-point scale². A factor analysis³ was then performed on this data to separate the statements into clusters where items within each cluster were as highly correlated as possible while clusters themselves were as uncorrelated as possible. This methodology achieved three goals:

- 1) Ensured that components of each motivation were indeed related.
- 2) Ensured that different motivations were indeed different.
- 3) Provided a way to assess these motivations.

The factor analysis produced 6 factors (clusters of statements). All the factors have a reliability of above .70 – the threshold commonly used in psychometric assessments.

Achievement (Reliability = .78)

How important is it to you to level up your character as fast as possible?

How important is it to you to acquire rare items that most players will never have?

How important is it to you to become powerful?

How important is it to you to accumulate resources, items or money?

Casual Socializer / Chat (Reliability = .78)

How much do you enjoy helping other players?

How much do you enjoy getting to know other players?

How much do you enjoy chatting with other players?

How much do you enjoy being part of a friendly, casual guild?

How often do you find yourself having meaningful conversations with other players?

Immersion / Role-Playing (Reliability = .75)

How important is it to you to be immersed in a fantasy world?

How much do you enjoy trying out new roles and personalities with your characters?

How often do you make up stories and histories for your characters?

How often do you role-play your character?

Serious Socializer / Relationship (Reliability = .79)

How often do you find yourself having meaningful conversations with other players?

How often do you talk to your online friends about your personal issues?

How often have your online friends offered you support when you had a real life problem?

Competition / Grief (Reliability = .75)

How much do you enjoy competing with other players?

How much do you enjoy dominating/killing other players?

How much do you enjoy doing things to make other players angry?

How often do you purposefully try to annoy other players?

Escapism (Reliability = .72)

How important is it to you that the game allows you to escape from the real world?

How often do you play so you can avoid thinking about some of your real-life problems or worries?

Several differences that emerged in contrast with Bartle's Types are worth mentioning. First of all, role-playing was found to not correlate highly with chatting or relationship formation and appeared to be a motivation on its own. Secondly, an Explorer motivation did not emerge. The following statements were potential candidates for an Explorer motivation:

Explorer (Reliability = .38)

Knowing as much about the game mechanics and rules as possible.

Exploring every map or zone in the world.

Having a self-sufficient character.

Earlier attempts had also included these statements:

- I like to think about class-balancing issues.
- I try out a lot of things to experiment with the game mechanics.
- I try to find bugs I can exploit.
- What fascinates me is finding out how stuff works in the game.
- I like numbers, charts and tables.

None of these statements were found to be highly correlated, however, the Achievement factor is correlated with the "mechanics" statement ($r = .46$) and the "self-sufficiency" statement ($r = .29$). So perhaps the motivation to Explore is a means to Achievement instead of being a motivation in its own right. Thus, perhaps all Explorers are in fact Achievers, or a motivation unique to game developers who have an external reason to understand a game's mechanics.

With the factors mapped out, it becomes possible to explore how the motivations differ by gender and how they correlate with age and hours played per week. The factor scores for each respondent were derived using a regression method. All gender differences noted below are significant at $p < .001$ in a t-test. For brevity, only the direction and effect size of each difference is noted.

Gender and Age Differences in Motivations and Correlations with Hours Played Per Week (N male = 2496, N female = 420)				
	Gender Differences	r*	Age Correlation Coefficients	Hours Correlation Coefficients
Achievement	Male > Female	.26	-.30	.16
Casual Socializing	Female > Male	.10	-.10	--
Immersion / RP	--	--	--	--
Serious Socializing	Female > Male	.26	--	.12
Competition / Grief	Male > Female	.19	-.34	--
Escapism	--	--	--	.12

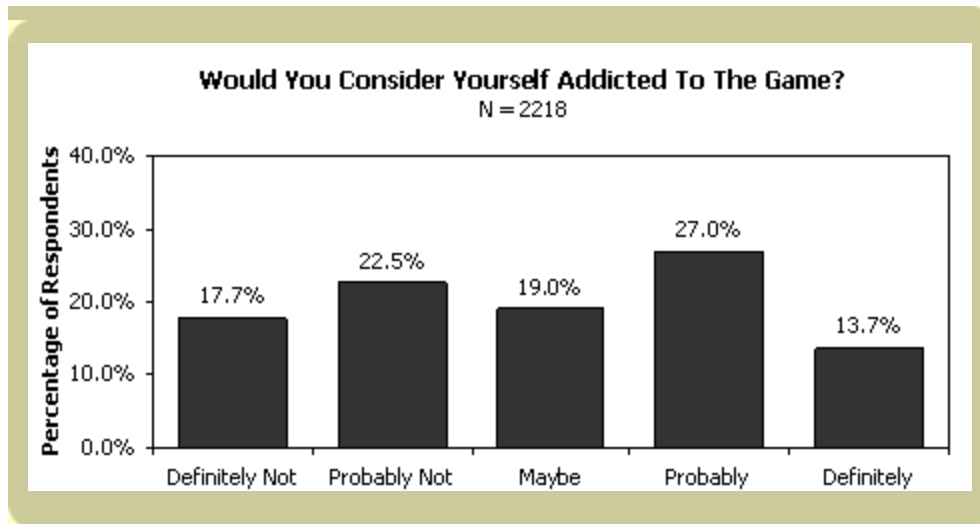
Note. All reported gender differences, and age and hours correlations are significant at the $p < .001$ level. r is a measure of the effect size of the gender differences, and thus an approximation of how much the overall difference can be explained by gender alone.

As expected, male players scored higher on the Achievement and Competition factors, while female players scored higher on the two Socializing factors. The gender differences in the Achievement and Serious Socializing factors were most salient. There were no gender differences with regards to the Immersion and Escapism factors. Age was negatively correlated with the Achievement, Casual Socializing, and Competition factors. In other words, older players tended to score lower on these factors than younger players.

Hours of play per week were most correlated with the Achievement, Serious Socializing and Escapism factors. The difference in hours of play between the top and bottom quintiles of the Achievement factor is 6.5 hours, and 5 hours between the top and bottom quintiles of both the Serious Socializing and Escapism factors.

While one might have imagined that scoring high on any factor would lead to higher time investment in the game, this is not the case. The data implies that there are 3 specific playing behaviors that lead to heavy usage. First are players who are hooked on getting to the next level or better gear. Many of these players are probably actually hooked onto the behavioral conditioning of MMORPG design⁴. Second, there are players who are deeply embedded into social networks in their community. They spend a lot of time in the game because this is where their friends are. And finally, there are players who spend time in the game to avoid dealing with issues in their real life. For some of them, the "push" of avoiding the real world may be stronger than the "pull" of entering a fantasy world.

This becomes more interesting when respondents were asked whether they would consider themselves addicted to the game.



Of particular interest is how motivation scores relate to self-report of feeling addicted to the game. Only the Achievement and Escapism correlated with self-report of addiction ($r = .25$ for both). In other words, even though Achievement, Serious Socializing, and Escapism all lead to higher hours of play per week, only those who scored high on Achievement and Escapism would label themselves as being addicted. This finding puts into focus how there is no one single reason why obsessive play patterns occur, but also that there are intrinsic (behavioral conditioning) and extrinsic reasons (escapism) that lead to problematic usage⁵.

Further findings with regard to these motivation factors will be included in some of the following sections, as in-game preferences and rates of attrition are discussed.

Appeal of Game Elements

The following section is devoted to how gender and age are related to the appeal of specific game elements. Respondents were asked to rate the importance of the following game elements on an 8-point scale:

- A good combat system
- A good crafting system
- Varied and interesting landscape
- Varied and interesting quests
- Highly customizable character creation

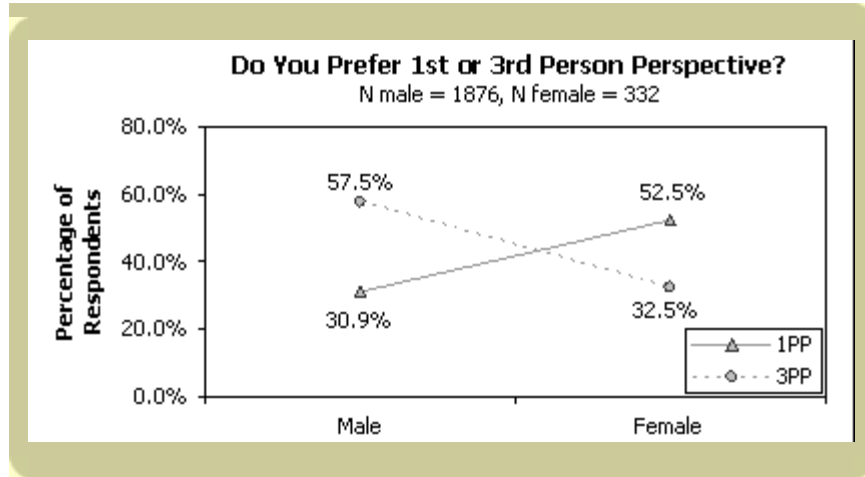
The following table summarizes gender and age differences. The percentages shown are percentages of players who ranked that element in the 2 highest points on the 8-point scale. The range shows the two percentages of the 12-18 age group and the over 35 age group to give a rough sense of how strong the trend is.

Appeal of Game Elements (N = 2639)				
	Male		Female	
	(N = 2329)	% range	(N = 310)	% range
Character Creation	Lowers with Age	71 -> 53	Lowers with Age	85 -> 67
Combat System	Lowers with Age	67 -> 51	Stable	40 -> 43
Crafting System	Stable	38 -> 40	Increases with Age	22 -> 51
Landscape	Stable	54 -> 51	Lowers with Age	70 -> 52
Quests	Stable	58 -> 58	Increases with Age	52 -> 65

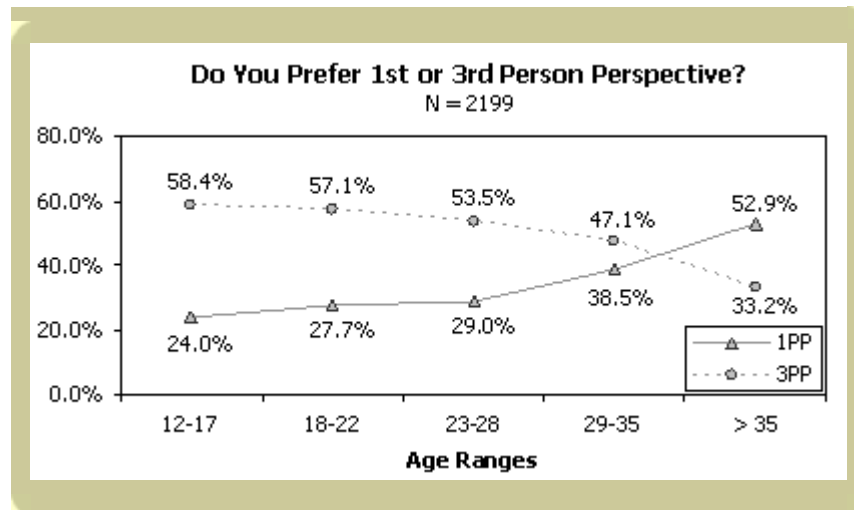
For both male and female players, the appeal of character customization decreases significantly with age. The appeal of the combat system decreases with age for male players, and remains stable and low for female players. Crafting systems have stable and moderate appeal for male players, while for female players, their appeal increases significantly with age. Interesting landscapes hold most appeal for young female players and decline with age, while they hold stable and moderate appeal for male players. And finally, quest systems have stable and moderate appeal for male players while they increase in appeal with age for female players.

It's a Matter of Perspective

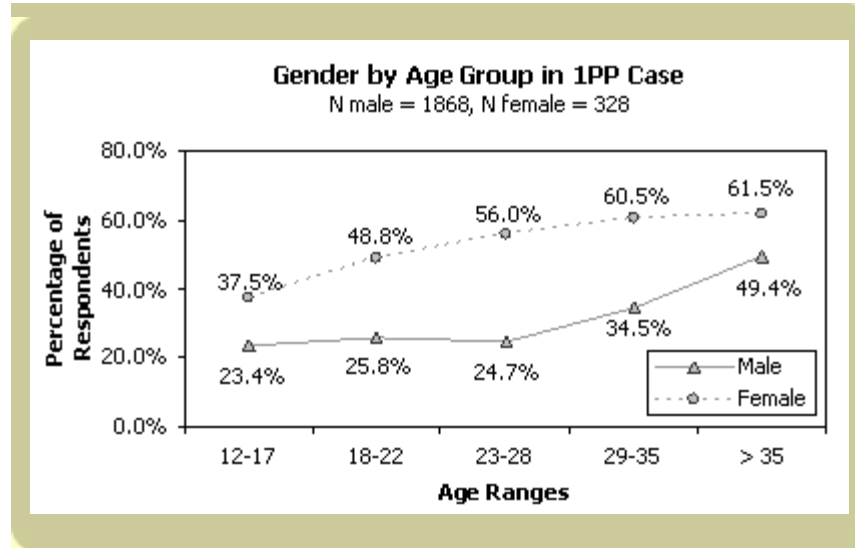
There were also interesting findings with regards to preference for first person perspective (1PP) and third person perspective (3PP). Respondents were asked to indicate which they preferred or had no preference. For clarity, those respondents who held no preference are excluded from the charts in this section.



While there were differences between games (i.e. more *EQ* players preferred 1PP, and more *DAOC* players preferred 3PP), the gender difference was always present in every game. Exploring the data by age groups also revealed a similar pattern.



Because female players tend to be older than male players, it is possible that the above two graphs may be showing the same underlying factor. To show that age and gender are in fact impacting preference for perspective independently, the 1PP case is shown below split by gender and age groups. Women always prefer 1PP across all age groups.



Past data had suggested that gender differences are driven by different motivations for participation. In very broad strokes, female players are more drawn to relationship-oriented activities, while male players are more drawn to achievement-oriented activities⁶.

The perception and use of an avatar – as the primary means of agency in online environments – might be expected to be shaped by the motivations for participating in the environment. In particular, goal-oriented users may be more likely to treat avatars as tools/pawns to achieve goals, thereby encouraging a preference for 3PP that objectifies and externalizes the avatar. In contrast, relationship-oriented users may be more likely to treat avatars as representations of themselves in a social environment, thereby encouraging identification and treating the avatar as the self through 1PP. This would also be supported by the age differences, given that younger players tend to be more achievement-driven. In other words, I argue that more fundamental motivational differences are driving the gender and age differences.

To test this line of reasoning more directly, users who preferred 1PP vs. 3PP were compared on their motivations for playing. Users who preferred 3PP scored higher on Achievement ($t = 5.5, p < .001$) and Competition ($t = 8.5, p < .001$), and lower on Serious Socializing ($t = -8.0, p < .001$) than users who preferred 1PP, which supports the hypothesis.

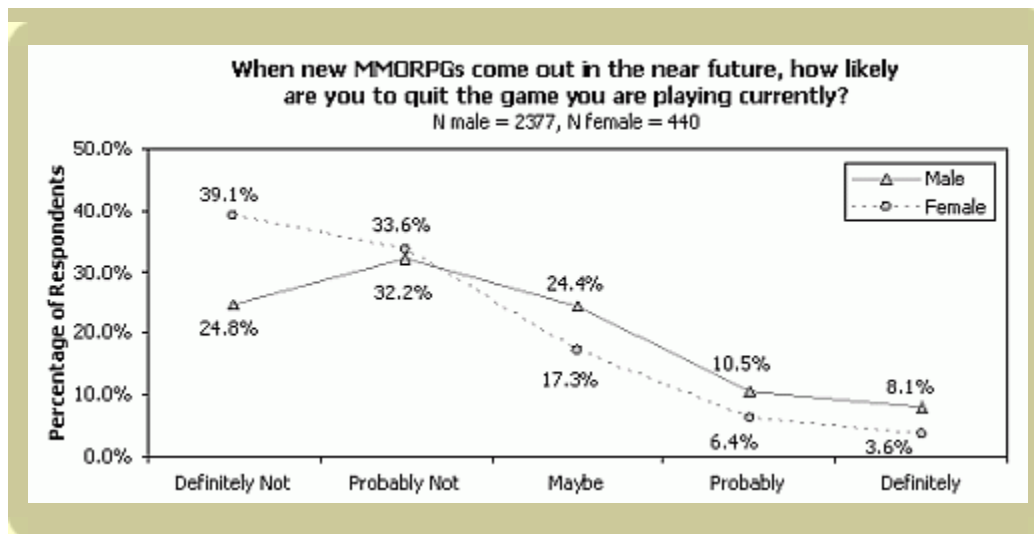
To tease apart the relative importance of age, gender and the motivations, a logistic regression was performed using 1PP/3PP as the categorical predicted variable. The Serious Socializing motivation emerged as the most significant predictor ($t = 7.7, p < .001$), followed by age ($t = 6.2, p < .001$), Grief ($t = -5.0, p < .001$) and then gender ($t = 2.38, p = .002$).

Thus, it appears that the observed gender difference is being driven by underlying motivational differences, between users who play to form and sustain relationships and users who objectify the environment and other users for personal gain. In either way, what is clear is that motivational differences are linked with preferences for perspectives in these environments.

While causality can't be directly inferred from this data set, the opposite claim that default (or fixed) perspective shapes motivations for playing doesn't easily explain the observed gender differences.

Fatigue and Attrition

One stable finding has been that female players are more loyal to MMORPGs than male players.



In a more detailed analysis, the following survey questions were used to explore player fatigue:

- 1) Are you bored with the game?
- 2) How likely are you to quit the game in the next month?

For both, the response choices were 5 points on a unipolar scale. The correlation between the two responses was .69 ($p < .001$). The two were summed to create a player fatigue index for each respondent. Male players ($M = 4.20$, $SD = 2.01$) scored significantly higher on this index than female players ($M = 3.60$, $SD = 1.85$), $t(2348) = 5.18$, $p < .001$. Younger players scored higher than older players ($r = -.14$, $p < .001$). In other words, younger and male players have higher rates of attrition than older and female players.

Because female players tend to be older than male players, an ANCOVA was performed, controlling for age, to make sure that the age difference wasn't driving the gender difference. The ANCOVA showed that gender was significant independent of age, $F(1,2330) = 14.2, p < .001$.

Correlations with motivation factors were mild. Fatigue is negatively correlated with Casual Socialization ($r = -.14$) and Serious Socialization ($r = -.09$), and positively correlated with Competition ($r = .07$) and Achievement ($r = .05$). In other words, game loyalty is largely the side-effect of loyalty to social networks in the community.

Conclusion

Players are not all the same, and understanding how they are different allows better estimations of how a particular game design will attract a particular player base, and how altering an existing game design may cause different rates of attrition among different segments of the player base. Gender and age influence how players enter the market, why they play, what matters the most to them in the game, and also how quickly they get bored with a game. But it goes both ways, specific game mechanics and designs attract a specific segment of the demographic.

Understanding how basic demographic attributes interface with motivations for playing and in-game preferences prompts us to wonder whether personality attributes may provide another interesting perspective. For example, do introverts want different things out of a game than extroverts? Do they have different play-styles? In fact, the reverse question is even more intriguing – if we had extensive logs of preferences and decisions that a player made in the game, given suitable permission from them, could we perform detailed and unobtrusive personality assessments of individual players? What can avatars tell us about the people behind the digital mask?

Notes

1. The basic demographics of MMORPG players provided in this article are a summary of data presented in: Yee, N. The Demographics, Motivations and Derived Experiences of Users of Massively Multi-User Online Graphical Environments (Under review).
2. Research in survey methodology has shown that construct-specificity improves inventory reliability, and that 5-point scales provide best reliability for unipolar scales.
3. A principal component analysis using an oblique Promax rotation was used. All factors had eigenvalues greater than 1.
4. For a more elaborate discussion of behavioral conditioning in MMORPGs, refer to: <http://www.nickyee.com/eqt/skinner.html>
5. For a more elaborate discussion of a model of addiction that accounts for intrinsic and extrinsic reasons, refer to: <http://www.nickyee.com/hub/addiction/home.html>
6. See <http://www.nickyee.com/eqt/menwomen.html> for more elaborate discussion of this trend.