If You Build It They Might Stay: Retention Mechanisms in World of Warcraft

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ABSTRACT
We analyze mechanisms of player retention and commitment in massively multiplayer online games. Our ground assumptions on player retention are based on a marketing model of customer retention and commitment. To measure the influence of gameplay, in-game sociality, and real-life status on player commitment, we use the following metrics: weekly play time, stop rate and number of years respondents have been playing the game. The cross-cultural sample is composed of 2865 World of Warcraft players from North-America, Europe, Taiwan, and Hong-Kong who completed an online questionnaire. We differentiate players in terms of demographic categories including age, region, gender and marital status.

Categories and Subject Descriptors
H.5.1 [**Multimedia Information Systems**]: Artificial, augmented and virtual realities

General Terms
Design, Human Factors.

Keywords
Games, MMO, World of Warcraft, retention, game design, demographics

1. INTRODUCTION
"If you build it, he will come". This line from the movie Field of Dreams, slightly altered, became a mainstay of pop culture wisdom: "If you build it, they will come". The video game industry has its own version: If you build a game, someone will try it [2, 17].

They may come but will they stay? This paper examines player retention in MMOs (Massively Multiplayer Online Games) in which the goal is not so much to have as many consumers buying the game as possible but to have them playing the game as long as possible. As a comparison, both the MMO World of Warcraft (WoW) and the blockbuster console game Call of Duty: Modern Warfare 2 sold 12 million units [30]. But in addition to the initial sale, WoW has been generating tens of millions of dollars every month for more than six years in subscription and prepaid card revenue.

In 2009 and 2010, several major MMOs such as Lord of the Rings Online, Dungeons and Dragons Online, and Champions Online switched or announced they would switch from a "pay-to-play" monthly subscription-based business model to "free-to-play." Free-to-play MMOs generally offer a microtransaction shop where players can buy virtual goods for real money. Microtransactions brought $230,000 per month to the MMO Puzzle Pirates. Although only 10% of its free-to-play players bought anything, the average revenue for each of those paying users was $50 per month [18], more than three times the WoW monthly subscription fee. Pay-to-play and free-to-play business models can be successful because players are involved and stay in the game, generating profit over time. Moreover, MMOs require a lot of simultaneous players to provide challenging and enjoyable player experiences [10]. Hence, there is a particular interest in knowing which mechanisms encourage players to stay in the game.

There has been limited research related to online game retention. Feng et al. analyzed the EVE Online player population to predict server load [13]. They noted that when the game opened, 30% of the players left within a month, and 70% left within a year and a half. Moreover, the retention rate for new players decreased over time: after two years, the rate of newcomers leaving within a month increased to 75%. Other research has suggested that online games such as The Sims Online could "keep player retention high" if Maxis, the game company behind The Sims, could perpetually "implement new features and alter the game in response to customers' playing habits" [9]. Kuo et al. compared two Taiwanese social games [20]. For a particular player, their simple and straightforward retention metric was how many interactions the player had had with other players. Retention is a key concept of online communities in general, and it is of particular interest for community management. Business scholars have found that the relationship between satisfaction and retention is based on three factors: the customer's perception of quality (i.e., being able to compare the product to the competition and having customer standards), trust, and commitment [16]. This model is shown in Figure 1.

Conference'10, Month 1–2, 2010, City, State, Country.

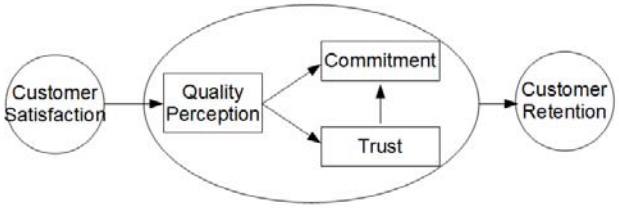

Figure 1: A conceptual model of the satisfaction–retention relationship (adapted from Hennig-Thurau and Klee, 1997)

As far as the MMO player's perception of quality is concerned, and according to expert MMO game designers, WoW set the MMO genre standards in polishing those previously defined in DIKU-MUDs. WoW also opened the MMO genre to more casual crowds [15, 24]. To our knowledge, no academic study has looked at how players perceive the quality of an MMO. Player trust in the context of online games and their website has received little attention [14]. Commitment is the portion of retention we focus on in this paper. Previous works have studied the level of commitment of players toward their guild [11, 28] but not towards the game as a whole. We also detail differences of player commitment in terms of age, gender and region.

We briefly describe the quantitative methods we used to collect player data as well as the retention metrics we propose. We detail and discuss how player motivations, in-game sociality and real-life connections influence commitment among various player demographics. The study limitations and future work are followed by a conclusion.

2. METHODS

2865 WoW players completed an online survey between March and May 2010. Links to the survey were posted on gaming websites in Taiwan, Hong Kong, and the US. Although the survey linked on English-speaking websites was not targeted to Europeans, some Europeans (4% of respondents) happened to complete the survey. 72% of respondents came from the US, 15% from Taiwan, and 9% from Hong-Kong. 31% of respondents were female, a higher rate than typically found in previous studies of MMOs (24% in [23], 20% in [31], 14% in [32]). We do not think our data are biased in this regard since current research suggests that 42% of online gamers are female [12] and the studies mentioned above show a consistently increasing proportion of female respondents. We utilized several metrics to measure player retention, specifically 1) hours of play per week, 2) stop rate and 3) the length of time during which WoW has been played. Each of these metrics describes a particular dimension of player commitment. We believe our metrics are a first step towards a more comprehensive model of player commitment and retention in MMOs.

Hours per week (H/w, or weekly play time) are one measure of commitment to the game. In our case, the weekly play time was observed when the survey was conducted. Although we cannot use it to draw conclusions about long-term player churn, it is the most straightforward measure of player commitment at a given point in time.

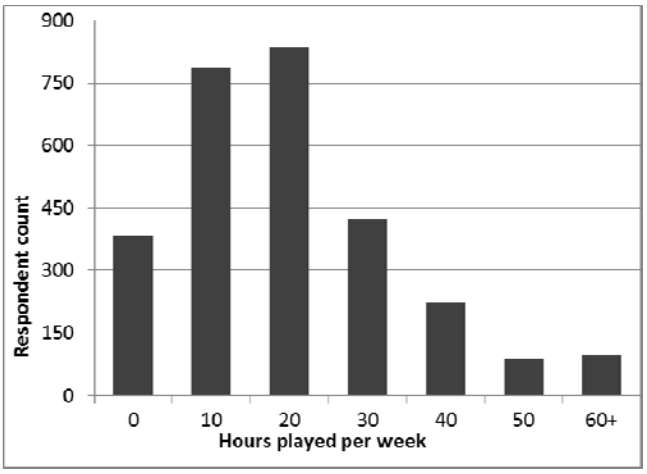

Figure 2: Distribution of Hours Played per Week over all respondents

The distribution of weekly play time is skewed to the right (see Figure 2). Previous work on EverQuest and Dark Age of Camelot players recorded similar distributions [28].

The **stop rate** is the ratio of respondents who have discontinued playing WoW and then returned to the game. Players are said to have "stopped" if they stopped playing for an interval of time and then came back, or if they cancelled their subscription and then reactivated it. Cable television and phone companies define "churn" as the monthly ratio of customers who stop using their product. In our study, the stop rate can be taken to suggest a long-term player churn. The overall stop rate for our sample was 77%. In other words, only 23% of respondents never stopped playing.

Our third major metric, **WoW years,** refers to how long respondents had been playing WoW as of Spring 2010 when the survey was conducted. At that time, WoW had been up and running for six years.

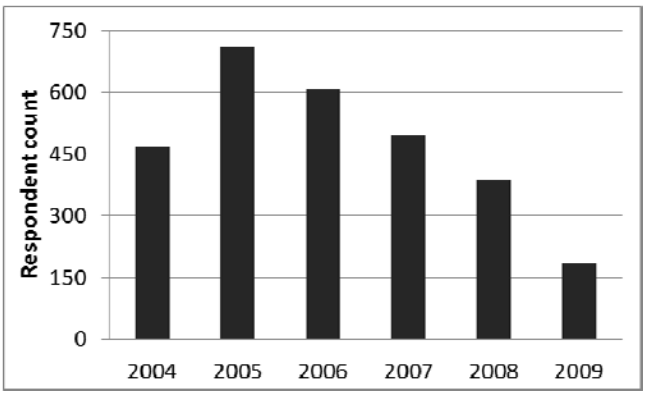

Figure 3: Distribution of dates of first playing WoW, over all respondents

96% of our respondents had been playing WoW for more than a year, and 70% for more than three years. These numbers are

consistent with recent findings of 94% and 65%, respectively [23].

In the section below, results described as significant have a p value lower than 0.01, unless otherwise specified.

3. FINDINGS

3.1 Overall statistics

As shown in Figure 4, 35% of respondents stopped playing for at least a month, 26% for at least six months and 14% for at least a year. A one-sided t-test showed that the 25% who never stopped playing started playing WoW more recently (2.9 versus 3.7 years).

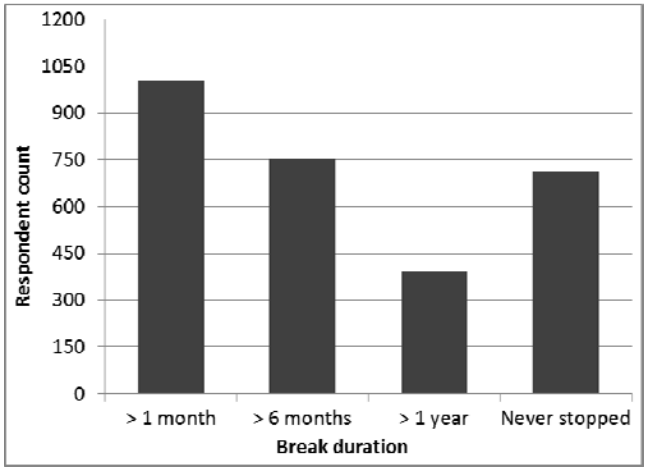

Figure 4: Distribution of the break duration over all respondents

We observed overall cultural differences between Asian and Western players. Asians played four more hours per week on average, yet they were more likely to stop. Asian and Western players started playing WoW around the same time[1]. Table 1 compares Asian and Western players in terms of retention metrics. Looking at gender, another one-sided t-test indicated females were not playing significantly more per week than males, yet they were less likely to stop. Female players also started playing WoW slightly later than males, as seen in Table 1.

Table 1: Differences between Asian and Western players, and between female and male players

	H/w	Stop rate	WoW years
Western players	22 (13.3)	75%	3.6
Asian players	26 (19.1)	85%	3.4
Females	23	68%	3.4
Males	23	81%	3.6

[1] Although WoW launched in the US three months before Europe, six months before China and a year before Hong-Kong and Taiwan.

WoW players can subscribe for one, three, or six months at a time. When the subscription runs out, the account is said to be inactive; it becomes inaccessible until the player pays for more. Because it is easy to forget about renewing the subscription, players can choose a recurring subscription. When they want to stop, they can cancel their subscription.

Stopping playing for six months or a year was common: 40% of respondents had stopped for six months or a year and then returned to the game. Among those 40%, 57% (i.e. 23% of the entire sample) did not cancel their recurring subscription. In other words, 23% of players were paying but not playing for six months or even a year! Players may know that their accounts stay in Blizzard's databases "indefinitely", even if they do not pay [6]. Hence it is very surprising that a quarter of respondents kept their subscription active.

3.2 Player motivations

Not all players want the same thing out of the game. A first distinction can be made between so-called "casual" and "hardcore" players: arguably, casual players may want an easier game, while hardcore players look for more and more efficient strategies to beat the game [29].

Table 2: Differences between casual and hardcore players

	H/w	Stop rate	WoW years
Casual	17	83%	3.4
In-between	24	76%	3.6
Hardcore	32	67%	3.7

In our survey, we asked players how "hardcore" they considered themselves. 29% considered themselves "casual", 8% "hardcore", and 63% "in-between". Hardcore players were less likely to stop than in-between players, who were themselves less likely to stop than casual players, $c^2(2, 2854) = 6.73$ (see Table 2). Moreover, labeling oneself a hardcore gamer was weakly yet significantly positively correlated with weekly play time, $r(2828) = .19$.

We also went deeper than this simple and subjective distinction and looked at player's motivations as described in Yee's player motivation model. Yee's model is composed of three factors: achievement, sociality and immersion [33]. Yee's model summarizes several years of aggregated data measuring player motivations in online games. Players have to rate from 1 (low) to 5 (high) the importance of 15 game elements including "leveling up" (associated with achievement in Yee's model), "being part of a guild" (sociality), and "learning about the lore" (immersion). The score for each motivational factor is the average of the player ratings for all the game elements related to this particular factor.

We categorized respondents based on their three motivation scores and averaged the weekly play time for each category. Figure 5 illustrates the relationship between these three motivation factors and weekly play time. To make the graph more readable, we binned each aggregated score in four categories ([1,2] for a score from 1 to 2,]2,3] for 2 to 3, and so on).

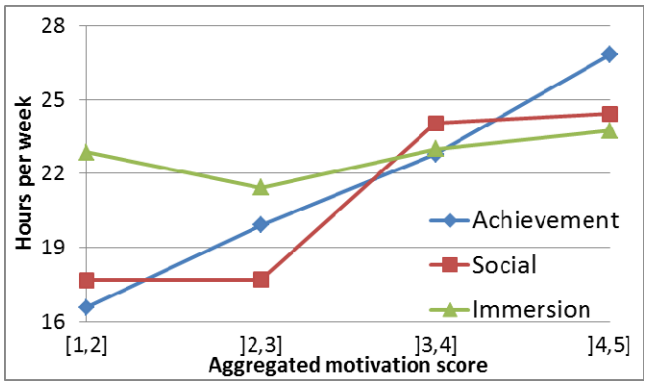

Figure 5: Average weekly play time against the three binned aggregated motivation scores

Achievement and weekly play time were weakly correlated, r(2863)=.20. Achievement motivation differed by gender and region (see Table 3). We found males had a significantly higher motivation score for achievement. Williams et al. reached the same conclusion in their study of gender in online games [31]. However, males also had a slightly higher social motivation score than females. This result differs from the observations made by Williams et al. In terms of regional differences, Asian players tended to be more dedicated than Western players in terms of weekly play time. The average achievement motivation score weakly yet significantly confirmed this trend (see Table 3). Interestingly, the average immersion motivation score for Asian players was significantly much higher than for Western players. Further work might be needed to explain in more detail which motivation factors work best for various demographic categories.

Table 3: Motivation scores between demographics

	Achiev. score	Social score	Immers. score
Males	3.6	3.7	3.3
Females	3.2	3.6	3.5
Westerners	3.5	3.7	3.3
Asians	3.7	3.5	4.0

3.3 Guilds

Looking at our metrics against the motivation scores, we found that on average, the social motivation factor had a positive influence on the weekly play time and the number of years playing WoW. Players who showed a high social motivation component played, on average, for more years and longer per week (see Figure 5). However, the more socially-motivated players were also more likely to stop. Further research is needed to explain this finding, but maybe socially-motivated players move to other MMOs when their in-game friends move, or maybe they are raiders who stop when they have consumed all the raid content of an expansion. Other motivation factors such as achievement or immersion did not influence the stop rate or the number of years playing WoW as much as the social motivation factor did. In WoW, the guild is the primary in-game player structure for sociality [21]. Moreover, most end-game achievements require a cohesive group of players, and guilds are the only player structure to provide such a group. Hence guilds are of particular interest for player commitment and retention. In the rest of this section, we analyze how guild characteristics influence our commitment metrics.

Previous studies showed that players in guild spent more time per week in the game [11, 28]. In our sample, we go beyond a simple in-guild/not-in-guild dichotomy and take into account the guild position of our respondents' main character. Only 10% of our total sample did not belong to a guild. 55% were basic guild members and 35% were guild officers or guild masters. A one-way ANOVA using guild position as the independent variable and weekly play time as the dependent variable indicated that a higher guild rank led to spending significantly more time per week in the game, F(2,2826) = 12.90. Another ANOVA showed that players with more guild responsibilities had been playing WoW slightly longer than basic guild members, who themselves were playing slightly longer than players whose main character was not in a guild, F(2,2840)=10.88.

Table 4: Differences between guild positions

	H/w	Stop rate	WoW years
Not in a guild	19	88%	3.4
Guild member	22	79%	3.5
Officer + GM	24	71%	3.7

While 71% of guild masters and officers had stopped, 79% of basic guild members and 88% of players whose main character was not in a guild had stopped. The stop rate decreased significantly as players' guild rank increased, $c^2(2, 2852) = 9.27$. This result is of primary importance as guilds are group structures that can be used by players for very different reasons: achievement as well as sociality.

3.4 Connections to real-life

Players often play WoW with people they know in "real-life" (RL), that is, outside the game. These people can be their significant other, friends, or family members. 75% of respondents played with someone they knew in RL. Considering our sample as a whole, playing with someone known in RL did not significantly increase or decrease the weekly play time, stop rate, or number of years playing WoW. Distinguishing by gender, we found that compared to males, females played with people they know in RL significantly more: 81% of females against 72% of males. Retention metrics did not vary by gender. Looking at regions, Asian respondents played significantly more (5 hours per week) if they were playing with someone they knew in RL. We did not find any impact on commitment metrics for our Western sample. In other words, gender and region do not seem to statistically influence commitment regarding playing with someone known in RL.

3.4.1 Real-life friends made in the game

We asked our respondents: **"**While playing WoW, have you ever met someone who became a real life friend?" 54% said they had. These 54% played significantly more per week than those who

never made RL friends from the game (see Table 5). They also had started playing WoW significantly earlier. These findings are not surprising, as meeting other players and making friends takes time. Surprisingly, the stop rate did not significantly differ between categories. Further research is needed to explain this phenomenon.

Table 5: Real-Life friends from the game

	H/w	Stop rate	WoW years
Made RL friends	24	78%	3.9
Did not make RL friends	21	76%	3.2

Female respondents reported having made RL friends from the game significantly more often than males did:61% of females versus 50% of males. Asian players reported significantly more often than Western players having made RL friends from the game: 58% for Asian players versus 52% for Western players.

Surprisingly, male players had a significantly higher social motivation score than female players: 3.74 for males versus 3.59 for females. Similarly, Western players were more socially eager than Asian players: 3.74 sociality motivation score for Westerners versus 3.50 for Asians. Further research is needed to explore these findings.

3.4.2 Finding a partner in the game

We also asked: "While playing WoW, I met someone who became a boyfriend/girlfriend and/or a spouse". 13% said they had. Respondents who met someone who became a RL partner played significantly more (see Table 6) and started playing WoW earlier than those who did not meet a RL partner in the game. Surprisingly and similarly to RL friends coming from the game, RL partners met in the game did not seem to decrease the stop rate.

Table 6: Real-Life partner from the game

	H/w	Stop rate	WoW years
Met RL partner IG	28	84%	4.0
Did not meet RL partner IG	22	76%	3.5

Female players were more likely to meet a RL partner in the game than males (20% of females versus 10% of males). Asian players reported having met a RL partner in the game more often than Western players: 18% of Asians versus 12% of Westerners.

3.4.3 Playing with your partner

Although some players managed to meet someone who became a real-life partner, some played with their existing real-life partner. We considered "partnered" respondents who reported their marital status was "engaged", "married", or "partnered", and those who reported playing with their spouse or boyfriend/girlfriend. 29% of our respondents were partnered and playing with their partner and 20% were partnered but did not play with their partner (see Table 7).

An ANOVA using the weekly play time as dependent variable showed that players who play with their partner played slightly less than single players, but four hours more than players not playing with their partner, $F(2,2831) = 29.00$. A Chi-square test showed they had a significantly lower stop rate than the other two categories of players, $c^2(2, 2848) = 6.94$. However, the number of years spent playing WoW did not strongly differ between the three player categories. These findings reveal an interesting player segment to target to increase player commitment: those who are partnered.

Table 7: Playing with real-life partner

	H/w	Stop rate	WoW years
Single or divorced players	24	81%	3.7
Plays with partner	23	71%	3.6
Does not play with partner	19	75%	3.8

3.5 Age, employment status and children

Players of different age and employment status reported noticeably different commitment metrics.

Age: In our sample, 166 respondents were over 45, and among them, 159 were Americans, so we only focus our analysis on the American players older than 45 (8% of the American player population). Although 8% is a small proportion, the senior player category is of particular interest in game studies, as 26% of Americans over 50 years old play video games [12] and senior gamers (and women in particular), are motivated to play online games in part because of their social aspect [22, 27]. Hence we think the ratio of senior gamers in MMOs is likely to increase as the average MMO player slowly ages and MMOs integrate more and more social components.

In terms of weekly play time or for how long they had been playing WoW, there was no significant difference between senior and non-senior American players. However senior players had a significantly lower stop rate than non-senior players: 53% for seniors against 76% for non-seniors. Figure 6 plots the weekly play time of respondents against their age. There were more American senior players (159 in the blue box) than players below age 45 playing more than 40 hours per week (125 in the green box). In other words, while game companies often focus on dedicated players who play many hours, an equally important demographic may be senior players. In our sample they occur in roughly equal numbers, and in addition, seniors play more consistently, with a lower stop rate. Consistent play may have important side effects such as continuing to recruit friends and family to play a game or to complete microtransactions. Further research is needed to study the senior demographic.

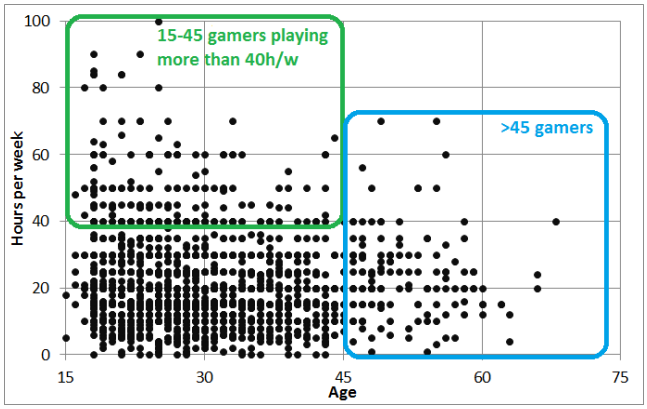

Figure 6: Weekly play time against age

Job Status: We also asked respondents their job status: full- or part-time, student, unemployed, home-maker or retired. We grouped the full-time, part-time and student respondents together into an "employed" category (88% of respondents) and home-makers, unemployed and retired into an "unemployed" category (12% of respondents). We hypothesized that if a player does not have a daily job, he or she has more time to play and will actually spend that time playing. No significant difference was found in terms of stop rate or numbers of years spent playing WoW. However, "unemployed" respondents reported playing significantly more per week (29 versus 22 hours per week), confirming our hypothesis.

Children: We asked players who had children if they played with them. 76% of respondents had no children, 5% played with their children and the rest had children but did not play with them.

Table 8: Playing with one's children

	H/w	Stop rate	WoW years	Age
Does not have children	23	100%	3.5	27
Plays with one's children	21	56%	3.7	42
Does not play with one's children	19	74%	3.9	36

An ANOVA with the weekly play time as dependent variable showed parents playing with their children played significantly longer per week than parents who did not play with their children, but less than players without children, $F(2, 2047) = 14.07$. The stop rate was significantly lower (56%) for respondents playing with their children compared to other categories, $c^2(2, 2242) = 5.19$. Respondents playing with their children were significantly older than other categories, $F(2, 2049) = 360.07$, confirming Nardi et al.'s findings that some parents use WoW as a way to communicate with their children [22].

4. DISCUSSION

Unsurprisingly, self-declared "hardcore" and achievement-oriented players reported a higher weekly play time and a lower stop rate. The hardcore 15 to 35 year-old gaming crowd has been well-studied by academia and our commitment metrics showed it remains a devoted player segment. However, some categories of more casual players, sometimes as substantial as the young hardcore gamers, have been neglected by both academia and industry. For instance, Pearce has been the only one so far to analyze the gaming practices of the "Baby Boomer" players [27]. Previous work has argued that both hardcore and casual player categories need to be involved and rewarded for an MMO to be successful [7]. We think senior gamers are a potent player segment to consider when designing the game.

Achievement has a predictable impact on weekly play time, confirming what has been mentioned repeatedly in works related to player motivation. More than a decade ago, Bartle's model of player types included achievers [3]. Several years later, MMOs were said to be "hard to play" and "[not] really mass market, yet rewards were targeted and received by the most perseverant achievers from a particular player niche" [2]. Nowadays, MMOs like WoW seem to have fully understood how to manipulate reward structures to leverage achievement. "Welfare epics", for instance, are considered consolation prizes for players unable to acquire decent-enough pieces of equipment [25]. Our data suggest that Asian players were more dedicated and achievement-oriented than Western players. As an illustration, the first WoW player to collect all achievements and "beat the game" (until Patch 3.2) was Taiwanese [8]. Asians were also earlier WoW adopters, certainly making them a very appealing market segment.

Players cannot accomplish the most difficult game contests alone, they have to gather in groups or guilds to collaborate. Pearce characterized a "community of play" as a group of players "shifting from playing for the game to playing for the people" through "intersubjective flow" [26, ch.8]. Nardi and Harris noticed a similar concept of collaborative play in which players evolved from being strangers to each other to being friends [22]. Visualizing guilds as communities of play or groups engaging in collaborative play helps us understand how achievement-oriented players can participate in guild activities, even if these activities do not immediately lead to making their avatar progress. Conversely, socially-motivated guild members end up engaging in the game activities crafted by game designers (e.g., raids, quests, or PvP). Previous studies of WoW have argued that learning is a key component of social play [1, 22]. Learning how to play one's character is the process that turns purely socially-motivated players into participants of activities crafted by game designers. Although players can collect information from forums and websites, a key way to learn remains in guilds. Ultimately, WoW guilds end up containing achievement-oriented players at least mildly interested in socializing and socially-motivated players participating in group-oriented game activities (in particular, raiding). Guilds increase player commitment because they add new play motivations for their members.

Focusing on the social motivation factor, female or Asian players seemed overall more socially-inclined than male or Western players. For instance, women or Asians reported having made strong RL connections (friends or even partners) from the game more often. Pace et al. remarked that players describe their intimacy experiences in WoW in two ways: detailed narratives called "episodes" and larger-scale descriptions called "histories" [23]. Histories require players to have played for months, maybe even years, to appear. We found that players who made RL friends and/or partners from the game started playing earlier and

played more per week. This indicates that intimacy histories, as well as friendships, are written as the player spends more time in the game. Although our data did not allow us to draw any cause-effect relationship between variables, there was a clear link between commitment metrics and the strength of the ties made in the game.

Pace et al. also found that intimacy in the context of online gaming was shared between the real world and the virtual world, not occurring purely in one or the other [23].With the introduction of the RealID service [5] in Summer 2010, and a first link with online social platforms like Facebook, Blizzard has taken a further step towards intertwining real and virtual. RealID is a utility that displays the real name of players instead of their online pseudonym. Certainly Blizzard may have understood that real life social networks can be leveraged to increase the retention of their games. Blizzard also implemented the Recruit-a-Friend feature to allow WoW players to invite friends or family members into the game [4]. When sponsoring friends through this system, each player's characters will get experience points three times faster, and the sponsored player will be able to grant 30 levels to the sponsoring player. Moreover, each player will be able to summon the other from any place in the game world. As 55% of respondents reported playing with a RL friend and 60% of partnered players reported playing with their partner, it seems Blizzard already knows that retention can be increased in integrating players' RL friends and partner into the game. However, only a quarter of North American WoW players with children reported playing with them. Integrating players' children or family members (other than partner) into the game might be a path still to explore for Blizzard to increase player retention.

Referrals can consist of inviting a real-life friend to the game, or just telling her about it. For referrals to happen, players have to be given incentives. In terms of in-game rewards, game companies should, at the first glance, reward the sponsoring player so that he does it again. But in rewarding both sponsoring and sponsored players, they can share in-game experiences together right away, and both might sponsor their other friends for more rewards. However, there may be some limitations to including RL contacts in the game. For instance, Williams et al. [31] found that when two partners played together, females were happier than males. Also, a psychology subscale was used to measure how much respondents' level of physical and verbal aggression was when they played. Males reported more aggressiveness when they were playing with their partner. This increase in aggressiveness might, in some cases, threaten a playful atmosphere, generate drama and degrade the game experience.

Designing an MMO taking into account all the findings discussed above may not be an easy task, but if you manage to build it, they may stay.

5. LIMITATIONS AND FUTURE WORK

Stopping playing: In the introduction, we mentioned a stop rate of 77% for our entire sample. Knowing why people stop playing is hard, and knowing why people come back to the game might be even harder. Expansion releases can be a first phenomenon to look at; people may not play so much before expansions, as they might have discovered most content or finished most dungeons. However, they return to the game after expansions have been released [19]. Our survey was conducted in Spring 2010, eight months before the release of Cataclysm, WoW's fourth expansion. Another survey conducted in March 2011 could be useful for determining whether players actually stop playing before expansion releases, and if they come back to the game after expansion releases.

Metrics: We have introduced three metrics to measure player commitment in WoW. Some of these metrics may not apply to other online games. For instance, counting the number of years playing an MMO that just came out does not make sense. In the case of children playing an MMO such as Club Penguin, parents may have more control over the player's accounts than the player herself. In this case, the weekly play time is not so much a measure of the player's will to play but rather how long the parents allow her to play. Also, some metrics can be linked to each other. For instance, a decreasing weekly play time over the months might predict a higher likelihood to leave the game. Repeated measurements of the weekly play time and the stop rate over a few months could help determine if such a link exists.

Sample bias: When a survey is circulated on a WoW website, in-game word of mouth can reach players who usually do not visit the website. Hence our sample might contain slightly more socially-inclined players than a random WoW player sample. A more certain bias of our sample was the region and countries of respondents. Many more players from American servers answered the questionnaire than Europeans. Hence, the average Western player mentioned in this study might more accurately describe the average American player. Further studies could shed light on the differences between European and North American players, and also between Chinese and other Asian players.

Access to the game: If one cannot afford to pay the monthly subscription fee or cannot afford a computer with a decent-enough graphics card to run the game, one is more likely to stop playing or migrate to a less resource-demanding MMO. Although our data do not contain any variable that could allow us to draw conclusions about access, it is very possible that some people must cancel their subscription because they cannot afford it or lack funds to replace equipment.

6. CONCLUSION

We studied player commitment and retention in World of Warcraft. Three metrics were introduced: weekly play time, stop rate, and how long respondents had been playing WoW. A quantitative analysis showed how WoW efficiently wielded powerful retention systems. The achievement and social play motivations seemed to be leveraged by WoW game designers, yet their impact differed between demographic categories (e.g., Asian versus Western, "hardcore" versus "casual", and male versus female players). Including friends, partners and family members from real-life into the game proved to be an especially good mechanism for player retention. A senior demographic of players aged 45+ is understudied. Our data show that they are of considerable interest to game designers and for academic study of gaming.

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