Understanding Video Gamer Engagement:

Why we play and continue to play.

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Videogames aren't just for kids anymore. Gone are the days when mom and dad would surprise Billy with a brand new Nintendo set on Christmas morning. Since the entrance of game consoles into the average American home, it's not only the game systems which have changed; it's the audience which they cater to that has seen the biggest transformation.   According to a study done by the Electronic Software Association (ESA) the average age of videogame players is now 35 years old, with a quarter of all gamers being 50 years of age or older. In a similar study performed by Popcap, researchers found that the average age of social (online) gamers is 48 years old in the United States. The results of these studies would indicate that we are seeing a progressive move toward older people playing games. This is very useful information for game developers and game marketers, as they can now target their games toward a seemingly much broader audience

A stereotype of videogame players, is that they are usually young boys who play them with their friends during sleep-over's, or especially college-aged men whose extracurricular activities involve performing keg stands and playing Madden or Halo for hours on end. Research by the ESA shows that the women over the age of 18 represent a significantly larger population of gamers (34 percent) than boys under the age of 17 (18 percent). This is in very sharp contrast to the accepted reality that videogames are the domain of adolescent or young men. In fact, 40 percent of all gamers are of the fairer sex. Sex also has an effect on the types of games we choose to play. Women represent 55 percent of the social gaming community, which would suggest that that the social aspect of the game is more engaging and more important to women than men. With regards to console games: In a story written by Ross Fadner for The Online Magazine for Media, Marketing and Advertising (OMMA) it was discovered that although 82 percent of games

are bought by or for men, only 57 percent of the console gaming audience is comprised of males. This would suggest that females are much more likely to play games on consoles than once thought, although the majority of console gamers are still men. In a similar study done by Byron Reeves and J. Leighton Read, they discovered that 33 percent of all video gamers are female. One interesting find they made is that 80 percent of people who play RPG's are males, and many of these players felt they could take the lessons learned in the games, into their real lives and real jobs. A person's education level also seems to have an impact on whether or not they choose to play videogames. According to the Popcap study, less than half of social gamers have four-year college degrees while about 40 percent of gamers have some level of college education. Only 15 percent of gamers indicated that they had completed some level of graduate work or more (up to PhD attainment) Taking this information at face value, it would indicate that the more educated a person is, the less likely they are to play videogames.

Before exploring video games and engagement, it is important we understand why we participate and engage in activities in general. This is not limited in scope to video games, but also includes why we read, play sports, and yes, play video games. In short, we have to examine the reasons for why we do.

There are several theories on why people participate in activities. Maslow, in his Hierarchy of Needs, suggests that the human subconscious consists of several levels of needs, ranging from physiological needs such as air and food, to self-actualization and intellectual needs. According to Maslow, no need can be met until all of the needs blow that level are satisfied. (Maslow, 1943). According to Parducci, pleasure is dimensional judgment which, like all other judgments, depends on their contexts of related

experiences. The pleasantness of any experience, real or imaginary, is determined by how it stacks up against other experience ordered by preference (Parducci, 1995). Vroom, in his Expectancy Theory, indicates that we participate in activities on the belief that a particular action will lead to an outcome, and that outcome will lead to another desired outcome (Vroom, 1964). Furthermore, Reiss discusses the 16 basic desires that he suggests motivate our behavior and define our personality. These desires include topics such as the desire for independence, curiosity, social contact, status, acceptance, and saving (Reiss, 2000).

As we can see, there are many theories and reasons people participate in activities, reasons they "do." But why do we do certain things? What reasons are there for participating in activities such as music and hobbies?

Hobbies are activities that are engaged in primarily for entertainment. We become engaged in hobbies because it's something that we as the individual likes to do, it can be anything from reading, collecting and even playing. The term "hobby" beginning in the 1920s and more rapidly through the 1930s was more of an ideological construct created to distinguish between "good" and "bad" pastimes, than a natural category of leisure activity (Gelber, 1991). We take the spare time that we have in our day to do something that we love to do, watch TV, go to the gym, etc... During the Great Depression, Hobbies expanded simply because people had more spare time on their hands, the unemployed and the underemployed had to do something on their time in which was devoted to work (Gelber,1991). Some hobbies are engaged in because they are a pleasant "break" from a

demanding career. It seems to be the norm that many people with demanding careers tend to pick up a relaxing hobby such as golf.

Music is another activity that can be considered engaging, both performing and creating music, and merely listening and enjoying music. Music and learning share an intimate relationship (Lewis). Research has been devoted to the effect of music on learning and although research is mixed in terms of there being a direct, causal relationship between music and enhanced academic performance, it is generally accepted that music is processed in the brain much the way language is processed and therefore can only enhance and complement learning in any subject (Lewis). Music appears to ignite memory and it can make learning fun and engaging. Music is a strong tool and can keep the human mind thinking, when you play a video game or sports even, people don't just jump right into it, the same goes for music. You listen to it and learn it just the same as you would with sports or video games, we have to crawl before we can walk. Being an athlete I can also say that music is used as a good engagement motivational tool, when we prepare for a game we listen to music to motivate us to play better and pump us up. They often say that an infant can hear things from the stomach. Even prior to birth, the fetus is able to hear and respond to music (Mahoney, Larson, & Eccles, 2005).

So what about games? Games are a closed formal system that subjectively represent a subset of reality (Crawford, 1984). These games provide players to overcome social restrictions and escape into a reality (such as playing a mobster or thief, activities the player would not normally participate in) (Crawford, 1984). Games allow the player to socialize in manners not normally acceptable (for example, a game of twister), provide

mental and physical stimulation and exercise, and address the players need for acknowledgement (the need for others to acknowledge cleverness, strategy, strengths, and weaknesses) (Crawford, 1984).

Videogames add another layer on top of the foundation laid by Crawford. Players are able to become the player and experience events from the viewpoint of the player (first person POV) or from a third party, detached point of view. Narrative arcs and interactive choices provide players the opportunity to participate in an evolving storyline and even affect the course of the storyline of the game. Furthermore, video games offer focused goals and immediate feedback, which are key in the development of story and gameplay.

Today we see a shift from the focused gamer towards more casual gamers. The trend of seeing casual games pop up all over the web is one that is surely going to continue in years to come. Casual games are defined as "games that are typically inexpensive to produce, straightforward in concept, easy to learn, and simple to play. Games such as Solitaire, Minebuster and the game Huje Tower- which we are going to study- are games that can be defined as casual. In contrast, games like Call of Duty or Halo, are games which have complex storylines, are expensive to develop and are difficult to master. These games are categorized as non-casual games.

In a Nielsen study done in 2009, researchers found that people who played casual games played for an average of 31 minutes. This is significantly less than the 80 minutes that players averaged when playing non-casual games. Using this information, we can

deduce that casual gamers perhaps play as a way to pass time, while non-casual

gamers become much more engaged in the storyline and aspire to master, and eventually

"beat the game."

In the Popcap study it was found that 49 percent of players play on a desktop or

laptop computer, while 28 percent played on a handheld game device or mobile phone.

This number of 49 percent would suggest that most players play either at home or at

work, while the 28 percent are likely playing their games "on the go" In our study, we will

look at what devices the majority of people played on, and we will also look to see if there

is a correlation between the device used and time played.

One of the more interesting articles regarding game engagement is written by

Hungarian professor Csikszentmihalyi which deals with his famous theory of flow. The

term "flow" is meant to describe a feeling comparable to being in the "zone" or in the

"groove." Csikszentmihalyi argues that this feeling is something all humans seek in their

daily activities. When players find that state of "flow" during a when playing a game, they

lose track of all sense of time and all external pressures are released. In essence, reality is

augmented, and there is nothing in the player's new "world" except the player and the

game. In Jenova Chen's article titled "Flow in Games" the author argues that in order for a

game to highly engage a player, the game must present the opportunity for the player to

find this state of "flow". "Flow is identical to what a player experiences when totally

immersed in a video game. It is obvious that gamers value video games based on whether

or not those games can provide flow experiences." Chen goes onto discuss that there are

certain factors which must be inherent in a game in order for it to have the ability to

provide "flow." Some of these factors include attractive content, increases in difficulty, and above all a sense of control over the game. Players want to feel like they are in control over what is taking place during their play experience. What this means for game developers, is that players place the most amount of emphasis on game play. Great graphics, sound and narrative are only useful when combined with a solid engine, which is quality playability.

Based upon our study of the above literature, we have found one overarching research question, which we then broke down into three sub-research questions:

Research Question: What factors affect a player's game engagement?

Sub-Research Question 1: What effect does personal background and experience have on a player's game engagement?

Sub-Research Question 2: What effect does the context in which a game is played have on a player's level of engagement?

Sub-Research Question 3: What effect does the player's perception of the game quality have on their game engagement?

Methodology:

Our survey was sent to a total of 400 people , all of whom were 18 years are older and from the United States. The survey was accessed through an invitation e-mail, which linked participants to our survey which was hosted by Questionpro.com

The survey used for this study consisted of three separate surveys (Pre-game, Game, and Post-game), using the "Thank You" pages to connect pre-game to game survey, and game to post-game survey. The pre-game survey consisted of questions focused around player background, demographics, and predispositions to video games, and required approximately three minutes to complete. The second survey, the game survey, consisted of the game "Huje Tower." Players could play for as long as they wanted, although the survey alerts them when they have been playing for approximately 45 minutes (a security feature implemented by QuestionPro, which logs users out of the survey after one hour of inactivity, and could not be disabled). During the game, players are timed as to how long they actually play. The third survey, the post-game survey, consisted of questions relating to the players perception of the game they had just played, and how long they thought they had played. This last survey required approximately three minutes to complete.

The first round of invitation e-mails was sent out on November 11, 2010 to 400 recipients. Reminder e-mails were sent out on November 20, 2010 and December 1, 2010 to all recipients. From this pool of 400 potential subjects, approximately 200 started the first survey, with 101 subjects completing the final survey, giving us a successful response rate of 25.25%.

Data was gathered between November 11, 2010 and December 7, 2010, in order to meet the deadline for presentations.

Data Analysis:

Once we received and compiled all of our data, we divided all of the usable (completed) data by research question. In essence, we looked at all of the questions of each survey and their respective responses, organizing them according to our three major research questions.

The data was then analyzed according to Research Question, relating game-play time, perceived game-play time, and various factors such as demographics, context, and preconceptions about the game.

Prior to analyzing the data in regards to research question, we first analyzed game-play compared to perceived game-play. We found that on average, players thought they played longer (17 minutes) than they actually played (10 minutes). This produced the following scatter plot:
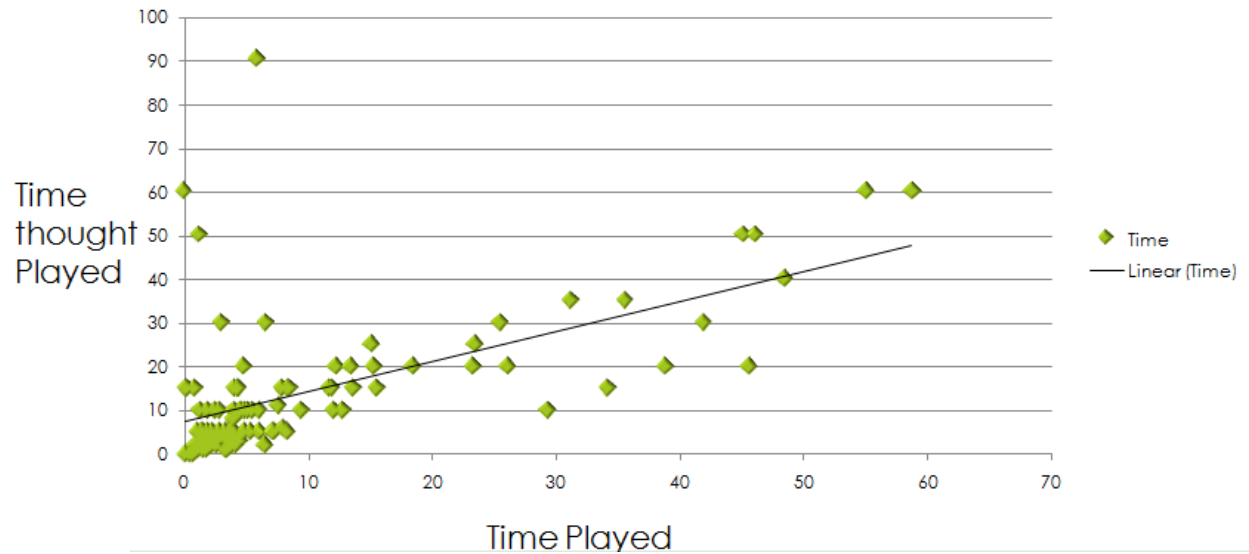
In the above scatter plot, it can be noticed there is a large cluster of subjects that underestimated their perceived playing time compared to their actual play time. Armed with this knowledge, we surveyed the data by research question.

Research Question 1: What effect does personal background and experience have on a player's game engagement?

To answer this question, data was examined across all three surveys, most notably from the pre-game survey. In following items found during the literature review in the PopCap study, we examined the relationship between time played and perceived played based on gender and marital status. The chart below depicts the data collected:

By Gender:

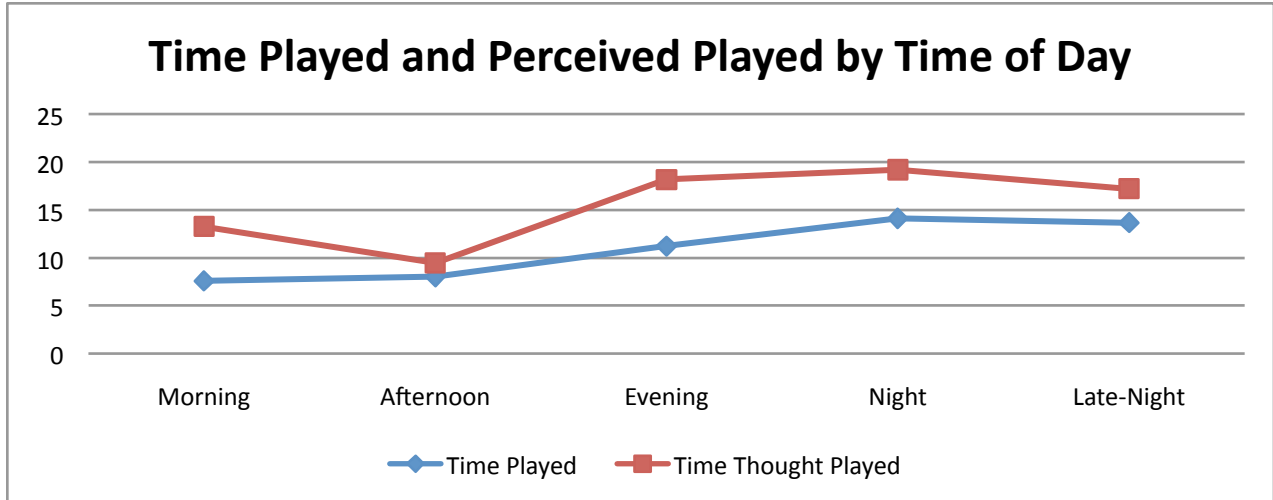|	Time played (in minutes)	Time Perceived Played (in minutes)
Male (n=71)	8.8	14.4
Female (n=30)	13.8	15.3

Further breakdown of this data indicates a similar view as presented in the PopCap study:

By Gender and Marital Status:

	Time played (in minutes)	Time Perceived Played (in minutes)
Male Single (n=66)	8.8	12.7
Male Married (n=5)	8.5	9.8
Female Single (n=16)	14.8	19.3
Female Married (n=14)	14.3	20.2

Research Question 2: What effect does the context in which a game is played have on a player's level of engagement?

To answer this question, data was analyzed from all three surveys, most notably questions from the pre-game and post-game surveys. Focus was placed on location of game-play, time of day, game-play time, and time perceived played.

Time Played and Perceived Played by Time of Day

	Morning	Afternoon	Evening	Night	Late-night
Responses (n)	16	33	16	26	10

	Time Played (in minutes)	Time Perceived Played (in minutes)
Home	11	15.1
Work	12	21.3
Public Space	1.9	3.3
Other	5	7.5

Research Question 3: What effect does the player's perception of the game quality have on their game engagement?

To answer this question, data from all three surveys was analyzed, though predominantly taken from the pre-game survey and post-game survey. Special care was taken to analyze

predispositions and engagement, how much fun the player had, and what interested them the most about the game.

<u>Predisposition, play-time, perceived play-time</u>
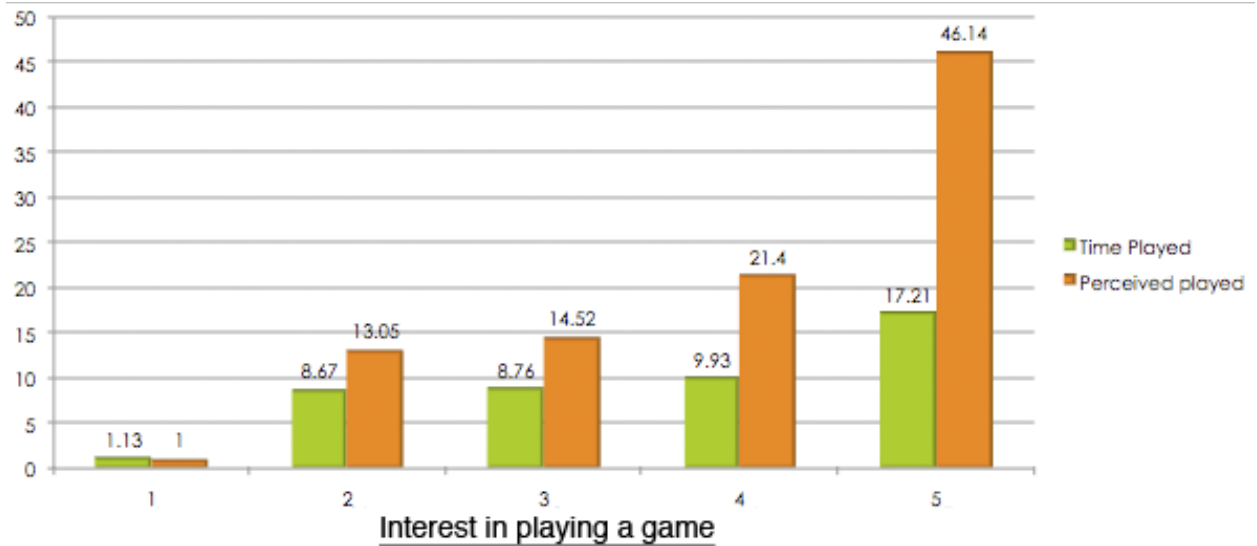
As noted here, players who indicated they were interested in playing a game played longer and thought they played longer.

We also analyzed the attributes of games players felt were the most interesting and important, as well as what attributes, if improved, would create a stronger, more engaging game. The data is as follows:

<u>Most interesting attribute of Huje Tower</u>

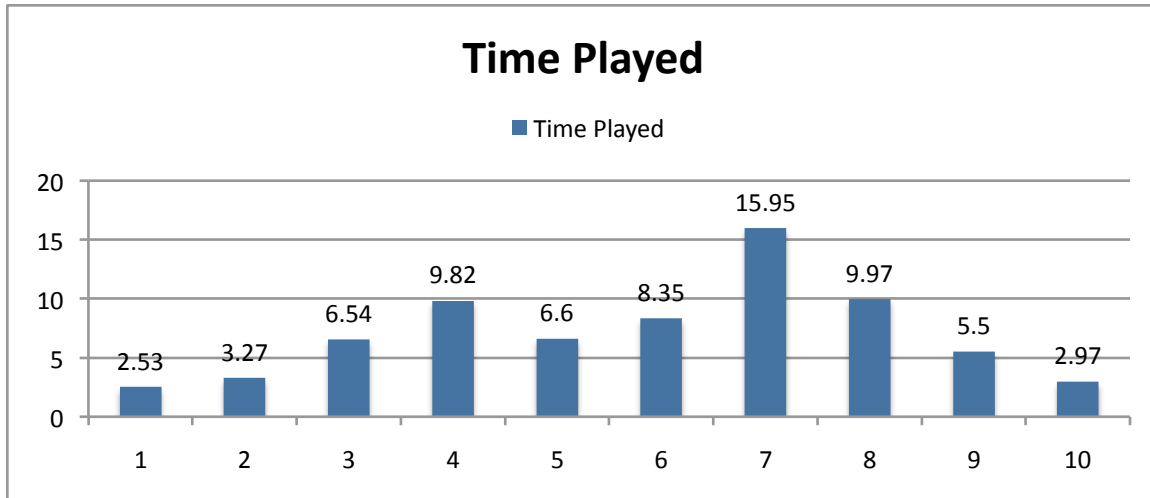|	Gameplay	Narrative	Characters	Sound	Graphics
Responses	70	6	8	8	9

As shown above, an overwhelming number of subjects responded that Gameplay was the most interesting attribute of this game. This can be compared to the following chart, which indicates what subjects thought would make the game stronger if improved:

If improved, would make Huje tower better

	Gameplay	Narrative	Characters	Sound	Graphics
Responses	60	24	17	10	31

Based on this data, a majority of subjects felt that Huje Tower would be a stronger game if Gameplay was improved, with Graphics and Narrative far behind in number of responses. It is important to note that subjects could select as many of the attributes to improve as they desired, while were forced to choose only one most interesting attribute.

Finally, the amount of fun a player has is another indication of their engagement levels. To see how much of an effect perceived fun had on engagement, subjects were asked to rate their level of enjoyment on a scale of one to ten. This data was then compared to how long the subject played, as shown below:

Time Played

■ Time Played

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20
                                        15.95
15
                  9.82            9.97
10          6.54      6.6   8.35
                                             5.5
 5   2.53  3.27                                   2.97
 0
      1    2    3    4    5    6    7    8    9    10
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The chart above shows game-play as related to enjoyment level, 1 being the least amount of fun, 10 being the greatest amount of fun possible. As indicated above, users who indicated their enjoyment level at a "7" played the longest, with a nearly similar drop off to either side.

Data Analysis Conclusions

Many conclusions can be drawn based on the data analyzed. By answering the individual research questions, we can find an answer to the overall research question "What factors affect a player's game engagement?" To answer this overall question, let us break it down and conclude on the sub-questions first.

Research Question 1: What effect does personal background and experience have on a player's game engagement?

Based upon the data gained through this study, it seems that females are more apt to play the game longer than males, with married females apt to think they played longer than they thought they did. This seems to fall in line with the PopCap study referenced in the literature review. However, a slight deviation is taken (perhaps based on the research sample), only one female admitted to playing while at work, compared to three men. This contrasts the PopCap study's findings, but should be researched further. However, based on initial analysis, it would seem that gender does have an effect on whether or not a person will play and continue to play a game.

Research Question 2: What effect does the context in which a game is played have on a player's level of engagement?

Context has many identifiers, of which cannot all possibly be met within a single study. However, there are important variables that can be, and have been examined in this study. In particular, we looked at the time of day the subject indicated they played, and the location they played in. This was to see if there was a pattern in play and engagement, the theory being that those who play earlier in the day play less, due to stressed timelines, appointments, and activities which need to be accomplished during the day, while nighttime players, in a more relaxed atmosphere, will play longer. In this, it seems the hypothesis was correct, with both time played and time perceived played lowest in the afternoon during peak work hours, and highest during the evening and nighttime hours. This information goes well with Csikszentmihaly's theory of "flow" where he discusses that in order to be engaged in an activity,

people have to in essence "lose themselves" in what they are doing. From here, they enter an almost trance-like state, where nothing in the world exists, aside from the person and the activity. Because those who play later during the day and into the night have less time stresses on them, they are able to "lose themselves," and play without the restrictions they would normally give themselves. Perhaps most interestingly, subjects who played during the afternoon held their perception of time played close to their actual playtime, indicating more focus and temporal awareness.

An analysis of the data on location people played proves interesting as well, primarily around the length of time people play games in different locations. Surprisingly, people played the longest and thought they played the longest while at work, perhaps during breaks or avoiding work. Conversely, players who played at public spaces played the least and were fully aware of playing a short amount of time, suggesting it was done as a temporary time wasting activity while waiting for a more engaging or important activity.

Overall, it seems location and time of day are important factors relating to game engagement, seemingly indicating that the employee who works the evening or night shift will be more apt to play games longer than those who play during the day.

Research Question 3:What effect does the player's perception of the game quality have on their game engagement?

Perception seems to be another important indicator on a player's game engagement. To answer this question, we focused on three key areas: Predisposition and game-play, most interesting aspect of the game, and most improvable part of the game.

It should be no surprise that those who indicate they are interested in playing a game prior to knowing anything about that game play the longest and think they played longer. This is perhaps the most important factor relating to game engagement: if they want to play, they will play for a longer amount of time. Conversely, those who had little to no interest in playing a game played the least amount of time. The chart above shows a clear curve of interest in relating game engagement and interest: Those who want to play, will.

The attributes of a game are important indicators as well. An overwhelming number of respondents indicated that game-play was both the most interesting aspect of the game and the one attribute that, if improved, would make the game stronger overall. Game-play was by far the most important attribute, clearly out-voting narrative, characters, sound, and graphics in interest and improvement. This suggest that game-play is the single most important attribute in regards to the creation of a game: the story can be spectacular, the characters memorable, and graphics amazing, without strong game-play, chances are a game will flop.

So, to return to the main research question "What factors affect a player's game engagement?," it seems that while numerous factors each have an important role. However, the evidence is overwhelming that the person must be interested and willing to play a game. Without that interest, the best game with great game-play, memorable story and characters, and spectacular graphics and sound will be ignored. Past that interest, game-play seems to be

the most important attribute of the game to maintain interest. Time of day and location are also important in regards to maintaining interest, but are often outside of the control of the developer.

Further Research

Gender and social interaction in games

During our pre-study research process, we discovered that females are more likely to play and be engaged in social games (Farmville, Scrabble, etc), while males are more likely to attracted to games that don't have quite the same level of social interaction. However, our data shows that married females tend to play un-social games with much of the same gusto as they do with social games. Are we seeing a drift toward females dominating the video game market? What recent developments have occurred in games, and in society as a whole that lead to females playing games more at this point than at any other point in history?

Sports gamers and game engagement

Our study showed that sports game enthusiasts are more likely to be engaged in games than players who enjoy other various genres. In all likelihood, sports gamers are (or were at one point) athletes, who look to the virtual world to provide some sort of competitive feeling? Are there characteristics that predispose athletes to playing videogames? Do athletes enjoy the

competitiveness of games and do they see the game as a challenge to overcome- much like the one they would face in their various disciplines?

People who played at work played the longest

Much like the Popcap study, it was the players who played our game at work that played the most. What does this say about our working culture and our society in general? If people feel the need to play videogames at work, does this mean that they don't have time during the rest of their day to engage in activities they enjoy? Are people so busy with their kids, BlackBerry's, and e-mails, that being at work is now becoming "time to relax?"

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