Gender and Race Representation in Casual Games

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Abstract This paper examines gender and race representation in casual games through content analysis. Study 1 looks at gender and race representation in a random sample ($N=200$) of casual games retrieved from the websites of the largest five casual game distributors. Study 2 looks at the most popular games on websites of the same five multinational distributors ($N=54$) and analyzes how primary characters are portrayed in terms of appearance and personality. Females are overly represented as primary characters but chi-square analyses indicate no significant differences between sexes in terms of how they are portrayed: of note, neither males nor females are depicted in a sexual manner. These results conflict with previous studies of gender representation in game characters: this paper suggests that sampling methodology and the relatively new trend of casual games excluded this subset of games from prior research. Implications are discussed using a social cognitive framework.

Keywords Gender representation · Video games · Casual games · Content analysis · Race representation · Gender stereotype

Introduction

The casual game industry is a rapidly growing segment of the video game market, generating $2.25 billion a year with a 20% annual growth (Casual Games Association 2010). From Facebook simulation games such as *Farmville* to jewel-popping games such as *Bejeweled Blitz*, casual games come in a wide range of genres but share the common characteristics of being simple, inexpensive, and popular among female players (Casual Games Association 2010).

Over the past decade, there have been numerous studies on gender portrayal in video games (e.g., Brown et al. 1997; Downs and Smith 2010; Martins et al. 2009; Miller and Summers 2007). These studies have consistently shown that characters in video games conform to gender stereotypes and sexual portrayal. Scholars have raised concerns about how these images would affect young people and have even suggested that the images were pushing away female players. The literature, however, overlooks casual games. Although early casual games—such as *Tetris*—did not feature human characters, newer games are increasingly incorporating narratives and protagonists. Since casual games are clearly attracting female players (Casual Games Association 2010; Nielsen 2009), it worthy to examine how characters in casual games are portrayed. This paper reports the gender and race representation of primary characters in casual games and examines whether or not there are differences between male and female characters in terms of appearance and personality.

Computer Games as a Mass Medium

Computer games are an extremely popular medium that support lucrative industries. In the United States, computer and video game software sales generated $10.6 billion in 2009, with 67% of American households playing computer or video games (Entertainment Software Association 2010). Once considered the playthings of teenage boys, games are now played by a wide range of demographics: in 2010,

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26% of Americans over the age of 50 played video games, an increase from 9% in 1999 (Entertainment Software Association 2010). Furthermore, 40% of game players are women, with female players over the age of 18 representing a greater portion of the game-playing population than boys that are 17 or younger (Entertainment Software Association 2010). The demographics of game players have drastically changed over the past decade and research suggests that although video games were traditionally a male-dominated media, the gender gap has started to narrow (Hartmann and Klimmt 2006). Given the increasing popularity of casual games, especially among women, this paper discusses how this subset of games reflects a shift from traditional stereotypical gender representation.

Characteristics of Casual Games

What is the most popular game in the world? Tracking 185,000 computers in American households over a 7-month period, Nielsen (2009) reported that 47 million unique gamers played *Solitaire* at least once during that period, whereas 5 million players were playing *World of Warcraft*, the most popular online role-playing game. Solitaire is a free game included in most PCs using the Windows operating system; however, we are seeing an increasing number of simple, Solitaire-type games that are available for free trial or can be downloaded for less than $20 (Nielsen 2009).

Because the definition of what makes a game casual is unclear (Juul 2009; Kuittinen et al. 2007), this paper defines casual games as games that are distributed by companies that label themselves as casual game distributors (Casual Games Association 2010). The Casual Games Association is an international organization representing 86 countries as of early 2010. Although the developers are diverse in terms of country of origin, most of the major distributors in this organization are based in the United States and cater to players in the Americas and Europe. Casual games distributed by companies not part of the Casual Games Association were not represented in this study.

Casual games are simple in interface and are mainly played on web browsers, mobile devices, or downloaded to the PC. They include arcade games (e.g., matching same-color tiles, popping bubbles), brain teasers, word, board, jigsaw, trivia, hidden object, mahjong, card, simulation, and puzzle adventure games. Most of these games are available for free for a limited time with the option to purchase for a small fee (usually from $1 to $20) after the trial period. Although casual games have been around since the beginning of the history of computer games, the industry has seen a boost in the past few years due to increased distribution on handheld devices

and social network sites such as Facebook (Casual Games Association 2010). Casual games are normally not primarily distributed on consoles, although very recently, casual games developers have been making their more successful games—such as *Plants vs. Zombies*—available for console players (PRwire 2010).

Casual games are an important subset of computer games because the player demographics are extremely different from the typically-studied video game audience. In comparison to hard-core, or "heavy" games that comprise of first-person shooters, racing games, fighting, sports, and role-playing games (French 2008), casual games require relatively less time commitment (Juul 2009), although players can certainly choose to play for long periods of time. In their Casual Games Market Report, which is based on surveys, raw data from websites, and interviews with corporate members of casual game companies, the Casual Games Association reports that over 200 million people play casual games each month over the Internet, the majority of which are women (Casual Games Association 2010). Due to the difference in the characteristics of the games, the typical casual game player is thought to have a preference for positive and pleasing narratives and the typical hardcore video game player is thought to have a preference for emotionally negative narratives such as science fiction, fantasy, and war (Juul 2009).

Despite the differences in player demographics, there has been little academic research on casual games (Consalvo 2009). "Scholarly attention to game culture has mostly focused on games that cater to gamers that the literature has deemed 'hardcore,' 'heavy' or at least 'mainstream,' even if we don't all agree on or approve of those identifying terms," Consalvo (2009, p.1) points out. A closer look at the genres of video games that have been studied shows that research has mainly covered massively-multiplayer online (MMO) role playing games (e.g., Cole and Griffiths 2007; Putzke et al. 2010; Yee 2006), first-person shooters (e.g., Jansz and Tanis 2007; Wright et al. 2000), and action games (e.g., Green and Bavelier 2003), all of which are big-budget games. There is very little literature on casual games, the few of which include anecdotal accounts of casual game players (Harrison 2004), market reports (Casual Games Association 2010), and lab experiments (Li and Counts 2007).

Social Learning Theory

It is important to analyze the content of visual media because scholars have suggested that the absence, presence, or type of portrayal of the character depicted in the media, affects how viewers perceive real-life interactions. Academics have claimed that visual media
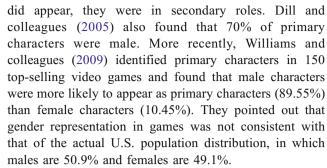
influences social identity formation (Mastro et al. 2008), gender stereotypes (Bandura 2002), and viewers' perception of reality (Gerbner et al. 1994).

Bandura's (1977) explanation of media effects through observational learning, a key construct of social learning theory, is the theoretical rationale for our study. Observational learning enables individuals to gain more knowledge about things that they would normally not be able to experience first-hand, due to constraints such as time, money, and other resources. Studies on violence (e.g., Carnagey et al. 2007), gender stereotypes (e.g., Beasley and Standley 2002), and racial representation (e.g., Mou and Peng 2008) are important in the context of social learning theory because images in games can be incorporated into cognitive schema and heuristics, which can subsequently affect identity formation, self-evaluation, attribution, and social comparison. For example, interpreting their study of race imagery in television advertising, Shrum (1999) presented the idea the images from media help form a cognitive schema, in which the images can build a set of impressions in an individual's brain that are stored and accessed at a later time. Coltrane and Messineo (2000) suggested that images contribute to perpetuation of subtle prejudice against African Americans by exaggerating cultural differences and denying positive emotions.

As video games become a more prominent type of media, we can predict that observational learning (Bandura 1977) becomes a growing issue among video game players. For example, academics studying games have found statistically significant effects of violent video game content on aggressive attitude in the short term (Anderson and Bushman 2001; Gentile and Stone 2005; Sherry 2001). Media effect research is aided by content analysis of video games, since identification of content is required to study the effect of that content.

Study 1: Gender and Race Representation in Casual Games

Existing studies of gender and race representations in games indicate that gender and race representations are not representative of real populations, and that the few depictions of women and racial minorities are stereotypical. To begin with, women do not have a prominent presence in games and are less likely to be the primary character or character that is playable by the game player. Looking at characters from Nintendo and Sega Genesis games, Dietz (1998) found that only 59% of games had female characters, and this included females who only appeared in the storyline and were not primary characters. Furthermore, Heintz-Knowles and colleagues (2001) found that 73% of game characters were male and that when females

did appear, they were in secondary roles. Dill and colleagues (2005) also found that 70% of primary characters were male. More recently, Williams and colleagues (2009) identified primary characters in 150 top-selling video games and found that male characters were more likely to appear as primary characters (89.55%) than female characters (10.45%). They pointed out that gender representation in games was not consistent with that of the actual U.S. population distribution, in which males are 50.9% and females are 49.1%.

These studies beg the question of whether or not gender representation of primary characters is the same for casual games. The author of this paper noticed that many of the well-known casual games titles—such as the *Diner Dash* and *Cake Mania* series—had females as primary characters, and was interested in whether or not this was representative of all casual games. The first research question was therefore exploratory in nature:

RQ1: What is the gender representation of primary characters in casual games?

Compared to gender, fewer studies have been conducted on race. Brand et al. (2003) concluded that most characters of the 130 games they analyzed were either White or too vague to tell. Dill et al. (2005) found that 68% of the primary characters were White, followed by Latino (15%) and Black (8%). The most recent study on racial representation by Williams and colleagues (2009) show that 80.05% of characters are White, followed by Black (10.74%), Asian (5.03%) and Hispanic (2.71%). This literature suggests that video games have a strong tendency to have White characters as primary characters. We can thus investigate whether or not this tendency also applies to casual games.

RQ2: What is the race representation of primary characters in casual games?

Study 1 Method

A random selection of 200 downloadable casual games was made from five of the top online distributors of casual games in January, 2010: Big Fish Games (offices in U.S., Canada, Ireland), Shockwave (U.S.), Pogo (offices in Canada, France, Germany, U.S., U.K.), Yahoo! Games (offices in France, Germany, Italy, Spain, U.K., Japan, Hong Kong, Singapore, Australia, New Zealand, Taiwan, Singapore, Argentina, Brazil, Canada, Mexico), and MSN Games (U.S.). Although these distributors are physically based in certain countries, games are distributed online and are accessible in countries with Internet access. These websites were five of the largest online distributors of casual games as of 2009, according to the Casual Games

Association (Casual Games Association 2010). All of the downloadable games that were available on the websites of the retailers as of the second week of January 2010 were compiled and put in alphabetical order, deleting those that appeared more than once. Many game titles were available on multiple sites: the final list contained 1,946 titles and 200 were selected using a random number generator. A full list of the game titles can be found in Appendix A. The games were only analyzed for sex (male/female) and race (White/non-White) of primary character based on the first 20 min of the game. Two coders, including the author, coded 140 games each for gender and race of the primary character; intercoder reliability was determined by the 40 games that overlapped between the two coders. Animals and non-human characters were not coded for gender or race. Given the low ambiguity of the dichotomous coding scheme, there was high coder reliability: Cohen's kappa (Cohen 1968) was 1.0 for both gender and race.

Study 1 Results

In the random sample of 200 games, we found that 130 (65%) games had humans as primary characters: 84 (42%) had females as the primary character [90% CI: 36%–48%], 25 games (12.5%) had males as the primary character [90% CI: 9%–16%], and 20 games (10%) had two primary characters that were both female and male. Eight primary characters (4%) were animals and 62 games (31%) did not have any characters. Games that did not have any characters were mainly arcade, card, or board games. If we exclude those games that had both females and males as primary characters, females (77.1%) were more frequently the sole primary character than males (22.9%).

Race representation was overwhelmingly White. In the 200-game random sample, only 8 (6%) games out of the 130 games with human characters had non-White primary characters.

Study 2: Gender and Racial Stereotypes in Casual Games

Study 1 tried to obtain a representative measure of gender and race representation through a random sample of casual games. The results suggested that females are over-represented as solo human primary characters in casual games (77.1%), showing a different pattern than that found among other studies of video games, in which females were found to be primary characters only 30% of the time or less (e.g., Dill et al. 2005; Heintz-Knowles et al. 2001; Williams et al. 2009). These results led to Study 2, in which we looked at *how* gender and race was depicted in casual games.

A major issue that has been brought up repeatedly in game studies is the depiction of female characters in stereotypical or archaic roles (Dietz 1998; Jansz and Martis 2007; Smith 2006). It is important to look at stereotypical content because scholars have suggested that game content may be self-selecting to a segmented audience because they are repelled by the "masculine" aspects of games. Previous studies have implied that this is a constant cycle, such that games featuring more males may attract more younger male players who, in turn, grow up to become game designers who design yet more games featuring male characters (Lucas and Sherry 2004; Williams et al. 2009)

Researchers have also suggested that exaggerated physical attributes of female game characters are what repel female game players from video games (Cassell 2002; Cassell and Jenkins 1998; McCroskey and McCain 1974). However, some studies have shown that female game players, like male players, prefer female game characters with stronger physical sexuality (Hartmann and Klimmt 2006). Scholars' competing interpretations of how female game players perceive this content and their rationale for studying such effects were supported by content analysis showing that female game characters are hypersexualized.

Dietz (1998), who did a content analysis of gender stereotypes in 33 popular Nintendo and Sega Genesis video games, found that there were four female stereotypes based on appearance and behavior: sexy object, victim (damsel in distress), feminine subject, and hero. Only three of the 33 games portrayed women as heroes. Beasley and Standley (2002) focused on the appearance of female characters as indicators of sexuality. They looked at how revealing the clothing was (skin exposure), the body cleavage, and breast size of the female characters, and found that women were over-sexualized. They also discovered that exaggerated images of voluptuous, scantily-clad women were no different among games with different age ratings, implying that younger game players were also being exposed to the distorted imagery of females. Downs and Smith (2010) also found in their analysis of 60 video games that females were represented in a hypersexual manner significantly more often than males; Haninger and Thompson (2004) found that women were more likely to be partially nude than men. Martins et al. (2009) found that female characters tend to be hyper-sexualized or hyper-childlike. One example of hyper-sexualization is the Tomb Raider series, in which female game characters are unrealistically proportioned and wear revealing clothing (Heintz-Knowles et al. 2001). These studies show that video games have a strong tendency to depict female characters in a stereotypical manner. Although casual games were not included in previous video game research, we can hypothesize that character

portrayal and stereotypes will be similar to that found in prior studies:

> H1: Female primary characters will be more likely to be portrayed in a physically sexual manner than male primary characters.
>
> H2: Female primary characters will be more likely to have feminine personalities than male primary characters.
>
> H3: Female primary characters will be less likely to have masculine personalities than male primary characters.

A research question was posed to look at the body types of the primary characters:

> RQ: What are the body types of primary characters?

Study 2 Method

Most prior video game studies focused on popular games (e.g., Dill et al. 2005; Downs and Smith 2010; Heintz-Knowles et al. 2001; Martins et al. 2009; Mou and Peng 2008), since the rationale for content analysis is that viewing media content may affect viewer perception; random samples may not reflect those media that are actually being consumed.

The popularity of casual game titles, however, is difficult to gauge from sales alone. Although players can buy the game, most are available for free for a limited time and are often accompanied by advertisements. Instead of unit sales, popularity was measured with download count, which the retailers of casual games take as one of the many indicators of game popularity. Due to the fact that the random list may not reflect those games that are actually played, the top five most-downloaded games were collected from each genre of the websites of the top five distributors as of 2009 (Casual Games Association 2010), the same websites used in Study 1. Genre was determined by the existing taxonomy of the websites, which included hidden object/puzzle, adventure, arcade, time management, and simulation. Board games and card games were removed from analysis, as study 1 revealed that these games rarely had human characters. A total of 125 game titles were collected from the five websites but high overlap across the websites resulted in 54 games (for titles, see Appendix B). Although the game titles were sampled from five websites, they were not exclusive to one website: all of the games were being distributed on multiple websites.

Unit of Analysis

Prior video game content analyses have different units of analysis. Some looked at introductory sequences (Jansz and Martis 2007), magazine reviews (Ivory 2006; Miller and Summers 2007), and magazine advertisements (Scharrer 2004). Of the studies that looked at video game play, most fall into a 10–30 min frame (Dill et al. 2005; Brand et al. 2003). Twenty minutes of each game were coded, including introductory sequences, most of which were less than a minute long. Compared to hard core video games, casual games are programmed to be played in short intervals (Casual Games Association 2010). The levels are designed so that most levels last less than 10 min, with many of the earlier levels lasting less than 3 min each. This enables coders to play at least two or three levels of the game in the 20-minute period, whereas with traditional console games or MMOs, a 20-minute period would most likely be only a small segment of one level. We thus felt that 20 min was sufficient in assessing the characteristics of the primary game character.

Coding

Two expert game players (undergraduate males in their early 20s) were paid by the hour to play and code the games. The coders received 30 min of training prior to coding. The coders played each game for 20 min, not including time to download and install the game.

Not all characters portrayed in the game are of equal value in terms of storyline contribution or impact on the player. For the games that were sampled, this study only identified the primary character. Since many of the games were third-person games, the primary character was loosely defined as the character leading the narrative of the game. Since importance is a somewhat relative concept, coders were told to choose the character who they thought was the primary character to see if there were any differences in perception.

The primary character was coded into four categories: human male, human female, both, and non-human. "Both" pertained to games where there were two human primary characters of opposite gender. Primary human characters were then coded for race, appearance, and personality. Animals or other non-human entities (e.g., aliens) were coded as non-human characters and excluded from further analysis, even if the character was "dressed up" in human attire. Race of primary character was coded "White" for Caucasian and "non-White" for other races.

Physical attributes were body type and sexual portrayal. Body type was coded as "thin," "normal," or "heavy." Sexual portrayal was coded as how revealing the clothing was ("not revealing," "somewhat revealing," or "very revealing"), based on Mou and Peng (2008). Personality attributes were measures of femininity and masculinity. Femininity and masculinity were not mutually exclusive, given that characters can harbor both feminine and masculine qualities. Although studies have pointed out that

social perceptions on femininity and masculinity are evolving (Holt and Ellis 1998), this study incorporated the Bem Sex Role Inventory (Choi and Fuqua 2003) to define the concept of femininity (i.e.; sympathetic, compassionate, gentle) and masculinity (i.e.; aggressive, independent, assertive). If the character displayed any personality characteristic from the list of feminine traits from the Bem Sex Role Inventory, coders would check "yes," if they did not display any of the traits listed in the inventory, coders checked "no," same with masculinity. Cohen's kappa (Cohen 1968) was 1.0 for gender of primary character, 1.0 for race, 0.84 for body type, 1.0 for feminine personality, 0.92 for masculine personality, and 1.0 for sexual portrayal. Differences in coding were reviewed by the author, who made the final decision.

Study 2 Results

In the selective sample of the 54 most-downloaded games, we found a similar proportion of females as primary characters in comparison to the random sample, but a drop in males as the primary character. Females were solo primary characters 55.6% of the time, and male-female duos (in which there were two primary characters, one of each gender) amounted to 9.3%. The remaining 24.1% of games had non-human primary characters or no characters. Males were the primary character only 11.1% of the time. For further analysis, only games that had a single primary character were selected.

To test H1, a Chi-square analysis was conducted between gender and sexual portrayal. The results were insignificant, $\chi^2(1, N=35)=2.15$, $p=.14$. There was no significant association between gender and sexual portrayal. Descriptive analysis showed that 72.4% of female characters had "unrevealing" attire; 27.6% had "somewhat revealing" attire, but none had "extremely revealing" attire. All of the male characters had "unrevealing" attire. H1 was unsupported: female primary characters will not more likely to be portrayed in a physically sexual manner than male primary characters.

To test H2, a Chi-square analysis was conducted between gender and feminine personality. There was an association between gender and feminine personality at the .05 significance level, $\chi^2(1, N=35)=6.67$, $p=.01$. Most female characters (83.3%) were reported as having a feminine personality while only 33.3% of male characters were found to have a feminine personality. The odds of a female character having a feminine personality was 2.5 times that of the odds of a male character having a feminine personality. H2 was supported.

For H3, a Chi-square analysis indicated that there was no association between gender and masculine personality at the .05 significance level, $\chi^2(1, N=35)=.95$, $p=.30$. Male

characters had masculine personalities 66.7% of the time while female characters had masculine personalities 44.8% of the time. Female primary characters will not less likely to have masculine personalities than male primary characters. H3 was not supported.

Regarding the research question on body types, females were almost equally distributed between thin (44%) and normal (48%), with a small proportion of heavy (8%) characters. Males were mostly normal (67%) or thin (33%). Table 1 summarizes descriptive findings of body type, personality and sexual portrayal.

Race representation was overwhelmingly White. In the sample of the 54 most-downloaded games, racial representation was similar to prior studies of video games and of the random sample of casual games. Of all human characters, 92% were White. The lack of data for non-White characters made it difficult to conduct any further analysis.

General Discussion

Existing video game studies, which have focused on games developed for game consoles, have shown that females are under-represented in the games—both as primary characters and secondary characters—and that what little has been portrayed of females has been based on stereotypical role types and hypersexual images. This study, however, shows that females are over-represented as primary characters and that neither males nor females are shown in a sexual manner. Also, although females were more likely to have a feminine personality than males, there were no gender differences in terms of masculine personality.

Moreover, in both sexes, the proportion of "normal" body types was greater than that of "thin" body types, with the occasional "heavy" body type. These results were consistent with female body imagery analysis by Martins

Table 1 Appearance and personality of primary characters in casual games

	Female	Male
Body type		
Thin	44%	33%
Normal	48%	67%
Heavy	8%	–
Sexual portrayal—attire		
Not revealing	72.4%	100%
Somewhat revealing	27.6%	–
Very revealing	–	–
Personality		
Feminine	83.3%	33.3%
Masculine	44.8%	66.7%

and colleagues (2009), who found that games developed for adults featured larger female characters in general. Since casual games are generally intended for adults, this may explain why a more even distribution was seen between "thin" and "normal" groups.

These results suggest that casual games are different from typically-studied video games. There could be several reasons for why casual games were not included in previous research. First, scholars have mainly sampled video games based on sales of the title. Due to the nature of their distribution and the low price of individual titles (averaging $7), most casual games cannot compete on an individual title basis with console games in terms of sales. Another reason casual games may have been omitted from previous video game research is because many of the games are not formally rated. In the United States, for example, game developers can voluntarily go through the Entertainment Software Review Board (ESRB) to obtain a formal rating. Although a rating is not required, most console games go through this process because most retailers have self-policies to only stock or sell games that carry an ESRB rating (Entertainment Software Review Board 2010). Since casual games go through a different distribution system, many casual game developers do not go through this process. Previous studies have sampled games based on ESRB ratings or sales figures; therefore casual games may not have been included in that sampling framework. A third reason could be that the integration of human characters into casual games is a fairly new phenomena.

The Internet-based distribution of casual games made this subset of games difficult to study, but demonstrates the rapid growth of an alternative market. In fact, the popularity of casual games may reflect an industry trend that was predicted to some extent by Cassell and Jenkins (1998), who pointed out that retailers are hesitant to sell games that interest females and that the increase in PC-based games could possibly "provide a golden opportunity to open the girls' market" (p.15).

This study shows that sex representation in casual games is overwhelmingly female and gender representation is non-stereotypical. What does this tell us? If self-selection were true, we would assume that gender representation is the cause for the games' popularity among women and we would expect to see stereotypical portrayal among male characters, which was not the case.

It is entirely possible that the large female population that enjoys casual games care very little about gender portrayal and are more interested in game-related factors such as the story (narrative), graphics, sound, and other factors that were not taken into account in this study. For instance, game genre may play a bigger role than gender representation in terms of how women select games; as Lucas and Sherry (2004) have found, women are more inclined to play puzzle games than men and puzzle games are certainly a strong genre in casual games.

As a content analysis, this study does not tell us why women are playing casual games. The fact that casual games portray women in a less stereotypical manner than console video games may be what attracts female game players (Kiesler 1985), or it could be a number of other factors such as game genre, the non-violent content, or stronger narrative elements. Future studies should examine whether or not playing games that portray women as a strong character affects players' thoughts about women and furthermore, how they treat women.

Limitations

A major limitation of the study is that both coders were expert game players. Although there is no reason to believe that the coding would have seriously differed in the case of inexperienced game players, inexperienced game players may have different perceptions. Also, only the first 20 min of the game was coded. Further into the game, the storyline could have changed so that females were no longer the primary character. However, given the repetitive game-play feature of casual games, it is very unlikely that the primary character would change in the middle of the game. Another limitation to the study is that the appearance and personality of the female game characters were all based on coders' perceptions, not a standardized unit of measurement. However, the strong inter-coder reliability suggests that the results at least have a high level of face validity.

Also, despite the fact that the Casual Games Association is an international organization, the games in this study were primarily developed by companies based in North America and Europe. Although games developed in Asia are increasingly being distributed on Western-based websites, the analyses of characters in this study may not reflect the content of games developed in Eastern cultures, especially Japan. Given the wealth of studies comparing individual and collectivist cultures, as well as media comparison studies on culture differences in gender roles, this study would be difficult to generalize at the global level and most likely best represents the game content catered for a Western audience.

This study only focused on the content of the game, not on how the content affects the player. Since the rationale of the analysis was based on the fact that media content could affect users, this study would only serve as useful if future research actually examines the media effects.

Female gamers have been an understudied population, yet casual game demographics indicate that female players are, in fact, growing in number. This content analysis of casual games suggests that gender representation in casual games is very different from gender representation in video games in general. Future studies should thus look

into more detailed factors of game effects, and see if the different types of gender representation between casual games and typically-studied console video games develop different cognitive schema for players. Although controlling purely for game effects is difficult, it would be interesting to see if people who play casual games have a more open-minded view of gender differences (or perceive very few gender differences) and if people who play non-casual games have more stereotypical attitudes regarding gender differences. This study is only the first but important step in the larger picture of seeing how gender representation and gender portrayal affect media use.

Appendix A: Titles of 200 Randomly-Selected Casual Games

A: Adventures of Robinson Crusoe, Age of Emerald, Age of Oracles: Tara's Journey, Alexandra Fortune: Mystery of the Lunar Archipelago, Alice Greenfingers, Alice's Magical Mahjong, Amazing Heists: Dillinger, Amelie's Café, Angela Young 2: Escape the Dreamscape, Annabel, Anna's Ice Cream, Antique Shop, Apple Pie, ArkLight, Ashton's Family Resort, Australia Zoo Quest, Avernum 4, Aveyond 2, Aveyond: Lord of Twilight

B: Babylonia, Babysitting Mania, Becky Brogan: The Mystery of Meane Manor, Beetle Bug 3, Belle's Beauty Boutique, Bilbo: The Four Corners of the World, Bonnie's Bookstore, Book of Legends, Born Into Darkness, Brave Piglet, Bubble Town, Build in Time, Build It! Miami Beach Resort, Burger Island, Burger Shop 2

C: Cajun Cop: The French Quarter Caper, Cake Mania, Cake Shop, Call of Atlantis, Carrie the Caregiver 2: Preschool, Cate West: The Vanishing Files, Chewsters, Chicken Attack, Chicken Invaders 3 Christmas Edition, Chocolate Shop Frenzy, Chocolatier: Decadence by Design, Chromentum 2, Clayside, Coconut Queen, Conga Bugs, Cooking Academy, Cooking Quest, County Fair, Cradle of Rome, Cryptex of Time, Curse of the Pharaoh: The Quest for Nefertiti, Cute Knight, Cy-Clone

D: Dark Tales: Edgar Allan Poe's Murders in the Rue Morgue, Deep Ball Defender, Deep Quest, Delaware St. John—The Curse of Midnight Manor, Department 42: The Mystery of the Nine, Diner Dash: Hometown Hero, Dirty Dancing, Discovering Nature, Discovery! A Seek and Find Adventure, Downbeat, Dr. Daisy Pet Vet, Dracula Origin, Dragon, Dragon Portals, Dragon Stone, Dream Day First Home, Dream Sleuth, Dreamsdwell Stories, Dress Up Rush, Druids—Battle of Magic, Dynasty

E: Echoes of the Past: Royal House of Stone, Elementals: The Magic Key, Elf Bowling: Hawaiian Vacation, Emerald City Confidential, Emerald Tale, Enchanted Fairy Friends: Secret of the Fairy Queen, Enchanted Katya and the Mystery of the Lost Wizard, Escape the Museum 2

F: Fab Fashion, Fabulous Finds, Family Restaurant, Fantastic Farm, Farm Frenzy 3: American Pie, Farmer Jane, Fashion Dash, Fashion Rush, Fashion Solitaire, Feeding Frenzy 2 Shipwreck Showdown, Fever Frenzy, Fill Up!, Fishdom—Spooky Splash, Fitness Dash, Fix-it-up: Kate's Adventure, Fizzball, Flower Paradise, Flower Stand Tycoon, Forgotten Lands: First Colony, Fur Ball Frenzy

G: G.H.O.S.T. Hunters: The Haunting of Majesty Manor, Garden Defense, Gemini Lost, Gems Quest, Go! Go! Rescue Squad!, Gold Miner Vegas, Gourmania, Grandpa's Candy Factory, Granny in Paradise

H: Hell's Kitchen, Hidden Expedition—Devil's Triangle, Hidden in Time: Mirror Mirror, Hollywood Tycoon, Hotel Dash: Suite Success, Huru Beach Party, Hyperballoid Golden Pack

I: Ice Cream Dee Lites, Ice Cream Tycoon, Ikibago, Inca Ball, Interpol 2: Most Wanted, Iron Roses

J: Jane Angel: Templar Mystery, Jojo's Fashion Show: World Tour

L: Legacy: World Adventure, LEGO Fever, Loco Mogul, Luxor 3

M: Magic Encyclopedia, Magic Farm: Ultimate Flower, Magic Match, Magic Tea, Magic Vines, Magus: In Search of Adventure, Margrave Manor 2: Lost Ship, Mayawaka, Megaplex Madness: Summer Blockbuster, Mevo and the Grooveriders, Money Tree, Mushroom Age, My Kingdom of the Princess, Mystery Case Files: Dire Grove, Mystery Case Files: Return to Ravenhearst, Mystic Emporium, Mystic Inn

P: Perfect Tree, Photo Mania, Picket Fences, Plant This!, Plantasia, Plumeboom: The First Chapter, Primate Panic

R: Roller Rush

S: Sally's Spa, Scuba in Aruba, Success Story, Superior Save, Supermarket Mania, Sushi To Go Express

T: Tasty Planet, Teddy Factory, The Apprentice—Los Angeles, The Dark Hills of Cherai, The Great Tree, The Hidden Object Show: Season 2, The Mirror Mysteries, The Office, The Search for Amelia Earhart, The Sims Carnival BumperBlast, The Sims Carnival SnapCity, The White House, Tinseltown Dreams: The 50 s, Townopolis: Gold, Tradewinds Caravans, Treasure Masters, Treasures of the Ancient Cavern, Tropical Farm, Turbo Sliders, 3 Days: Zoo Mystery

V: Valerie Porter and the Scarlet Scandal

W: Wedding Dash, Wedding Dash 2: Rings Around the World, Wendy's Wellness, Westward III: Gold Rush, Wild West Quest 2, Wonderburg, Wonderland Secret Worlds, World of Zellians

Y: Yard Sale Junkie, Youda Farmer, Youda Legend: The Golden Bird of Paradise, Youda Sushi Chef
Z: Zenerchi, Zuma Deluxe

Appendix B: Top 5 Downloaded Games from Each Genre of Top 5 Retailer Sites

A: Alexandra Fortune: Mystery of the Lunar Archipelago
B: Bejeweled 2, Big City Adventure: New York City, Born Into Darkness, Build-a-lot 4 Power Source
C: Cake Shop 2, Campfire Legends: The Hookman
D: Dark Tales: Edgar Allan Poe's Murders in the Rue Morgue, Delicious—Emily's Holiday Season, Drawn: The Painted Tower
E: Emily's Tea Garden, Enlightenus, Escape Rosecliff Island
F: Family Feud, Farm Frenzy 3: American Pie, Farm Mania 2
G: Gardenscapes
H: Hidden Secrets: The Nightmare, Hotel Dash: Suite Success
J: Jewel Quest Mysteries: Trail of the Midnight Heart, Jojo's Fashion Show World Tour 3
L: Little Shop—World Traveler
M: Magic Farm, Mahjong Garden Deluxe, Mary Kay Andrews—The Fixer Upper, Mirror Mysteries, Mystery Stories: Island of Hope, Murder, She Wrote, My Kingdom of the Princess, Mystery Case Files: Dire Grove, Mystery Case Files: Return to Ravenhearst
N: Nanny Mania, Natalie Brooks: Mystery at Hillcrest High
P: Penny Dreadfuls: Sweeney Todd, Poppit To Go, Princess Isabella
R: Real Crimes—Jack the Ripper, Rhianna Ford & The Da Vinci Letter, Romance of Rome
S: Sally's Quick Clips, Samantha Swift and the Mystery of Atlantis, Skip-Bo Castaway Caper, Slingo Mystery, Sunset Studio
T: The Sultan's Labyrinth: A Royal Sacrifice, The Treasures of Montezuma 2, Treasures of the Serengeti, 1001 Nights—The Adventures of Sindbad
V: Veronica Rivers: The Order of Conspiracy, Virtual City
W: Westward IV: All Aboard, Women's Murder Club: Triple Crime Pack
Y: Ye Old Sandwich Shoppe
Z: Zuma's Revenge! Adventure

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