PLAYER-AVATAR SEX CONGRUITY AND GAME

ENJOYMENT

by

Duncan Prettyman

A thesis submitted to the Faculty of the University of Delaware in partial
fulfillment of the requirements for the degree of Master of Arts in Communication

Spring 2015

PLAYER-AVATAR SEX CONGRUITY AND GAME

ENJOYMENT

by

Duncan Prettyman

Approved: _____
Jennifer L. Lambe, Ph.D.
Professor in charge of thesis on behalf of the Advisory Committee

Approved: _____
Elizabeth M. Perse, Ph.D.
Chair of the Department of Communication

Approved: _____
George H. Watson, Ph.D.
Dean of the College of Arts and Sciences

Approved: _____
James G. Richards, Ph.D.
Vice Provost for Graduate and Professional Education

ACKNOWLEDGMENTS

Jennifer Lambe, Ph.D. for all of the help, guidance, and advice she has provided during my graduate education.

James Angelini, Ph.D. for allowing me to use his lab for my project and for all of the advice and continuous support he has given throughout my academic career.

Dannagal Young, Ph.D. for her advice and support during the writing of my thesis.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

This study investigated the effects of player-avatar sex congruity (PASC) on player's

enjoyment of a video game. A model was proposed that explained how PASC affected

players' identification with their avatar and sense of presence within the game which

in turn affected their feelings of enjoyment. An experiment was performed using a

sample of male and female undergraduates from a large eastern university to test the

proposed model. Participants were randomly assigned to play as either a male or

female avatar and then played a game for fifteen minutes. After the fifteen minutes of

gameplay participants completed an online survey measuring a number of variables

including their enjoyment, identification with their avatar, and sense of presence.

PASC was found to have no significant effect on any of the measured variables.

However, the proposed model did receive partial support. Results suggest that

although some variables are related in the proposed manner PASC does not have any

significant impact on players' enjoyment of a video game.

Chapter 1

INTRODUCTION

Video games are one of the most popular pastimes for individuals. Industry reports estimate that 58% of Americans play video games and that a total of $20.77 billion was spent on video games in 2012 (Electronic Software Association [ESA], 2013). According to data collected by Lenhart et al. (2008) as part of the Pew Research Center's Internet and American Life Project 97% of teens play some sort of video game.

Not only are many people playing video games but they are also playing games regularly and for significant amounts of time. Lenhart et al. (2008) report that roughly one-third of teens play games daily. With regards to how long teens are gaming per day, Lenhart et al. (2008) found that 24% of teens report playing for at least an hour, 13% report playing for two hours, and 13% report playing for three or more hours. With video games now taking up more of people's free time they are spending less time doing other leisure activities, such as watching TV or going to the movies (ESA, 2013). In a study by Greenberg, Sherry, Lachlan, Lucas, and Holmstrom (2010) it was found that the amount of time boys spend playing video games matched or exceeded the amount of time they spent watching television.

These statistics suggest that video games are beginning to displace other well established leisure activities. Furthermore, the average number of years a gamer has been playing video games is 13 years (ESA, 2013), which suggests that, once adopted,

playing video games becomes a regular pastime. Clearly video games have become an important, popular, and pervasive form of media in American culture.

One common feature of video games that nearly all games contain is avatars. Avatars are the digital characters that represent a player in a video game. In many modern video games players have the ability to customize their avatar in a number of ways. Players can adjust their avatar's facial structure (e.g. pick eye shape or nose size), they can also choose their avatar's hair color, hair style, eye color, skin tone, race, and sex. These are just a few examples of the options available to players; some games may include less or even more options. As video games grow in popularity it becomes important for scholars to understand avatars and the effects they have on players and their game experiences.

Despite avatars' centrality to games little research has been done on avatars and their effects on players. The research that does exist has found that avatars have effects on players' feelings of identification with the avatar (Trepte & Reinecke, 2010; Trepte, Reinecke, & Behr, 2009), their sense of presence in the world of the game (Eastin, 2006; Jin, 2011), their enjoyment of the game (Hsu, Lee, & Wu, 2005; Trepte & Reinecke, 2010), and their behavior during and after playing (Behm-Morawitz & Mastro, 2009; Fox, Bailenson, & Tricase, 2013; Hollingdale & Greitemeyer, 2013; Yee & Bailenson, 2007). However, little of this research has looked at what *properties* of avatars cause these effects. One important property that hasn't received much attention is player-avatar sex congruity ([PASC] i.e. whether or not a player's sex matches the sex of his or her avatar). This study seeks to help fill this hole in the literature. It will look at how PASC affects players' game enjoyment via processes of presence and identification.

Sex and Gender

As this study is concerned with the sex of a player's avatar it is important to note the distinction between sex and gender. According to feminist theories of gender, sex is a distinction between male and female based on the physical features of someone's body, and gender is a continuum between masculine and feminine and is a social construct (Butler, 1990). Gender is based on the performance of social roles that are categorized as either masculine or feminine (Butler, 1990). Thus, depending on how people act, talk, etc. they are considered as masculine or feminine.

The current study is concerned with avatars' sex (based on physical appearance) because gender is a performance, and thus is determined by players who are in control of their avatars. Research has shown that the performance of gender is not restricted to in-person interactions, but that people continue to perform gender even in digital environments (Martey, Stromer-Galley, Banks, Wu, & Consalvo, 2014; Yee, Bailenson, Urbanek, Chang, & Merget, 2007). Martey et al. (2014) conducted a study of how gender manifests in digital worlds. Specifically, they looked at players' behaviors in a massive-multiplayer online roleplaying game (MMORPG) (Martey et al., 2014). They found that male and female players' in-game behaviors differed significantly (Martey et al., 2014). Furthermore, they found that male players that used a female avatar adopted some behaviors of female players (their appearance and some of their chat behaviors) (Martey et al., 2014). The results of Martey et al.'s (2014) study illustrate how players' in-game behaviors act as gender performances, and thus how avatar gender is determined by the player. In other words, the gender of an avatar can differ between players because it is based on how a player chooses to play that avatar. Avatar sex on the other hand can be determined based on the avatar's "physical" characteristics (i.e. an avatar's body shape). Additionally, this study

illustrates why it is important to understand PASC. If when playing as an avatar of the opposite sex players are adopting new behaviors, like the ones in Martey et al.'s (2014) study do, then it appears that players' behaviors change depending on whether or not they are playing as an avatar of the same sex or not. If this is the case, then it is important to better understand how PASC affects players and their game playing experiences.

Effects of Player Sex on Game Enjoyment

Currently there is little to no research on the effects of player sex on game enjoyment. The only study looking at the relationship between player sex and game enjoyment that the author was able to locate was an experiment conducted by Lin in 2010. In the experiment participants played either a morally justified male character in a non-violent game, a morally justified male character in a violent game, or a morally unjustified male character in a violent game for twenty minutes (Lin, 2010). After playing the game, participants' enjoyment of the game and identification with their character was measured (Lin, 2010). The results of the experiment found that male and female players both found video games appealing but differed in the content that attracted them to games (Lin, 2010). Female players enjoyed the nonviolent game but did not enjoy the unjustified violent game (Lin, 2010). On the other hand, male players enjoyed the games regardless of their content (i.e. male players enjoyed all three game conditions equally) (Lin, 2010). The results of Lin's experiment suggest that player sex may influence game enjoyment in some way.

Research on Video Game Enjoyment

Despite being one of the most basic reasons that people engage with and use media, media enjoyment has not received much attention in media research (Oliver & Nabi, 2004). Because enjoyment is such a basic motivator for media use it has a number of theoretical and practical implications, and therefore it is important we understand how it works (Oliver & Nabi, 2004). In terms of video games a number of factors have been found to influence individuals' enjoyment. In an integrated model of game enjoyment by Shafer (2013) interactivity, presence, and perceived reality were included as variables predicting game enjoyment.

Klimmt, Hartmann, and Frey (2007) argue that one of the key factors of game enjoyment is interactivity. They argued that the interactivity in video games gives players a feeling of "causal agency," which means that they feel their actions in the game influence the game world in some way (Klimmt et al., 2007). In an online experiment that manipulated participants' interactivity Klimmt et al. (2007) found that when interactivity was reduced participants enjoyment of the game was also reduced. In other words, the more a game responds to the actions of the player the more enjoyable the game is. One reason that interactivity may be an important factor of game enjoyment is that it makes the game world seem more realistic. If a game seems more "real" it may enhance players' feelings that they are "in the game world," which is enjoyable.

Interactivity is not the only way to make a game seem more realistic. In a study by Skalski and Whitbred (2010) they found that sound quality had a significant impact on how present players' felt in the game world. Compared to players that played the game with normal sound (i.e. stereo) those that played the game with surround sound (i.e. five speakers and a subwoofer) felt much more present within the world of the

game (Skalski & Whitbred, 2010). Skalski and Whitbred (2010) also tested the impact of image quality (standard definition versus high definition). Interestingly, they found that image quality had no significant impact on players' feelings of being present in the game. Skalski and Whitbred's (2010) study provides further evidence that the more realistic the game experience the more players feel like they are in the game world, which in turn makes the game more enjoyable. Realism is not the only factor that affects a players' enjoyment of a game.

Schneider, Lang, Shin, & Bradley (2004) found that the presence of a narrative can affect players' involvement with a game. Schneider et al. (2004) found that playing a first-person shooter (FPS) with a narrative led to increased identification, sense of presence, and physiological arousal compared to playing a FPS with no narrative. They hypothesize that a narrative may enhance players' involvement in a game because it provides justification for their actions (often violent ones) in the game (Schneider et al., 2004). Schneider et al.'s idea is partially supported by the study conducted by Lin in 2010 discussed earlier. The results of Lin's (2010) study showed that the justification of violence affected players' identification and game enjoyment. When violence in a game was justified women found the game more enjoyable than when violence was not justified (Lin, 2010). Men, however, did not differ significantly in their enjoyment of the game in either condition (Lin, 2010). Part of the reason narrative and justification influence enjoyment is that they both affect how identifiable the characters in a game are.

When players identify with a video game's character(s) they enjoy the game more (Hefner, Klimmt, and Vorderer, 2007; Klimmt, Hefner, and Vorderer, 2009). Narrative and justification of violence can influence how much players identify with

characters (Lin, 2010; Schneider et al., 2004), and thus affect how enjoyable a game is.

Lin's (2010) study also illustrates a finding by Ravaja, Saari, Salminen, Laarni, and Kallinen (2006). Ravaja et al. (2006) conducted a study in which they measured participants' psychophysiological reactions to various game events (e.g. dying, increasing their score, etc.). What they found was that negative events in video games, such as player death, cause an increase in positive affect and a decrease in negative affect when players are actively participating in the event (i.e. playing the game; Ravaja et al., 2006). In other words, their study suggests that negative game events, such as dying, may actually increase positive feelings in players and reduce negative feelings. If this is the case, then amount of times players die in a video game would not affect their enjoyment of the game.

So far all the studies that have been discussed have looked at factors of game enjoyment more or less individually and cross-sectionally. Thus, the question of how all of these factors affect game enjoyment together and over time remains. One study conducted by Wirth, Ryffel, von Pape, and Karnowski (2013) has examined how game enjoyment develops over time as the result of several predictor variables. In their longitudinal study Wirth et al. (2013) found that exploratory behavior, spatial presence, competence, experiences of suspense and solution, and simulated life experiences all contributed to game enjoyment. Not only did Wirth et al.'s (2013) study verify a number of factors of game enjoyment that had been tested individually, but it also found that game enjoyment increases over time across several sessions of game play. Thus, not only do many factors contribute to enjoyment of a game, but also the more time spent playing the more enjoyable a game becomes.

Avatar Sex and Game Enjoyment

Despite knowing many of the factors that contribute to game enjoyment there are still many potential elements that have gone untested, leaving a hole in the literature. In particular, there is a lack of research on avatars' effects on game enjoyment; the author was only able to locate one study that looked at this relationship (Trepte & Reinecke, 2010). Trepte and Reinecke's (2010) study looks at how the personality similarity between players and their avatars affects game enjoyment. The present study looks to contribute to the game enjoyment literature as well as the avatar effects literature by examining the relationship between PASC and enjoyment. This leads to my overall research question:

RQ: Does PASC affect players' enjoyment of the game?

With regards to PASC affecting game enjoyment, two of the most relevant factors of enjoyment are identification and presence.

Identification

As already discussed, identification has been found to be one of the factors that contribute to game enjoyment (Hefner et al., 2007; Klimmt et al., 2009). Cohen (2001) defines identification as, "an imaginative process through which an audience member assumes the identity, goals, and perspective of a character" (p. 261). In other words, when an audience member identifies with a character it is more than just feeling similar to or empathizing with a character; when identification occurs an audience member feels like they *are* the character. Another way of thinking of identification is the idea of being in someone else's shoes. What distinguishes identification from other audience responses to media characters is that it positions the audience member as a character (Cohen, 2001). When people identify with a character in the media they feel

as if they are that character. However, when people simply like a character, feel like they could be friends with a character, or imitate a character they are separate from that character; the audience member is an agent interacting with the character (Cohen, 2001). In identification there is no separation between the agent and the character, the agent *is* the character (Cohen, 2001).

<center>Avatar Sex and Identification</center>

Several studies have linked similarity, both physical (Hsu et al., 2005; Trepte et al., 2009) and personality (Trepte & Reinecke, 2010), between a player and his or her avatar to increased feelings of identification. It was found that the more similar players felt their avatars were to themselves the more they identified with their avatars. Trepte et al. (2009) conducted a study in which participants were presented with five game descriptions (two feminine and three masculine games) and then asked to create an avatar for that game. Participants constructed avatars from a list of masculine and feminine traits provided by the researchers; they also selected their avatars' sex (Trepte et al., 2009).

What they found was that players constructed avatars that matched the description of the game (i.e. masculine avatars for games with masculine descriptions and feminine avatars for games with feminine descriptions; Trepte et al., 2009). Furthermore, they found that participants' biological sex had a strong influence on their sex choice for their avatar (Trepte et al., 2009). In other words, players matched the gender of their avatar to the game but not necessarily the sex of the avatar (e.g. female players would make masculine female avatars for the masculine games). Additionally, participants preferred the games that let them play avatars that matched their personal sex roles more than games that did not (Trepte et al., 2009). When these

<center>9</center>

findings are considered in conjunction with the findings on avatar similarity it suggests that PASC has an influence on game enjoyment. Thus, I make the following hypotheses:

H1: Playing as a same-sex avatar will increase identification more than playing as an avatar of the opposite sex.

H2: Playing as a same-sex avatar will increase enjoyment of the video game more than playing as an avatar of the opposite sex.

H3: Identification will be positively related to enjoyment.

Presence

Another factor that affects enjoyment of video games is presence. Presence is the experience of virtual objects as actual objects (Lee, 2004). When media users forget they are watching a movie or playing a game they are experiencing presence. Presence is experienced when media users no longer notice the mediated nature of an object and start treating it as if it were real. There are three subtypes of presence: physical, social, and self presence (Lee, 2004). Physical presence is experiencing virtual physical objects as actual objects (Lee, 2004). For example, when playing video games players interact with the various objects in them as if they are real. Social presence is experiencing virtual social actors as actual social actors (Lee, 2004). If a video game player worries how their actions will affect the characters in a game he or she is experiencing social presence. The player is no longer thinking of the game characters as simple artificial intelligence (AI) programmed to respond in specific ways; rather, he or she is thinking of them as "actual" social actors with thoughts and feelings. Lastly, there is self presence which is the experience of virtual selves as actual selves "in either sensory or nonsensory ways" (Lee, 2004, p. 46). In other

words, when a media user experiences their virtual representation as their actual self they experience self presence.

Identification with the virtual self is key to experiencing self presence. The more a user identifies with a virtual self the more real the virtual self feels to the user (Lee, 2004). The difference between self presence and identification is that self presence applies only to virtual representations of the self, such as game avatars, while identification can be experienced in relation to non-representational characters, such as the main character of a movie. For example, people can experience identification with Mufasa in the film *The Lion King*, but they cannot experience self presence because Mufasa is in no way a virtual representation of the film's viewers. Thus, if individuals are experiencing self presence then they are also experiencing identification (in relation to their virtual representation). In other words, identification is necessary, but not sufficient for experiencing self presence. Of the three subtypes of presence the one that is most relevant to the current study is self presence.

Surprisingly, little research has been done on self presence despite its relevance to avatar studies. One study that has been done found that self presence mediates the effects of self-construal on players' parasocial relationships with their avatars (Jin & Park, 2009). Self-construal refers to the degree to which a person sees him or herself as distinct from or connected to others (Jin & Park, 2009). Individuals whose self-concept is built around their relationships with others are considered to have "high interdependent" self-construal (Jin & Park, 2009, p. 724). Jin and Park (2009) found that players with high interdependent self-construal had greater feelings of self-presence than players with low interdependent self-construal. In other words,

players that normally express themselves through their relationships with others felt more like they *were* their avatars.

Avatar Sex and Presence

A study by Eastin (2006) found that when avatar and player sex matched, players felt a greater sense of presence than when playing avatars of the opposite sex. Eastin's (2006) study consisted of a series of three experiments that examined the effects of avatar sex and opponent type (computer versus human) on female players' feelings of presence and aggression. In the experiments players played an opponent in a multiplayer FPS game (Eastin, 2006). For the first two experiments players were randomly assigned either an opposite or same-sex avatar (Eastin, 2006). Eastin (2006) found that female players' feelings of presence only reached significance when they played as a same-sex avatar, which suggests that PASC has a strong influence on female players' feelings of presence. Eastin's (2006) study did not include any male players, and currently there is no study that has examined the effects of PASC on presence in males. Despite this limitation it is not unreasonable to assume that Eastin's (2006) findings will also be true of males. Thus it is predicted that:

H4: Playing as a same-sex avatar will increase sense of presence more than playing as an avatar of the opposite sex.

H5: Identification will be positively related to sense of presence.

Furthermore, as discussed earlier, increased presence has been connected with increased game enjoyment (Schafer, 2013; Wirth et al., 2013). Based on this research it is expected that:

H6: Sense of presence will be positively related to enjoyment.

Study Rationale

Based on the research on identification and presence I propose the following mechanism for explaining the effects of PASC on enjoyment of a video game: similarity with avatar (i.e. same or opposite-sex avatar) leads to identification which leads to enjoyment. Presence is a mediating variable between identification and enjoyment. Both identification and presence have been directly linked to enjoyment; furthermore, identification has been found to be predictive of presence (Hefner et al., 2007; Klimmt et al., 2009; Lee, 2004; Schafer, 2013; Wirth et al., 2013). When players' sex matches their avatar's sex they should experience greater identification. Greater identification will lead to increased enjoyment of the game as well as increased feelings of presence. Thus, both identification and presence are factors in game enjoyment and both are affected by PASC. The proposed mechanism is illustrated in Figure 1.
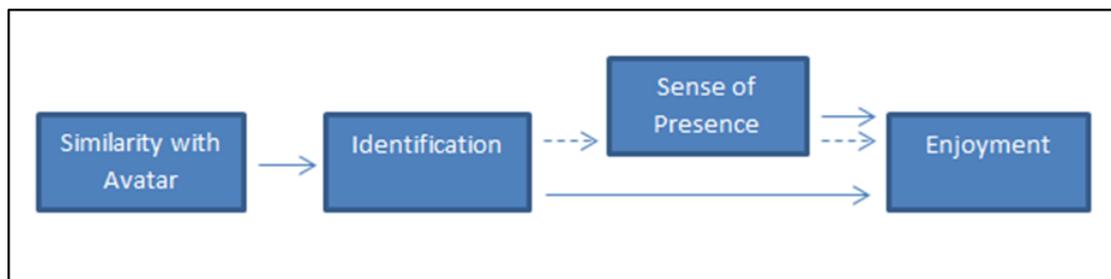

Figure 1   Mechanism for video game enjoyment. This figure illustrates the suggested method for how similarity with avatar influences enjoyment through identification and sense of presence. Solid lines indicate a direct relationship between variables and dotted lines represent a mediated relationship

Additionally, while the Trepte et al. (2009) study does suggest that PASC has an effect on game enjoyment the study has several limitations. The first limitation is that their study did not actually test participants' reactions to any real games; they only used descriptions of games. The current study will address this by actually having participants play a real game. Furthermore, Trepte et al.'s (2009) study was focused on examining what strategies players use when creating their avatars for games and less on the effects of those avatars. The present study looks to test the implications of Trepte et al.'s work by having participants play an actual game as either a male or female avatar and measuring their enjoyment of the game afterwards.

Chapter 2

METHODS

The current study examined the effect of player-avatar sex congruity (PASC) on players' game enjoyment. In addition to looking at enjoyment this study also looked at the effects of PASC on identification and presence, which are believed to be factors of game enjoyment.

Participants

A convenience sample of 124 undergraduate students from a large eastern university enrolled in communication courses was used for the study. Students were offered extra credit in their courses for participating. The sample was largely female (73%; $n = 91$) with males making up only 27% ($n = 33$) of the total sample. Participant ages ranged between 18 and 24 years old ($M = 19.73$; $SD = 1.27$). The majority of participants were Caucasian (77%; $n = 95$), followed by Asian (13%; $n = 16$), Hispanic (5%; $n = 6$), other (3%; $n = 4$), and African American (2%; $n = 3$).

According to the Electronic Software Association (ESA; 2013) the average gamer is 35 years old. However, the ESA (2013) also reports that 32% of gamers are between 18 and 35 years old. Thus, the sample used for this study should still be fairly representative of the video game playing population. Furthermore, there is no reason to expect that the key relationships under study would be altered by a participant's age.

Participants' overall skill and experience with videogames was generally low with the majority of the sample reporting being "unskilled" (33%; $n = 41$) or "somewhat unskilled" (26%; $n = 32$). Nineteen percent reported being "somewhat skilled" ($n = 24$), and only 13% reported being "skilled" ($n = 16$). Nine percent reported being neither skilled nor unskilled ($n = 9$). For participants' skill with specific consoles please see Table 1.

Table 1   Participant Skill With Specific Video Game Consoles

Console	N	Mean	SD	Unskilled	Somewhat unskilled	Neither skilled or unskilled	Somewhat skilled	Skilled
Xbox 360	124	2.44	1.54	44%	16%	7%	19%	15%
PlayStation 3	124	2.39	1.43	39%	23%	12%	15%	12%
Nintendo Wii	124	3.30	1.31	14%	16%	14%	40%	17%
PC	123	2.67	1.34	28%	17%	28%	16%	11%

Additionally, the majority of the sample reported spending only 0-2 hours a week playing video games (85%; $n = 105$). For the remainder of the sample 6% spend 3-4 hours a week ($n = 7$), 2% spend 5-6 hours a week ($n = 3$), 5% spend 5-6 hours a week ($n = 6$), and 2% spend 9 or more hours per week ($n = 3$).

Stimulus

The video game chosen for the study was *Mass Effect 2*. *Mass Effect 2* is an action-RPG (roleplaying game) by Bioware that has sold over 10 million copies since its release (D'Angelo, 2012). The game is played from the third-person, which means that the camera is fixed behind the player's avatar allowing them to see the avatar's entire body. *Mass Effect 2* is set in a science fiction future in which humanity has

spread to the stars and encountered other intelligent species. The player plays as Commander Shepard, an officer in humanity's space fleet. Players have the ability to customize Shepard in a variety of ways including facial structure, hair color, and sex. However, in order to maintain similarity between the male and female avatar conditions only the default male and default female avatars will be used for the purposes of this study.

The default avatars' faces are not exaggerated and are very similar in terms of attractiveness and age. Both the male and female avatars wear the same set of armor, which completely covers them save for their heads. The male and female avatars both have normally proportioned bodies. Figure 2 presents screenshots of the default male and female avatars. For the experiment participants played through a 15-20 minute section of the game in which Shepard awakens on a space station that is under attack and must make his/her way to the escape pods to leave the station. This section was picked for several reasons. First, it is a tutorial level. This means that it is designed to introduce players to all the basic features they will encounter throughout the game. In other words, it features a bit of all the major elements of the game in one short section giving players a good idea of how the rest of the game would play. This makes it an excellent "summary" of the rest of the game, and therefore the results should be more generalizable. Second, because it is a tutorial level it features on-screen prompts of what buttons to press in order to guide players through the basic functions of gameplay. These tutorials will aid participants unfamiliar with videogames.

Figure 2   Default avatars. This figure presents cropped screenshots of the default female (left) and male (right) avatars in *Mass Effect 2*. Uncropped versions of the screenshots are available upon request.

Procedure

The experiment used a 2X2 (player sex X avatar sex) between-subjects design to measure the effects of PASC on enjoyment. Participants were randomly assigned to one of two conditions: the male avatar condition, or the female avatar condition using Microsoft Excel's randomization function.

When participants arrived for the study they were told they would be playing a video game and taking a survey as part of a study on the enjoyment of video games. Participants were asked to sign their name in a notebook. These signatures were solely for the purpose of giving the participant the extra credit for their participation in the study and were not associated with their responses in any way. Participants were then given an informed consent form to fill out. Once participants had filled out the form they were taken to another room for the gameplay part of the experiment.

In the gameplay part participants played a video game for 15 minutes with either a male or female avatar depending on their condition. A researcher told participants that they had 15 minutes to play the game and they were informed they were not being recorded or assessed on their performance in the game. Participants were then left alone to play the game. There were several reasons for choosing 15 minutes as the time limit. By limiting gameplay to 15 minutes skilled players were prevented from playing beyond the section chosen for the study since it is the minimum amount of time a skilled player would need to complete the chosen section. Furthermore, it still gave less skilled players ample opportunity to play the game. Since participants were informed that they were not being assessed on their skill or completion, whether or not they finished the game section should not affect their enjoyment. Participants played the game on a PlayStation3 (PS3) connected to a 46 inch flat screen TV. While playing the game participants were seated in a comfortable chair approximately six feet from the television. Participants used a Dualshock 3 sixaxis controller to play the game. Once the 15 minutes of gameplay were finished the researcher returned and took participants to another room with a computer for the survey part of the experiment.

For the survey part of the experiment participants took an online survey that measured their enjoyment of the game, identification with their avatar, sense of presence, past exposure to the game, level of skill with video games (in general and with specific consoles), frequency of video game use generally, sex role, and basic demographic information. In order to keep track of which survey responses belonged to which condition there were two identical versions of the survey, one for each of the two conditions. Participants were given the online survey that matched their condition.

The survey took approximately five minutes to complete. Once participants had completed the survey they were thanked and given a slip with the chief investigator's contact information.

Measures

Independent variables.

Player-Avatar Sex Congruity (PASC)

Participants were randomly assigned to one of the two avatar conditions (male avatar or female avatar) in order to create two roughly equal groups. Participants that were assigned an avatar that matched their reported sex were included in the "same-sex avatar group" (57%; $n = 71$; males, $n = 21$; females, $n = 50$), while participants that were assigned an avatar that did not match their reported sex were included in the "opposite sex avatar group" (43%; $n = 53$; males, $n = 11$; females, $n = 41$). The sex of participants was measured using self-report in the form of their answer to the question "What is your sex?"

Dependent variables.

Enjoyment

Enjoyment of the game was assessed using five items based on the enjoyment measures found in Klimmt et al. (2010), Skalski and Whitbred (2010), and Wirth et al. (2013). The modified items included statements such as "I had fun playing the game" and "the game made me feel good." Responses were measured using a five point Likert scale ranging from 1 "strongly disagree" to 5 "strongly agree." Negatively worded items (e.g. "I did NOT find the game entertaining") were reverse coded. The scale had good internal consistency ($\alpha = .94$, $M = 3.01$, $SD = 1.07$).

Sense of Presence

Participants' sense of presence was measured using a thirteen item index adapted from Behm-Morowitz and Mastro (2009). The index consists of items such as "while playing the video game, I felt like I was in the world of the video game" which are rated by participants on a seven point scale ranging from 1 "not at all" to 7 "very much/well." Negatively worded items (e.g. "While playing the video game, I NEVER forgot that I was in the middle of a study") were reverse coded. The modified scale had good internal consistency ($\alpha = .88$, $M = 3.92$, $SD = 1.02$). Missing values were replaced with that player's mean on the remaining scale items.

Identification

Participants' identification with the avatar was measured using a five item index adapted from Behm-Morawitz and Mastro (2009). The index consists of statements such as "I felt like my character was a real person" and "during my game play, I felt like I really was my character" which are rated by participants on a seven point scale ranging from 1 "not at all" to 7 "very much/well." The adapted index had good reliability ($\alpha = .82$, $M = 3.24$, $SD = 1.21$). Missing values were replaced with the mean.

Control Variables.

Sex Role

The short form of the Bem Sex Role Inventory (BSRI) was used to measure participants' sex role orientation in order to control for any possible effects on enjoyment. The short form of the BSRI consists of three subscales made up of lists of adjectives, a masculinity scale, femininity scale, and social desirability scale (Bem, 1974). The masculinity and femininity subscales contain adjectives traditionally

considered to be masculine ("independent," "assertive," "forceful") and feminine ("affectionate," "sympathetic," "understanding"), respectively (Bem, 1981). The social desirability subscale is made up of filler adjectives such as "conscientious," "moody," and "reliable" (Bem, 1981). Participants indicate how well they think each adjective describes them on a seven point Likert scale ranging from 1 "never or almost never true" to 7 "always or almost always true" (Bem, 1974). Participants' scores are averaged for the masculine and feminine subscales and then a median split is performed to classify them into one of four sex-role groups (masculine, feminine, androgynous, or undifferentiated) (Bem, 1981). The short form of the BSRI has been found to be reliable; however, Bem (1981) does note that it classifies more participants as androgynous or sex-reversed than the long form due to the socially desirable nature of the feminine traits retained in the short form of the BSRI. The sample was split roughly equal between all four sex-role groups with slightly more participants in the masculine (27%; $n = 34$) and undifferentiated (28%; $n = 35$) groups compared to the androgynous (23%; $n = 28$) and feminine (22%; $n = 27$) groups.

Prior Exposure to Stimulus

In order to control for the possible effects of participants having previously played the game on their enjoyment, they were asked whether or not they had played the game used in the study (*Mass Effect 2*) before. Prior exposure to the stimulus was measured by asking participants "Prior to this study have you ever played *Mass Effect 2*?" Only 7% of the sample reported having played *Mass Effect 2* prior to the experiment ($n = 8$).

Past Experience with Video Games

Because some participants may be more skilled at video games, which may affect how enjoyable they found the game, participants' skill with video games was assessed using an index made of three items. The first item asked participants to indicate how skilled they are at video games in general on a five point Likert scale ranging from 1 "unskilled" to 5 "skilled." The second item asked participants how skilled they are at playing on specific consoles including Xbox 360, PlayStation3, the Nintendo Wii, and PC on a five point Likert scale ranging from 1 "unskilled" to 5 "skilled." The third item asked participants how often they play video games on average per week: 0–2 h, 3–4 h, 5–6 h, 7–8 h, 9 or more (Behm-Morowitz & Mastro, 2009). Missing values were excluded.

Demographic Information

Demographic information was collected by asking participants to provide their sex, race/ethnicity, and age on the questionnaire. Missing values were excluded.

Chapter 3

RESULTS

As previously mentioned the sample was split into two roughly equal groups based on whether or not their reported sex matched the sex of the avatar they were assigned. Within both groups the number of female participants was greater than the number of male participants. The same-sex avatar group consisted of 21 males and 50 females (57%; $n = 71$) and the opposite sex avatar group was made up of 11 males and 41 females (43%; $n = 53$). Independent sample t-tests and correlations were used to test the hypotheses. Analysis of covariance (ANCOVA) was used to test the research question. Assumptions were tested by examining normal probability plots and scatterplots. No violations of assumptions were found.

Hypothesis 1

Hypothesis 1 was not supported. Hypothesis 1 predicted that playing as a same-sex avatar would increase identification more than playing as an opposite sex avatar. An independent sample t-test was used to test the effect of avatar condition on identification. The test revealed that there was a no significant difference between the same-sex ($n = 71$; $M = 3.38$; $SD = 1.15$) and opposite sex ($n = 53$; $M = 3.05$; $SD = 1.27$) conditions, $t(122) = 1.50$, $p < .05$, $\eta^2 = .018$.

Hypothesis 2

Hypothesis 2 was not supported. Hypothesis 2 predicted that playing as same-sex avatar would increase enjoyment of the video game more than playing as an

opposite sex avatar. An independent sample t-test was used to test the effect of avatar condition on enjoyment. The test found that there was a no significant difference between the same-sex ($n = 71$; $M = 3.05$; $SD = 1.15$) and opposite sex ($n = 53$; $M = 2.95$; $SD = 0.97$) conditions, $t(122) = .512$, $p < .05$, $\eta^2 = .002$.

Hypothesis 3

Hypothesis 3 was supported. Hypothesis 3 predicted that identification would be positively related to enjoyment. A one-tailed Pearson r correlation was carried out to test the hypothesis. The test found that there was an average positive correlation between identification ($n = 124$; $M = 3.24$; $SD = 1.21$) and enjoyment ($n = 124$; $M = 3.01$; $SD = 1.07$), $r_s (122) = .47$, $p < .01$.

Hypothesis 4

Hypothesis 4 was not supported. Hypothesis 4 predicted that playing as same-sex avatar would increase sense of presence more than playing as an opposite sex avatar. An independent sample t-test was used to test the effect of avatar condition on sense of presence. The test found that there was a no significant difference between the same-sex ($n = 71$; $M = 3.99$; $SD = 0.96$) and opposite sex ($n = 52$; $M = 3.84$; $SD = 0.97$) conditions, $t(122) = .868$, $p < .05$, $\eta^2 = .006$.

Hypothesis 5

Hypothesis 5 was supported. Hypothesis 5 predicted that identification would be positively related to sense of presence. A one-tailed Pearson r correlation was carried out to test the hypothesis. The test found that there was a strong positive correlation between identification ($n = 124$; $M = 3.24$; $SD = 1.21$) and sense of presence ($n = 124$; $M = 3.92$; $SD = 0.96$), $r_s (122) = .57$, $p < .01$.

Hypothesis 6

Hypothesis 6 was supported. Hypothesis 6 predicted that sense of presence would be positively related to enjoyment. A one-tailed Pearson r correlation was carried out to test the hypothesis. The test found that there was a strong positive correlation between sense of presence ($n = 124$; $M = 3.92$; $SD = 0.96$) and enjoyment ($n = 124$; $M = 3.01$; $SD = 1.07$), $r_s (122) = .72$, $p < .01$.

Research Question 1

Research Question 1 explored whether player-avatar sex congruity (PASC) influenced a player's enjoyment of the game. A one-way ANCOVA was used to explore the influence of PASC on enjoyment while controlling for the effects of sense of presence and identification. Avatar condition (same-sex avatar, opposite sex avatar) was used as the independent variable and enjoyment was used as the dependent variable; sense of presence and identification served as covariates. Results of the ANCOVA found that there was no significant different between conditions on enjoyment after controlling for the effects of identification and sense of presence, $F = (1, 122) = .09$, $p = .77$, $\eta^2 = .001$. See Table 2 for adjusted and unadjusted means.

Table 2   Adjusted and Unadjusted Means for Avatar Conditions

Source	Unadjusted Mean	SD	Adjusted Mean	SE
Same-sex	3.05	1.15	2.99	.089
Opposite Sex	2.95	0.97	3.03	.103

Chapter 4

DISCUSSION

With video games now becoming a part of mainstream culture it becomes important that we understand the effects they have on people as well as what causes these effects. Exploring how avatars affect players is one way we can better understand this new medium. This study investigated the relationship between player-avatar sex congruity (PASC) and players' enjoyment of a video game. It proposed a mechanism that attempted to explain the effects of PASC through processes of identification and sense of presence. The results of the experiment, however, suggest that contrary to past research PASC does not have an effect on any of these items.

It had been predicted that similarity with avatar would lead to increased identification, which in turn would lead to increased enjoyment. Presence would act as a mediating variable between identification and enjoyment. The mechanism's predictions of the relationships between identification and enjoyment, identification and sense of presence, and sense of presence and enjoyment were all supported. However, contrary to its predictions for avatar similarity no significant difference was found between the same-sex avatar group and the opposite sex avatar group on any of these measures. In other words, similarity to avatar, at least in terms of sex, does not seem to have any significant impact on players' identification, sense of presence, or enjoyment. Thus, the proposed mechanism was only partially supported. Since the mechanism is partially supported it appears that either PASC does not have any influence on enjoyment, or some other variable is causing the non-significant results.

27

Based on previous research it had initially been predicted playing as an avatar of the same sex would increase similarity with the avatar, and therefore increase identification (Trepte & Reinecke, 2009). Although those playing as an avatar of the same sex did tend to have greater feelings of identification than those playing as an opposite sex avatar this difference was not found to be significant. This finding suggests that PASC does not have a significant impact on players' feelings of identification. Past research suggests that an important component for identification is an avatar's personality traits and how similar they are to the player (Trepte & Reinecke, 2010). In other words, it may be more important that a character's personality traits are similar to the player than for the player and avatar to have the same sex. This suggests that anyone can identify with an avatar if their personalities are similar enough regardless of that avatar's sex.

Similar conclusions can be drawn regarding enjoyment and sense of presence. With regards to enjoyment and sense of presence, although those in the same-sex condition did find the game more enjoyable and experience greater feelings of presence than those in the opposite sex condition this difference was not significant. The lack of a significant difference between the two conditions suggests several things. First, it suggests that players' enjoyment of a game is not significantly influenced by the sex of their avatar. Thus, a player's enjoyment may be based more on his or her playing experience than on PASC. Second, these results may suggest that PASC is not a significant factor for players' sense of presence, and that they can have high or low feelings of presence regardless of their congruity with their avatar's sex. This finding in particular is contrary to previous research which had found that sense of presence was greatly affected by PASC (Eastin, 2006). It is possible that the low

sense of presence is due to the sample's overall low skill with video games. If participants have little skill with video games they may have a harder time controlling their avatar, which may lead to reduced identification. According to the proposed mechanism identification is linked to sense of presence. Thus, low skill with video games may cause a reduced sense of presence. By reducing participants' scores in both avatar conditions low skill with games would reduce the chances of finding a significant difference between the two groups, and therefore mask the effects of PASC. Despite these contradictory results the study also had several results that were in-line with previous research.

Consistent with previous research positive relationships were found between identification and enjoyment (Hefner et al., 2007; Klimmt et al., 2009), presence and enjoyment (Schafer, 2013; Wirth et al., 2013), and identification and presence (Hefner et al., 2007; Klimmt et al., 2009; Lee, 2004; Schafer, 2013; Wirth et al., 2013). These findings lend partial support to the proposed mechanism for game enjoyment discussed earlier. The positive relationship between identification and enjoyment supports the part of the mechanism that proposes a relationship between these two variables. However, despite finding a positive relationship between identification and enjoyment no difference was found between the avatar sex conditions. This suggests that although increased identification does increase enjoyment, PASC does not make enough of a difference in terms of identification for it to influence a player's enjoyment of the game. Similarly, despite there being a positive relationship between identification and presence, as well as a positive relationship between presence and enjoyment, no significant difference was found between the two avatar conditions on sense of presence.

Limitations and Future Research

The results of the current study may be limited for several reasons. The first and biggest limitation of the current study was that the sample used contained significantly more females than males. Additionally, the distribution of male and female participants was not evenly balanced, there were significantly fewer men in the opposite sex group ($n = 11$) compared to men in the same-sex group ($n = 21$). Due to the sex specific nature of this study's hypotheses having an unbalanced distribution of sexes may have skewed the results.

Additionally, due to the imbalanced nature of the sample used no comparisons could be made between the two conditions based on player sex (e.g. men in same-sex condition compared to women in same-sex condition). Having a more even distribution of sexes within each avatar condition would allow for comparisons to be made between the men and women in each group. Future experiments should use a more balanced sample of males and females in both of the avatar sex conditions in order to see if there are any differences between men and women with regards to playing as same-sex vs. opposite sex avatars.

Furthermore, as was discussed earlier, participants in the same-sex avatar group had slightly higher average scores on enjoyment, identification, and presence than those in the opposite sex group although these differences were not significant. It is possible that if a larger and more balanced sample was used these effects may be more pronounced and even reach significance. Future studies should continue to investigate these relationships using a larger sample.

The second limitation of the study is that the sample is drawn from undergraduate students in communication courses which limits the generalizability of its findings. The population from which the sample was drawn may not be

30

representative of all populations. Future studies should seek to use a more representative population from which to draw their sample.

A third limitation of the current study was the sample's overall inexperience with video games. Participants' inexperience may have caused them to become frustrated during the game playing portion of the experiment, which may have negatively affected their enjoyment. Future studies may want to provide participants with a few minutes to practice with the game before beginning the experiment proper in order to reduce frustration; as has been done in other video game studies (Behm-Morawitz & Mastro, 2009; Eastin, 2006).

A fourth limitation is that this study intentionally used non-sexualized avatars. Past research has shown that playing as a sexualized vs. a non-sexualized avatar does have effects on players (Behm-Morawitz & Mastro, 2009). It is possible that the results of this experiment would be different if sexualized avatars were used instead. Future research should explore the potential interactions between player sex, avatar sex, and avatar sexualization.

Despite the limitations of this study it still serves to further our knowledge of avatars and their effects on video game players. The finding that PASC does not have any significant impact on enjoyment, identification, or sense of presence is interesting to both video game researchers and game developers. For researchers this study begins to fill a hole in the avatar effects literature by exploring the effects of PASC on several variables. Future research should explore other ways that PASC might be affecting players. Additionally, the proposed model of how avatars affect game enjoyment found partial support and should be tested further. Future research could explore other aspects of avatar similarity, such as race or age, using the proposed mechanism as a

basis for this research. For game developers this study's findings suggests that they need not worry about the sex of the avatars in their games negatively affecting players' experiences with them. This frees developers to create a more diverse selection of avatars and avatar options.

As has already been said this study is an initial exploration into the effects of PASC on players' game experience. Avatars and avatar effects remain a relatively unexplored area in video game studies. Additional research in this area will help us to better understand this new medium and the underlying mechanisms through which it is affecting people.

REFERENCES

Bem, S. L. (1974). The measurement of psychological androgyny. *Journal of Consulting and Clinical Psychology, 42*(2), 155-162. doi:http://dx.doi.org/10.1037/h0036215

Bem, S. L. (1981). *Bem Sex-Role Inventory: Professional manual*. Palo Alto, CA: Consulting Psychologists Press.

Behm-Morawitz, E., & Mastro, D. (2009). The effects of the sexualization of female video game characters on gender stereotyping and female self-concept. *Sex Roles, 61*(11-12), 808-823. doi:http://dx.doi.org/10.1007/s11199-009-9683-8

Butler, J. (1990). Subversive bodily acts. In J. Butler (Ed.), *Gender Trouble: Feminism and the subversion of identity* (pp. 163–180). New York: Routledge

Cohen, J. (2001). Defining identification: A theoretical look at the identification of audiences with media characters. *Mass Communication & Society, 4*(3), 245-264. doi:http://dx.doi.org/10.1207/S15327825MCS0403_01

D'Angelo, W. (2012, April 17). *Mass effect: A sales history*. Retrieved from http://www.vgchartz.com/article/250066/mass-effect-a-sales-history/

Eastin, M. S. (2006). Video game violence and the female game player: Self- and opponent gender effects on presence and aggressive thoughts. *Human Communication Research, 32*(3), 351-372. doi:http://dx.doi.org/10.1111/j.1468-2958.2006.00279.x

Entertainment Software Association. (2013). *The 2013 essential facts about the computer and video game industry*. Retrieved from http://www.theesa.com/facts/pdfs/esa_ef_2013.pdf

Fox, J., Bailenson, J. N., & Tricase, L. (2013). The embodiment of sexualized virtual selves: The proteus effect and experiences of self-objectification via avatars. *Computers in Human Behavior, 29*(3), 930-938. doi:http://dx.doi.org/10.1016/j.chb.2012.12.027

Greenberg, B. S., Sherry, J., Lachlan, K., Lucas, K., & Holmstrom, A. (2010). Orientations to video games among gender and age groups. *Simulation & Gaming, 41*(2), 238-259. doi:http://dx.doi.org/10.1177/1046878108319930

Hefner, D., Klimmt, C., & Vorderer, P. (2007). Identification with the player character as determinant of video game enjoyment. Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics), 4740 LNCS, 39-48. Springer Verlag.

Hollingdale, J., & Greitemeyer, T. (2013). The changing face of aggression: The effect of personalized avatars in a violent video game on levels of aggressive behavior. Journal of Applied Social Psychology, 43(9), 1862-1868. Retrieved from http://search.proquest.com/docview/1449312029?accountid=10457

Hsu, S. H., Lee, F., & Wu, M. (2005). Designing action games for appealing to buyers. *CyberPsychology & Behavior, 8*(6), 585-591. doi:http://dx.doi.org/10.1089/cpb.2005.8.585

Jin, S. (2011). 'I Feel Present. Therefore, I Experience Flow:' A Structural Equation Modeling Approach to Flow and Presence in Video Games. *Journal Of Broadcasting & Electronic Media*, *55*(1), 114-136. doi:10.1080/08838151.2011.546248

Jin, S. A., & Park, N. (2009). Parasocial interaction with my avatar: Effects of interdependent self-construal and the mediating role of self-presence in an avatar-based console game, wii. *CyberPsychology & Behavior, 12*(6), 723-727. doi:http://dx.doi.org/10.1089/cpb.2008.0289

Klimmt, C., Hartmann, T., & Frey, A. (2007). Effectance and control as determinants of video game enjoyment. *CyberPsychology & Behavior, 10*(6), 845-847. doi:http://dx.doi.org/10.1089/cpb.2007.9942

Klimmt, C., Hefner, D., & Vorderer, P. (2009). The video game experience as "true" identification: A theory of enjoyable alterations of players' self-perception. *Communication Theory, 19*(4), 351-373. doi:http://dx.doi.org/10.1111/j.1468-2885.2009.01347.x

Lee, K. M. (2004). Presence, explicated. *Communication Theory, 14*(1), 27-50. doi:http://dx.doi.org/10.1111/j.1468-2885.2004.tb00302.x

Lenhart, A., Kahne, J., Middaugh, E., Macgill, A. R., Evans, C., & Vitak, J. (2008, September 16). *Teens, Video Games, and Civics*. Retrieved from: http://www.pewinternet.org/2008/09/16/teens-video-games-and-civics/

Lin, S. (2010). Gender differences and the effect of contextual features on game enjoyment and responses. *Cyberpsychology, Behavior, and Social Networking, 13*(5), 533-537. doi:http://dx.doi.org/10.1089/cyber.2009.0293

Martey, R., Stromer-Galley, J., Banks, J., Wu, J., & Consalvo, M. (2014). The strategic female: gender-switching and player behavior in online games. *Information, Communication & Society*, *17*(3), 286-300. doi:10.1080/1369118X.2013.874493

Oliver, M., & Nabi, R. L. (2004). Exploring the Concept of Media Enjoyment: An Introduction to the Special Issue. *Communication Theory (10503293)*, *14*(4), 285-287.

Ravaja, N., Saari, T., Salminen, M., Laarni, J., & Kallinen, K. (2006). Phasic emotional reactions to video game events: A psychophysiological investigation. *Media Psychology*, *8*(4), 343-367.

Schneider, E. F., Lang, A., Shin, M., & Bradley, S. D. (2004). Death with a story: How story impacts emotional, motivational, and physiological responses to first-person shooter video games. *Human Communication Research, 30*(3), 361-375. doi:http://dx.doi.org/10.1093/hcr/30.3.361

Shafer, D. M. (2013). An integrative model of predictors of enjoyment in console versus mobile video games. *PsychNology Journal, 11*(2), 137-157. Retrieved from http://search.proquest.com/docview/1459338509?accountid=10457

Skalski, P., & Whitbred, R. (2010). Image versus sound: A comparison of formal feature effects on presence and video game enjoyment. *PsychNology Journal, 8*(1), 67-84. Retrieved from http://search.proquest.com/docview/754049940?accountid=10457

Trepte, S., & Reinecke, L. (2010). Avatar creation and video game enjoyment: Effects of life-satisfaction, game competitiveness, and identification with the avatar. *Journal of Media Psychology: Theories, Methods, and Applications, 22*(4), 171-184. doi:http://dx.doi.org/10.1027/1864-1105/a000022

Trepte, S., Reinecke, L., & Behr, K. M. (2009). Creating virtual alter egos or superheroines? Gamers' strategies of avatar creation in terms of gender and sex. International Journal of Gaming and Computer-Mediated Simulations, 1(2), 52–76.

Wirth, W., Ryffel, F., von Pape, T., & Karnowski, V. (2013). The development of video game enjoyment in a role playing game. *Cyberpsychology, Behavior, and Social Networking, 16*(4), 260-264. doi:http://dx.doi.org/10.1089/cyber.2012.0159

[Untitled screenshot of default female shepard]. Retrieved May 30, 2014 from http://assets.vg247.com/current//2011/07/20110719me2_08.jpg

[Untitled screenshot of default male shepard]. Retrieved May 30, 2014 from
     http://cd1.leviathyn.com/wp-content/uploads/2014/01/mass-effect-2-male-
     shepard-lazarus-project-character-creation.jpg

Yee, N., & Bailenson, J. (2007). The proteus effect: The effect of transformed self-
     representation on behavior. *Human Communication Research, 33*(3), 271-290.
     doi:http://dx.doi.org/10.1111/j.1468-2958.2007.00299.x

Appendix A

EFFECTS OF AVATAR SEX ON GAME ENJOYMENT SURVEY

Q33 The purpose of this study is to assess players' feelings about playing video games. The following survey will take 5-10 minutes and ask you questions about your feelings regarding the game you just played. You will also be asked to provide some information about yourself.   By participating in this study you can earn extra credit in your communication course. Participation in the study is completely voluntary and you are free to stop at any time. The survey is anonymous and no identifiable information will be collected.

Q34 Thinking about the game you just played please indicate how much you agree or disagree with each of the following statements.

Q8 I had fun playing the game.
- ○ Strongly Disagree (1)
- ○ Disagree (2)
- ○ Neither Agree nor Disagree (3)
- ○ Agree (4)
- ○ Strongly Agree (5)

Q9 I would play the game again.
- ○ Strongly Disagree (1)
- ○ Disagree (2)
- ○ Neither Agree nor Disagree (3)
- ○ Agree (4)
- ○ Strongly Agree (5)

Q10 Playing the game made me feel good.
- ○ Strongly Disagree (1)
- ○ Disagree (2)
- ○ Neither Agree nor Disagree (3)
- ○ Agree (4)
- ○ Strongly Agree (5)

Q11 I would recommend the game to others.
- ○ Strongly Disagree (1)
- ○ Disagree (2)
- ○ Neither Agree nor Disagree (3)
- ○ Agree (4)
- ○ Strongly Agree (5)

Q12 I did NOT find the game entertaining.
- ○ Strongly Disagree (1)
- ○ Disagree (2)
- ○ Neither Agree nor Disagree (3)
- ○ Agree (4)
- ○ Strongly Agree (5)

Q35 Thinking about the video game experience you just had please answer the following questions.

Q19 How well were you able to control your actions in the video game?
- ○ Not at all 1 (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (5)
- ○ 6 (6)
- ○ Very Well 7 (7)

Q20 How much did the visual aspects of the game involve you?
- ○ Not at all 1 (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (5)
- ○ 6 (6)
- ○ Very Much 7 (7)

Q21 How much did the noises/music in the game involve you?
- ○ Not at all 1 (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (5)
- ○ 6 (6)
- ○ Very Much 7 (7)

Q22 How well were you able to look around or search the game environment?
- ○ Not at all 1 (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (5)
- ○ 6 (6)
- ○ Very Well 7 (7)

Q23 How well were you able to interact with objects and/or people in the game?
- ○ Not at all 1 (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (5)
- ○ 6 (6)
- ○ Very Well 7 (7)

Q24 How involved were you in the video game experience?
- ○ Not at all 1 (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (5)
- ○ 6 (6)
- ○ Very Much 7 (7)

Q25 How well did you adjust to the video game experience?
- ○ Not at all 1 (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (5)
- ○ 6 (6)
- ○ Very Well 7 (7)

Q26 While playing the video game, I felt I was in the world of the video game.
- ○ Not at all 1 (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (5)
- ○ 6 (6)
- ○ Very Much 7 (7)

Q27 While playing the video game, I NEVER forgot that I was in the middle of a study.
- ○ Not at all 1 (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (5)
- ○ 6 (6)
- ○ Very Much 7 (7)

Q29 When I stopped playing the video game, I felt like I came back to the "real world" after an experience.
- ○ Not at all 1 (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (5)
- ○ 6 (6)
- ○ Very Much 7 (7)

Q30 While playing the video game, I was unaware of the noises in the room in which I was sitting.
- ❍ Not at all 1 (1)
- ❍ 2 (2)
- ❍ 3 (3)
- ❍ 4 (4)
- ❍ 5 (5)
- ❍ 6 (6)
- ❍ Very Much 7 (7)

Q32 I was not at all involved in the video game while I was playing it.
- ❍ Not at all 1 (1)
- ❍ 2 (2)
- ❍ 3 (3)
- ❍ 4 (4)
- ❍ 5 (5)
- ❍ 6 (6)
- ❍ Very Much 7 (7)

Q36 Thinking about the video game experience you just had please answer the following questions.
Q14 I felt like my character was a real person.
- ❍ Not at all 1 (1)
- ❍ 2 (2)
- ❍ 3 (3)
- ❍ 4 (4)
- ❍ 5 (5)
- ❍ 6 (6)
- ❍ Very Much 7 (7)

Q19 During my game play, I felt like I really was my character.
- ❍ Not at all 1 (1)
- ❍ 2 (2)
- ❍ 3 (3)
- ❍ 4 (4)
- ❍ 5 (5)
- ❍ 6 (6)
- ❍ Very Much 7 (7)

Q20 I felt upset when my character did not do well in the game (e.g., was injured, killed, got lost).
- ○ Not at all 1 (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (5)
- ○ 6 (6)
- ○ Very Much 7 (7)

Q21 I felt happy when my character did well in the game.
- ○ Not at all 1 (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (5)
- ○ 6 (6)
- ○ Very Much 7 (7)

Q22 I could relate to my character.
- ○ Not at all 1 (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (5)
- ○ 6 (6)
- ○ Very Well 7 (7)

Q45 The next set of questions will ask you to describe yourself using a list of personality characteristics. Please indicate, on a scale of 1 (never or almost never) to 7 (always or almost always true), how true of you each of the following characteristics is.

Q44 For the following characteristics please indicate, how true of you each of these characteristics is, on a scale of 1 (never or almost never) to 7 (always or almost always true).

	Never or almost never true 1 (1)	Usually not true 2 (2)	Sometimes but infrequently true 3 (3)	Occasionally true 4 (4)	Often true 5 (5)	Usually true 6 (6)	Always or almost always true 7 (7)
Defend my own beliefs (1)	○	○	○	○	○	○	○
Affectionate (2)	○	○	○	○	○	○	○
Conscientious (3)	○	○	○	○	○	○	○
Independent (4)	○	○	○	○	○	○	○
Sympathetic (5)	○	○	○	○	○	○	○
Moody (6)	○	○	○	○	○	○	○
Assertive (7)	○	○	○	○	○	○	○
Sensitive to the needs of others (8)	○	○	○	○	○	○	○
Reliable (9)	○	○	○	○	○	○	○
Strong Personality (10)	○	○	○	○	○	○	○

Q46 For the following characteristics please indicate, how true of you each of these characteristics is, on a scale of 1 (never or almost never) to 7 (always or almost always true).

	Never or almost never true 1 (1)	Usually not true 2 (2)	Sometimes but infrequently true 3 (3)	Occasionally true 4 (4)	Often true 5 (5)	Usually true 6 (6)	Always or almost always true 7 (7)
Understanding (1)	❍	❍	❍	❍	❍	❍	❍
Jealous (2)	❍	❍	❍	❍	❍	❍	❍
Forceful (3)	❍	❍	❍	❍	❍	❍	❍
Compassionate (4)	❍	❍	❍	❍	❍	❍	❍
Truthful (5)	❍	❍	❍	❍	❍	❍	❍
Have leadership abilities (6)	❍	❍	❍	❍	❍	❍	❍
Eager to soothe hurt feelings (7)	❍	❍	❍	❍	❍	❍	❍
Secretive (8)	❍	❍	❍	❍	❍	❍	❍
Willing to take risks (9)	❍	❍	❍	❍	❍	❍	❍
Warm (10)	❍	❍	❍	❍	❍	❍	❍

47 For the following characteristics please indicate, how true of you each of these characteristics is, on a scale of 1 (never or almost never) to 7 (always or almost always true).

	Never or almost never true 1 (1)	Usually not true 2 (2)	Sometimes but infrequently true 3 (3)	Occasionally true 4 (4)	Often true 5 (5)	Usually true 6 (6)	Always or almost always true 7 (7)
Adaptable (1)	❍	❍	❍	❍	❍	❍	❍
Dominant (2)	❍	❍	❍	❍	❍	❍	❍
Tender (3)	❍	❍	❍	❍	❍	❍	❍
Conceited (4)	❍	❍	❍	❍	❍	❍	❍
Willing to take a stand (5)	❍	❍	❍	❍	❍	❍	❍
Love children (6)	❍	❍	❍	❍	❍	❍	❍
Tactful (7)	❍	❍	❍	❍	❍	❍	❍
Aggressive (8)	❍	❍	❍	❍	❍	❍	❍
Gentle (9)	❍	❍	❍	❍	❍	❍	❍
Conventional (10)	❍	❍	❍	❍	❍	❍	❍

Q42 The following questions will assess your previous experience with video games.
Q13 Prior to this study have you ever played *Mass Effect 2*?
❍ Yes (1)
❍ No (2)

Q6 In general how skilled are you at playing video games?
❍ Unskilled (1)
❍ Somewhat unskilled (2)
❍ Neither skilled or unskilled (3)
❍ Somewhat skilled (4)
❍ Skilled (5)

Q37 How skilled are you at playing video games on:

	Unskilled (1)	Somewhat unskilled (2)	Neither skilled or unskilled (3)	Somewhat skilled (4)	Skilled (5)
Xbox 360 (1)	O	O	O	O	O
PlayStation 3 (2)	O	O	O	O	O
Nintendo Wii (3)	O	O	O	O	O
PC (4)	O	O	O	O	O

Q7 How many hours do you spend playing video games per week?
O 0-2 hours (1)
O 3-4 hours (2)
O 5-6 hours (3)
O 7-8 hours (4)
O 9 or more hours (5)

Q43 The following questions will ask you to provide some basic information about yourself.
Q2 What is your sex?
O Male (1)
O Female (2)

Q3 What is your race/ethnicity?
O White/Caucasian (1)
O African American (2)
O Asian (3)
O Hispanic (4)
O Other (please specify) (5) _____

Q4 What is your age?

Appendix B

IRB APPROVAL LETTER

UNIVERSITY OF DELAWARE RESEARCH OFFICE

210 Hullihen Hall
University of Delaware
Newark, Delaware 19716-1551
Ph: 302/831-2136
Fax: 302/831-2828

DATE: September 10, 2014

TO: Duncan Prettyman
FROM: University of Delaware IRB

STUDY TITLE: [652651-1] Video Game Enjoyment Study

SUBMISSION TYPE: New Project

ACTION: APPROVED
APPROVAL DATE: September 10, 2014
EXPIRATION DATE: September 9, 2015
REVIEW TYPE: Expedited Review

REVIEW CATEGORY: Expedited review category # *(7)*

Thank you for your submission of New Project materials for this research study. The University of Delaware IRB has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a study design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received Expedited Review based on the applicable federal regulation.

Please remember that informed consent is a process beginning with a description of the study and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the study via a dialogue between the researcher and research participant. Federal regulations require each participant receive a copy of the signed consent document.

Please note that any revision to previously approved materials must be approved by this office prior to initiation. Please use the appropriate revision forms for this procedure.

All SERIOUS and UNEXPECTED adverse events must be reported to this office. Please use the appropriate adverse event forms for this procedure. All sponsor reporting requirements should also be followed.

Please report all NON-COMPLIANCE issues or COMPLAINTS regarding this study to this office.

Please note that all research records must be retained for a minimum of three years.

Based on the risks, this project requires Continuing Review by this office on an annual basis. Please use the appropriate renewal forms for this procedure.

- 1 -   Generated on IRBNet

If you have any questions, please contact Nicole Farnese-McFarlane at (302) 831-1119 or nicolefm@udel.edu. Please include your study title and reference number in all correspondence with this office.