

A STUDY OF THE SOCIAL AND COGNITIVE EFFECTS OF
SEXUAL OBJECTIFICATION IN VIDEO GAMES ON MALE GAMERS

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This paper is dedicated to the many amazing humans who have inspired me to ask the hard questions and gain the skills to answer them myself, as well as the inspiring women who have empowered me to do so. In specific, I dedicate this paper to my grandmother, Dorothy "Dot" Schillinger, for teaching me through example that the greatest life to live is one in service of others and in betterment of the world.

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ABSTRACT

Sexual objectification is a popular media tool to capture the attention of viewers and consumers, from print advertisements to television. As media technology has developed, so has the presentation of sexual objectification. Video gaming offers a more immersive experience, allowing players to transport themselves into environments. Research on this element of gaming is lacking depth and breadth. This project utilized experimental design to test whether frequent gamers who played as a sexually objectified character had different cognitive processes during gaming or attitudes towards women after gaming than those who played as a non-objectified character. Using psychophysiological tools and a post-test questionnaire, this study attempted to index attention, arousal, and potentially dangerous attitudes towards women; however, the manipulation was not disguised enough and the social effects were not validly indexed. This study found that individuals exposed to a sexually objectified female character had stronger orienting responses, indicating motivationally relevant attention, and no difference in arousal level than those exposed to the control, a fully clothed female character.

Chapter 1: Introduction

Women's bodies have been objects of interest and tools for sale throughout modern history. From historical sources like pin-up models and 1970's flight attendants to modern R&B music videos (Aubrey & Frisby, 2011) and Carl's Jr. advertisements, women's bodies are used capture consumer's attention. The development of new technology has only increased the amount of ways to expose consumers to sexual objectification. One of the newer tools that objectifies women's bodies is modern gaming. Regardless of the medium for gaming – PC, online, console – sexual objectification is prevalent in the gaming industry. It appears in the articles in gaming magazines (Dill & Thill, 2007), on the cover of games (Burgess, Stermer, Burgess, 2007; Children Now 2001), and in the characters with which players choose and interact (Children Now, 2001; Beasley & Standley, 2002).

Previous research shows that sexual objectification in media does not occur in a vacuum. There are effects of sexual objectification, though they may differ based on the gender of the viewer. Women may find sexual objectification leading them to unhealthy body perception and other mental health issues (Frederickson & Roberts, 1997; Stice & Shaw, 1994; Fox, Bailenson, Trice 2013). For men, effects manifest in increased anti-social behaviors and more negative attitudes towards women (Dill, Brown, Collins, 2008; Kalof, 1999; Yao, Mahood, Linz, 2010).

Research into the effects and the gender differences has been limited in scope for the relatively new medium of gaming. Where it does exist, it is limited by design that restricts the external validity of the results or reliance on self-reporting that could be biased as participants consider the social desirability of their responses. There is a gap in research looking at the isolated effects of sexual objectification independent of violence on male gamers, which leads to a question of how does sexual objectification in video game content impact male gamers' processing of the gaming experience and attitudes towards women. This is the question about which this study seeks to inform.

Theoretical Relevance

Scholars have often been interested in the influence of media on the consumer, and sexual objectification is one topic with a history of research behind it. Despite research showing dangerous effects on women (Stice & Shaw, 1994; Frederickson & Roberts, 1997; Fox et al. 2013) and men (Kalof, 1999; Dill, Brown, Collins, 2008; Yao et al. 2010), it is still a popular strategy in advertising and entertainment. Seventy-six percent of women in print advertisements in men's magazines and 56% of women in ads for women's magazines appeared as sexual objects (Stankiewicz & Rosselli, 2008). More than half of movie previews were found to contain at least one sexual scene, with women much more likely than males to be portrayed as sexual (Oliver & Kalyanaraman, 2005).

Though gaming may be relatively new to the media sphere, it is not missing from media effects research. Studies have been conducted to investigate the effects of many factors of gaming, from the style of games to the content

within. Effects of sexual objectification has been found in music videos, print advertisements, and other mediums, but are often confounded by violence in gaming. This research will isolate sexual objectification by limiting players to nonviolent portions of the game where the character is exploring their safe environment.

However, effects of sexual objectification can elude traditional research methods. As negative attitudes towards women become socially stigmatized, research may be limited by social response bias as subjects silence themselves or adjust their answers to match that which they predict are socially acceptable. Psychophysiology can provide a solution to this confound. Through the use of biological measures, researchers can look at the cognitive process during media consumption. These tools also allow researchers to look at unconscious responses, which cannot be controlled or limited by individuals influenced by societal pressures.

Practical Importance

Research on the effects of sexual objectification on male gamers could also have important practical implications. The negative effects of the prevalent sexual objectification of women in video games has been spotlighted by sources like Anita Sarkeesian's *Feminist Frequency* and *Tropes vs. Women in Video Games*, as well as questioned by the media. These sources claim the detrimental social effects of sexual objectification in gaming while advocating for gaming to acknowledge and minimize this style of presentation of women.

However, a lack of causal evidence limits the pressure put on the industry to change its practices. While some previous research expresses concerns about the dangerous effects of sexual objectification on women through gaming (Fox & Bailenson, 2009; Fox et al., 2013), the results are confounded by extraneous variables like different styles of games and the presence of violence. The experimental design makes it unclear whether it is the sexual objectification or some extraneous variable that causes the existing differences.

If sexual objectification in gaming can be isolated and investigated, the results could have major implications on the gaming industry. If no significant effects were discovered, the industry and the people who love the games inundated with sexual objectification would have a defense in the attacks against them by the media and public.

However, if significant negative effects can be found, the industry has a lot to answer for. If the outfits of gamers' characters or the non-player characters they interact with during the game the developers design lead to antisocial behavior towards women, the industry will have an ethical dilemma on its hands. Research has shown exposing women to sexually objectified female video game characters has negative effects on their opinions of society and their bodies (Fox et al., 2013), yet the gaming industry persists in these portrayals. If negative effects were found for male gamers, such as increased acceptance of rape myths prevalent in society or more tolerance for sexual harassment, it would be challenging to defend the need for characters in bikinis or mini-skirts. These findings could also open the door to discussion about the state of society,

centered on the sexual aspects of a woman's body while discounting her autonomy and damaging her self-worth.

Methodology

To uncover the effects of sexual objectification in gaming, this study was conducted with a sample of male gamers. Conceptually, sexual objectification occurs when women are portrayed as sexual objects through depiction of clothes, behavior, or other identifiable characteristics. For this study, it was operationalized as female characters in needlessly revealing clothing that puts the emphasis on her body and less on other assets of the character. The sample was comprised of young adult heterosexual men from the local community who report playing video games at least twice a week. Using Skyrim as the medium, participants were randomly assigned to play as either a sexually objectified female character (excessively revealing clothing/armor) or a full clothed and armored male character. The gameplay was controlled as much as possible to minimize extraneous factors like violence. During gameplay, psychophysiological measures were used to record cognitive and emotional processes engaged during gameplay (attention and arousal). Self-reported attitudes toward women were measured after participants played the game using items from the Likelihood to Sexually Harass instrument (Pryor, 1987) and the Rape Myth Acceptance scale (Burt, 1980). Differences between the two conditions were analyzed to investigate the cognitive motivational processes engaged by sexual objectification of a game avatar and the effects of playing as a sexually objectified character.

Chapter 2: Literature Review

Media portrays women as sexual objects regularly (Brown, 2009), removing the agency of the model, actress, or character and defining her by sexual traits. This portrayal of women in media can have negative consequences on the consumers of media, men and women alike. Viewers and consumers of this portrayal of women can have more negative views of women, represented by acceptance of rape myths, hostile sexism against women and even higher likelihood to personally sexually harass.

Objectification takes an individual with agency and complexity and simplifies them into an object to desire or possess. It “functions to socialize girls and women to, at some level, treat themselves as objects to be looked at and evaluated” (Fredrickson & Roberts, 1997, p. 176). Sexual objectification describes a specific occurrence, when women are treated “as bodies that exist for the use and pleasure of others” (Frederickson & Roberts, 1997, p. 175). Whether in movies, magazines, music, or countless other formats, women are portrayed in stereotypical gender roles, specifically sexually objectifying ones, more often than men (Brown, 2009). In print format, women are overwhelmingly presented as sexual objects in advertisements. Stankiewicz and Rosselli (2008) conducted an extensive content analysis of almost 2,000 advertisements in 58 popular U.S. magazines, coding whether women were presented as sexual objects and/or victims. Across all magazines, they found that every other depiction of women portrayed in advertisements were sexually objectifying. In men’s magazines, 76%

of women who appeared in advertisements were coded as sexual objects. Women's magazines portrayed women as sexual objects in 56% of advertisements. Advertisements in magazines targeting young adolescent girls contained sexually objectifying content in 64% of advertisements. Media grows with the development of new technology, and sexual objectification grows with it. Technological advances have brought about more interactive mediums like video games, which become a major market forecasted to reach \$111 billion by 2015 (Gartner.com, 2013). This new medium brings new ways to integrate sexual objectification into the lives and minds of media consumers.

Sexual Objectification in Gaming

Sexual objectification is an integral part of the gaming world and merits exploration of its effects. Violence is a common factor in video games, and has a wealth of research on the effects of the topic. However, sexual objectification is missing that background, which raises concern over how often sexual objectification appears in video games.

Depicting women as sexual objects is prevalent in video games. Though women are the majority gender in America (U.S. Census Bureau, 2011), they are a minority of in the world of gaming characters. Only 2% of arcade games featured women, while men appeared in 60% of the games. Male characters appear as much as four times more frequently than female characters (Children Now, 2001). The disparity only grows when it comes to the player-controlled characters, where male characters dominate females more than five to one. (Children Now, 2001; Beasley & Standley, 2002). From the beginning of the

gaming experience, the gender presentation breaks from reality. Women are shown as a rarity instead of a majority, and the few presentations of women in games will matter more because they are so comparatively rare.

When women appear in video games, they are in bodies and clothes that fail to match reality. Women appear more scantily clad than the males they share the cover with (Miller & Summers, 2007; Burgess, Stermer, Burgess, 2007; Children Now 2001). Burgess et al. (2007) found in their analysis of over 200 video game covers, men were portrayed as exaggeratedly muscular in 26% of the covers analyzed. Women were exaggerated, though the focus on their chest; in 49% of covers, women were portrayed as busty (breasts larger than normal, but not unnatural) or super busty (unnaturally and abnormally large breasts due to size and/or shape). Miller and Summers (2007) conducted a content analysis on video game characters, finding additional support that men are portrayed as more muscular, while females were more attractive and innocent. Women's clothing was also significantly more revealing overall and for their upper and lower bodies than men in the games.

While the exaggerated portrayals of men could be said to be of some relevant skill for the game such as strength, the same cannot be said for female portrayals. Burgess et al. (2007) concluded:

...the frequency of unrealistically sized and shaped breasts was difficult to interpret as anything other than sexist objectification given the irrelevance of breasts to the tasks facing video game characters...The message

clearly seemed to be that large breasts and/or a hyper- sexualized appearance were an essential element for female characters. (p. 427-8)

Even in the shape and proportion of female characters, video games diverge from reality. A content analysis by Martin, Williams, Harrison, and Ratan (2009) found that the female characters depicted in more realistic games significantly differed from the average American proportions, with significantly larger heads and small chests, waists, and hips.

These depiction of women in video games fail to match reality; however, these presentations may be the prototype used to shape a game player's construction of reality as seen with other mediums. Shrum (2002) discussed that perceptions of reality can be influenced by factors of media consumption. Individuals use recent and vivid depictions, ones that are fresh on the mind and easy to recall (Shrum, 2002). For frequent gamers, this may be the gaming depiction of women – rare, unrealistically proportioned, and sexualized. If that concept is on the mind of the video game consumer when they come to make a judgment about reality, it will be the concept they apply.

The objectification on women in video games is not contained to the in-game experience, but also in the culture and discussion surrounding games. Dill and Thill (2007) found that the characters in video game magazines are portrayed along stereotypical norms, showing men as more aggressive while women are depicted as sexual, scantily clad, or a mix of sexual and aggressive. The danger of these magazine portrayals was exemplified in an ensuing survey in the same article that found that the stereotypes presented were upheld by

youth, even those who did not normally play video games (Dill & Thill, 2007). The portrayals have a carryover effect on perceptions outside of the gaming experience. Ivory (2009) found a similar trend in gaming reviews. Male characters dominated gaming reviews, being more likely to be mentioned than females. When females were mentioned, the focus was on their body and sexual behavior. Women's attractiveness and sexuality was mentioned in proportionally more reviews than for male characters (Ivory, 2006).

With so much sexual objectification present in video games and gaming culture, it is unsurprising that it has an impact on those who are exposed to it. Dill, Brown, and Collins (2008) exposed participants to one of two sets of images: U.S. Senators and congress people or video game characters in sex-typed roles like macho males and sexually objectified females. They found that males who were exposed to the sex-typed manipulation were significantly more tolerant of sexual harassment than any other group. Dill et al. (2008) also found that long-term exposure to sex-typed game content was significantly correlated with higher acceptance of sexual harassment and less progressive views of rape.

Fox and Bailenson (2009) conducted an experiment on character clothing and behavior in an immersive gaming environment. Characters were all female either sexually or conservatively dressed and had either a responsive behavior operationalized as a high gaze or a nonresponsive operationalized as a low gaze. Outfit and behavior were said to be stereotypical for the sexually dressed responsive characters ("vamps") or conservatively dressed with a low gaze ("virgins"), and incongruent for sexually dressed with a low gaze or

conservatively dressed with a high gaze. Male and female participants were immersed in a virtual world where they were exposed to one of the four conditions of characters. Exposure to “vamps” or “virgins” yielded higher acceptance of rape myths than characters whose clothing did not match their attitudes. Participants exposed to “vamps” with responsive behavior and sexual outfits also showed some support for hostile sexism, reporting significantly higher hostile sexism than responsive characters conservatively dressed. Participants may have felt threatened by the dominant female and been “compelled to “punish” this bad woman or put her in her place by expressing acceptance of rape myths” (Fox & Bailenson, 2009, p. 155).

Fox and Tang (2013) found similar results in their survey of gamers looking into predictor of sexist beliefs about video games and the women who play them. They found the social dominance orientation was a significant predictor of sexist beliefs towards women in networked gaming environments. Two traits of masculinity, the strict adherence to heterosexual norms and endorsement of masculine norms, were also significant predictors of sexist behavior. They hypothesize that it may be the sexist presentation of many games, in which women are powerless and men are saviors, that attracts these male gamers and reinforces the masculine culture surrounding gaming which silences women and other minorities.

Yao et al. (2010) explored the priming effects of female objectification of male gamers. Male participants were assigned to one of three video games: one with interaction with an objectified female and sexually explicit content (Leisure

Suit Larry), one with non-sexual social interaction (The Sims for the PlayStation2), or a non-sexual and non-social game (PacMan II). Gamers who played the game with sexually explicit content were primed by these interactions to respond faster to sexual and sexually objectifying words about women. With only 25 minutes of gameplay, those who played Leisure Suit Larry reported a significantly higher likelihood to sexually harass than those who played the control games.

Behm-Morawitz and Mastro (2009) improved upon research on video games by basing their experiment on a single game, choosing the same character at different points in the game when she is either heavily clothed or sexually objectified. The study measured differences in attitudes towards women, among other measures, between different conditions of the game. Using Tomb Raider's main character Lara Croft, 328 participants of both genders were assigned at random to play as Lara Croft at period of the game when she was either highly sexualized, dressed with a lot of revealing skin, or not sexualized, full clothed with less emphasis on her figure. A control condition did not play Tomb Raider at all. Male and female participants who played as the sexualized character reported less favorable attitudes towards women's cognitive capabilities, and women in the sexualized condition were more likely to agree with statements supporting the women are less physically capable than men (Behm-Morawitz & Mastro, 2009). The sexualization of the character did not have a significant impact on male gamer's attitudes towards women, which Behm-Morawitz and Mastro (2009) suggested could be due to the counter-stereotypical

presentation of a female character. Where most video games portray women as rare, weak, and sexualized (Children Now, 2001; Beasley & Standley, 2002; Burgess et al., 2007), Lara Croft is an empowered female heroine with more dimensions than just a sexual object.

Overall, the shared trend for all the studies was that sexual objectification in video games is not without an impact. The sexually objectified portrayals in video games carries over to reality, resulting in a focus on the sexual nature of female characters (regardless to its relevance to the games) and increase in misogynistic sexism indicated by higher hostile sexism scores, increased likelihood to sexually harass, and increased cyber-harassment towards women.

Filling a Research Gap

Much of the research into the effects of video games is limited by the research design. Yao et al. (2010) introduced numerous extraneous variables by using different games with different styles and tasks that could have driven the significant differences found. Each game has a different design style of the character and surroundings, a different end task from not being killed by ghosts to sleeping with as many women as possible, even different background music. Though modifications were made to ensure that Leisure Suit Larry was similar to the control game of the Sims, it is still a separate gaming environment with a different goal for the gamer that could add focus and fixation on sexual objectification. The effects uncovered that individuals who played the sexually objectifying game reported a higher likelihood to sexually harass could be explained or lessened if all the extraneous variables were eliminated.

Some research uses novel gaming methods, such as immersive environments found in Fox and Bailenson (2009) and Fox and Tang (2013), which limits the applicability of the results to assumption about the typical gaming experience. While current games are increasingly more realistic which could allow for greater transportation into the gaming narrative for video game players, there is the limitation of not physically feeling present in the research. However, Fox, Bailenson, and Tang uses technology that introduces the gamer into a first person immersed role in which their body is the mode of transportation into the game instead of a simple controller. As gaming becomes more immersive, involving the physical and mental involvement of the gamer, their research will represent the common situation. Much gaming, however, still uses a traditional controller to transport the gamer into the video game. Much of the research depends on interacting with the objectified female character (Dill et al., 2008; Fox & Bailenson, 2009; Fox et al., 2013; Fox & Tang, 2013; Yao et al., 2010), which could limit the exposure time to the experimental variable. A non-player character may have limited interaction with the gamer, interaction that is conditional at being in certain places at certain times. Since each gamer would play to game in a different way, even if it is just faster or slower, this could change when the exposure to sexual objectification occurs, and possibly limit exposure.

Dill et al. (2008) found that exposure to violence in video games had an impact on attitudes towards women. This confound introduces concern – video games known for their sexual objectification, like the Grand Theft Auto (GTA) franchise, also include violence around and against the women being objectified.

The results from Dill et al. (2008) would confound results from studies using games like GTA – whether any significant differences were caused by the presence of sexual objectification, violence, or an interaction of the two would be difficult to separate. This research seeks to eliminate confounds by using the same game on a typical gaming system with no violence component.

Current research also depends on the participant's cognitive awareness to measure everything before or after the active gaming process. Measuring continuous response during gaming is difficult since the activity is highly involved; asking a participant to report their level of attention or arousal continuously during a game could distract from the overall effects. Psychophysiology is a solution to this limitation. Psychophysiological measures assume that the mind is embodied, thus the processes of the mind have an impact of the functioning of the body. Changes in measurable body signals can allow insight into the ongoing mental processes (Potter & Bolls, 2009). Using psychophysiological measures allows participants to focus unequivocally on the gaming at hand while the psychophysiological equipment collects data during the entire experience. Effects during the actual process of gaming can be discovered. Psychophysiological research has been validly used to measure the cognitive effort and arousal in gaming studies (Lang, Potter, & Bolls, 2009).

Psychophysiology can also serve as a tool to allow insight into responses that are societally unpopular. Admitting to behaviors like overt sexism can be frowned upon in society, so individuals may choose to regulate their responses, knowing that someone is going to see their answers. However, few individuals

would be able to regulate their body functions, especially while actively engaged in another task. This allows psychophysiological measures collected during the gaming experience to index actual responses without any self-monitoring interfering with the validity of results.

For this study, the instruments and methodology eliminate some of these limitations in order to isolate and accurately index the effects of sexual objectification.

Research Question 1: How does sexual objectification in video game content impact the processing of the gaming experience and influence gamers' attitudes towards women?

Limited Capacity Model of Motivated Mediated Message Processing

The Limited Capacity Model of Motivated Mediated Message Processing (LC4MP) provides a theoretical framework for looking into the cognitive effects of factors of media consumption. This model, developed and articulated by Lang (2009), theorizes that humans have limited cognitive resources at any time to perform cognitive functions like memory encoding and recall. Media occurs continuously and varying, and the communication between the medium and the consumers is continuous as well. Human activity occurs over time, and as it is a reaction to the environment around them, the activity can be measured and used to look at the real time processing of media exposure. Sexual objectification is a media factor that may escape traditional research methods. Using the LC4MP theory and the tools derived from it allow researchers to observe media consumption with sexual objectification present in real time to avoid self-

ensorship in post-viewing questionnaires. Sexual objectification also represents a distinct media factor that would stand out in a media presentation, impacting the cognitive resources and allowing effects to be seen and measured.

The appetitive (approach) and aversive (defense) systems are two motivational systems that have evolved throughout time to protect humans from harm and promote survival. Lang (2009) posits that the motivational and cognitive systems are interconnected and influencing each other, which allows the cognitive efforts hidden in the black box of the brain to impact the body in ways that can be measured. The appetitive system is activated by positive stimuli, while the aversive system is activated by negative stimuli. Resource allocation varies as the systems are activated based on the stimuli. The level of appetitive stimuli activation corresponds to the amount of resources dedicated to encoding and storing it. However, when the aversive system is activated, relatively more resources are dedicated at first, theoretically to better understand and identify the potential dangers in the situation, before resources allocated to encoding drop off and are applied to problem solving efforts.

The toolbox to measure the cognitive efforts is derived from measurable biological signals that are connected to these cognitive efforts and evolutionary motivational systems. The encoding process of attention can be observed from heart rate information. It is seen in 5- or 6- second cardiac orienting response, which occurs when the heart rate slows as the brain dedicated more resources to the cognitive efforts of encoding, then increases as the brain dedicates resources to other processes like retrieval to understand the image or media the individual

has been exposed to, before decreasing again as they return their attention to the media (Lang, 2009). This is the brains “What is This?” response, in which it encodes the image, retrieves comparisons to comprehend what it is being exposed to, then returns attention to the game. A cardiac orienting response is an indicator of motivationally relevant attention (Lang, 2009). Arousal, operationally indicating how exciting or calm the media experience was, can be seen in the skin conductance measured through eccrine sweat glands, which are connected to motivation systems and emotional responses, such as the palm of the hand or the soles of the feet (Potter & Bolls, 2012). Exposure to arousing material stimulates the sympathetic nervous system, which releases “emotional sweat” (Potter & Bolls, 2012) in these sweat glands connected to emotional experiences as part of the fight or flight response.

Attention. Attention to media is driven by the motivational system activation, which can be linked to either inborn and shared motivations (like food and sex) or individual and cultural connections (like music and colors associated with cultural norms) (Lang, 2009). The inborn appetitive system could be activated when an individual is presented with a potential mate (Lang, 2009), such as when a heterosexual media consumer is exposed to a sexually objectified female. The female is a potential mate with the emphasis placed on her sexual allure, which could increase attention paid to this character. During gameplay, this could be indicated by phasic orienting responses when the participant is first exposed to the sexual character, or when camera angles or character movements results in perspective changes that emphasize the sexual

presentation of the character.

Hypothesis 1: Participants playing as a sexually objectified female character compared to a non-objectified female character will exhibit stronger cardiac orienting responses (a) upon first presentation of the character and (b) during perspective changes.

Arousal. Gaming represents a more active media experience than other forms of media, both in terms of selection and exposure. Instead of being exposed to gaming while trying to consume other media, like television or newspaper advertisements, the gamer selects to expose themselves to the game. The motivations for playing video games may vary from selective exposure and escapism (Vorderer & Ritterfeld, 2009) to the novelty of interactivity compared to traditional media (Vorderer, 2000), but it stands that players are motivated by the pleasure they receive from gaming.

The sexual objectification adds an additional component of arousal to the game play experience. As with attention, exposure to sexually objectified female characters should activate the appetitive system with the presentation of a potential mate for a heterosexual male. This would be indicated by increased arousal for duration of playing as a sexually objectified female character.

Hypothesis 2: Participants playing as the sexually objectified female character compared to the non-objectified male character will exhibit greater arousal during gameplay.

Priming

This study is also using priming theory as a basis for examining the social effects of sexual objectification in gaming. Priming “refers to the effect of the content in the media on people’s later behavior, thoughts, or judgment” (Roskos-Ewoldsen & Roskos-Ewoldsen, 2009). Within this theory, memory is conceived as a “collection of networks,” (Berkowitz, 1984), which are comprised of the cognitive elements or “nodes,” like thoughts or feelings, that are connected via associative pathways. This is similar to the storage process in the LC4MP discussed by Lang (2009). Information is experienced, encoded, and stored along associated networks, which allows new information to be linked with other incoming information, as well as previous information along the associative pathways.

A priming effect is found when an element brought into awareness “radiates out from this particular node along the associative pathways to other nodes” (Berkowitz, 1984). For some time after a thought or concept has been brought to the front of the mind, that element and those connected to it through the associative pathways are more likely to come to mind again. It is not due to any extra effort on the recipient’s end to stimulate these connections – the actions of the memory take place passively and involuntarily (Berkowitz, 1984).

Gaming represents a more involved process than typical media consumption. Instead of being a passive recipient of the message, gamers are active in their consumption, interacting with the elements of the media and sometimes embodying them as they play as characters. When playing as a sexually objectified character, not only are players repeatedly and consistently

exposed to the image of sexual objectification, but the concept is also tied into their character and their interactions. The associated pathways get larger as sexual objectification connects to more and more of the elements in the gaming experience.

Previous research has discovered these priming effects of video game representation. Players that interacted with a sexualized female character who had a high, dominant gaze also rated higher rape myth acceptance and (Fox and Bailenson, 2009), perhaps due to primed thoughts connecting this behavior to a threat to male sexual dominance. Dill et al. (2008) found that even without the involved process of playing the video game, mere exposure to images of sexualized video game characters led to an increased tolerance of sexual harassment by male participants. They theorized that seeing those images may have primed thoughts related to the “male-dominated socio-culture structure” (Dill et al., 2008, p. 1407). Masculine norms of heterosexual self-representation and power over woman predicted self-reported sexist behavior in gaming by Fox and Tang (2013). The content of the games, which depicts women as damsels in distress to be saved, may prime thoughts of women as weak or less than the males who save them. For this experiment, the portrayal of the female character as sexual object may prime thoughts of women as objects for others’ use and pleasure, which could identified in scales which measure attitudes towards women.

Hypothesis 3: Participants who play as a sexually objectified female character during the game compared to the non-objectified female character will express a higher likelihood to sexually harass.

Hypothesis 4: Participants who play as a sexually objectified female character during the game compared to the non-objectified female character will express more rape myth acceptance.

It may be that the psychophysiological processes influences or illuminates the participant's self-response. If an experimental element leads to a participant paying more attention as indexed through heart rate, that element may be in the forefront of the mind and easier to recall it or its associated elements. To the effect, it is important to ask:

Research Question 2: To what extent do participants' psychophysiological responses during gameplay correlate with their attitudes towards women?

Chapter 3: Methodology

The methodology for this study sought to isolate the effects on male gamers of playing as sexually objectified female character. Participants played a non-violent section of the PC game Skyrim as either a sexually objectified female or a non-objectified female character. During gameplay, psychophysiological measures were used to capture the cognitive and emotional processes. After the game, questionnaires were used to measure potential social effects.

Participants

This study recruited 70 male participants from the Midwestern town of Columbia, Missouri and the surrounding areas. These participants were between the ages of 18 and 21, selected due to the importance of emerging adulthood as discussed by Arnett (2000). In this article, Arnett described the emerging adulthood as a time when individuals are early enough in their life to have many opportunities and directions available to them with the independence to explore and chose their role in the future. This is a period of development separate from adolescence and young adulthood. Arnett (2000) proposed the age range of 19 to 25 for this period of establishment. Since this study was measuring cognitive processes that can change as the brain develops, this age range was limited to minimize any differences in cognitive development. Participants all self-identified as sexually attracted to women. Fifty percent of adult gamers ages 18-29 report gaming at least a few times a week (Lenhart, Jones, & Macgill, 2008), thus only participants who reported playing video games more than two times a week were

recruited. Participants were compensated \$20 for approximately 60 minutes of participation.

Experimental Design and Procedure

This experiment was a between-subjects post-test-only design with two levels of sexual objectification IV: present (a female avatar with sexually objectified modifications and dress) and not present (the standard female avatar). A female researcher ran each session, but was only present in the room at the very beginning and very end of the study and assured participants their answers were completely private. This was to alleviate participant concerns while answering questions on participants' attitudes toward women and minimize response bias.

Participants were recruited via social media tools and snowball sampling and selected after completing an online screener via Qualtrics. One hundred and seventy-five people took the survey, only 70 were selected and scheduled on a first-come, first-serve basis. The study was completed in the Mizzou MediaBrain Lab located on the University of Missouri Campus. Before participants arrived, they were assigned to one of the two experimental conditions by the flip of a coin (heads = non-objectified female character, tails = sexually objectified female character) with the constraint that an equal amount of participants were in each condition.

Participants arrived in the Lab and read over the consent information before beginning the study. Once a participant consented to participating by signing the consent form, they were prepped for placement of the

psychophysiological measures following the guidelines presented in Potter and Bolls (2012). Participants were seated in a comfortable recliner locked in the reclining position approximately three feet away from a 32-inch color TV screen on which they viewed all the stimuli and questionnaires. Once all electrodes were placed, participants were given the keyboard and mouse needed for the study before the primary researcher left the room. The instructions on how to maneuver the character were taped to the keyboard table. A task list for Skyrim gameplay was tucked under the keyboard. All future instructions from the researcher came through an intercom system while the researcher was in separate room.

Participants played two levels of the PC game Bejeweled (lasting between three and five minutes) while the researcher checked the sensor signals to ensure signal quality. This introductory game also served to get participants in a gaming mindset and gave them time to adjust to the physical sensations of the sensors, which could have been distracting when starting game play.

Participants then moved to the experimental portion, when they played in the Skyrim universe for 20 minutes, as measured by the primary researcher. During gameplay, the primary researcher manually inserted event markers during the collection of physiological data when the camera angle in the game changed in a meaningful way (e.g. zoom in or at, move from above to below, black screen to character view when entering a new building, etc.). The primary researcher also monitored the collection of physiological data and made note of any excessive movement artifacts that occurred while the participant engaged in gameplay.

Following the experimental gameplay, participants played three online branded games for at least 60 seconds each. The whole experience took at least five minutes. None of the games had human characters. The games served as a distractor to distance the experimental game from the self-report DV measures.

Once all gameplay was finished, the participant began the post-test measures, which were completed in Qualtrics. Each question was its own Qualtrics item and the presentation of items was randomized via the Qualtrics survey randomization tool.

After a participant completed the questionnaire, the primary researcher debriefed and disconnected them. The participant then filled out the payment receipt, received their compensation in cash, asked any questions they had, and then left.

Independent Variable

Sexual objectification was the variable of interest for this study. It occurs when the focus is put on a female's sexualized appearance or attitude for the use and pleasure of others. In gaming, this occurs when the female characters gamers interact with or choose to play as are scantily clad with exaggerated breasts for the gamers' viewing pleasure. These depictions are superfluous to the point of the game; actually, the minimal clothing and disproportionate body size would be a detriment to the female adventurer.

For this experiment, there were two levels of this independent variable being manipulated. The experimental (present) manipulation was a female character with curvier figure and modified larger breasts and buttocks in the

default underwear. The control (not present) condition was a non-objectified female character with the same modifications, which were covered in a very modest outfit. Images of the objectified and non-objectified characters are in Appendix A.

Stimulus

The game in question that contained manipulation was Skyrim V: Elder Scrolls for the PC on Steam. This game was selected to eliminate as many extraneous variables as possible. The characters were in the Skyrim race Nord, the race indiscernible from humans. The character in each condition was the same in statistics and place in the game. The only difference was the outfit the character was wearing. Sexually objectified characters also did not have any clothing in their inventory. The breast and butt size of the female character was adjusted for gameplay the Skyrim modification Enhanced Character Edits. The character is named Alex, a gender-neutral name.

Participants were instructed to keep the game in a third person perspective, and the instructions on how to make the camera third person were taped to the table participants use in case it changes. Participants were instructed not to change their character appearance in any way.

Each participant started at the same save point, located just inside the front gates of the town of Whiterun, a large city in the game populated by the Nord race. The in-game time was early morning, so there was plenty of light to view the character and the surroundings, and non-player characters have opened homes and stores in explore. The inventory of the character was nearly

empty, containing only the clothes the character wore (none if the sexually-objectified condition), 15 lock picks and the Helgen Keep Key that cannot be dropped, sold or used in Whiterun.

The gameplay was for the most part not violent. Characters started with no weapons in the inventory to use, which limited the likelihood of being involved in a violent situation. Participants were instructed to avoid violence in the game.

They were instructed to explore the city during gameplay and not accept any quests that would drive them to leave. All participants were given a task list (Appendix B) to complete as much of as they could. This task list directed them to talk to other non-player characters and complete small tasks in and close around Whiterun. Participants were given 25 minutes to explore the city and the surrounding areas and interact with the characters populating the game. Images of the environment of the game can be seen in Appendix C.

For most players, the gameplay went unimpeded. If a participant was stuck in one area, lost, or approaching an area where they would be likely involved in a violence (i.e. an underground catacombs where any character that entered was attacked), participants were warned by the researcher over the intercom how to get out of that situations. If a participant changed the view of the character by changing the camera perspective or engaging in 'fight mode' which locked the camera in a zoomed-out perspective from behind, they were given several seconds to change back before the researcher did so from the other room. Two participants attempted to clothe the sexually objectified character in clothes they picked up during the game. They were reminded over the intercom

not to change the appearance of the character, and the clothing was immediately removed before the gaming experience continued.

Dependent Variables

Attention. Attention was conceptualized as the cognitive effort put forth to encode a message into working memory and was measured by recording the participant's heart rate. The pattern of interest was a cardiac orienting response, found when the heart rate first decreases, then increases, then decreases again, usually in a 5- or 6-second pattern. Three electrodes were placed on the forearms in an Einthoven's triangle formation to collect the raw biological signal. Rubbing alcohol was used to clean the skin where the sensors were placed. Heart rate was calculated as the milliseconds between R-spikes in the waveform and converted into beats per minute averaged for each second of gameplay.

The specific component of attention of interest in this study was orienting responses after perspective changes of the game characters. Event markers placed in the data file at the camera change by the researcher who was observing the game in real time indicated these perspective changes. The minimum number of event markers placed for one participant was six marked perspective changes. This number was used for all participants – each participant had the data for the first six valid perspective changes extracted and used to analyze attention. Valid, in this case, refers to the noise in the data files. Some event markers included data that could not be used for analysis due to a high degree of noise present in the recorded ECG signal that most likely was due to movement artifact.

Arousal. Arousal was conceptualized as a psychological state of being excited and was measured using skin conductance, a psychophysiological measure indexing the activity of sweat glands in the hand associated with emotional sweating. Participants cleaned their hands with soap and water before participating to prep the area. Two Ag/AgCl sensors were placed on the palm of the left hand to measure the biological signal. One sensor was placed on the thick part of the palm above the thumb, and the other sensor was placed next to it, towards the pinky.

This did not interfere with game play since all participants used their right hand for the mouse and only needed to use their fingers on the left hand for keyboard controls.

Likelihood to sexually harass scale (LSH). This scale, developed by Pryor (1987), put each participant in a hypothetical situation in which they were in a position to exploit sexual favors from a female subordinate. The original scale is comprised of 10 different situations in which the participant is asked to imagine they are various ages in various industries, but always in a position of power with a female subordinate who could receive a benefit in exchange for sexual favors. The original 10 scenarios have been narrowed down to two scenarios with high reliability (Pryor & DeSouza, 1999 as cited by Pryor & Meyers, 2000; Isbell, Swedish, & Gazan, 2005). This study used the abbreviated LSH comprised of three scenarios, which can be found in Appendix D.

One scenario was selected based on its relevance to the sample population, a situation between two college students. The other two scenarios

were selected by sampling 27 males between the ages of 18 and 21. Participants in the pre-test sampling read each of the scenarios and were asked to rate how much they could imagine themselves in the hypothetical situation. Two scenarios were selected that were most easy for college-aged males to imagine themselves in.

For the LSH, the participant was asked three questions following each hypothetical situation; however, only the second question, which asks if the participant would agree to whatever is being asked for in exchange for sexual favors, was used for calculating the LSH score. Responses are between 1 (Not At All Likely) to 9 (Very Likely). The total LSH score for participants was calculated by adding their response to the second question. Possible scores are between 3 and 27 based on the responses to the second question, with higher scores representing a higher likelihood to sexually harass.

Rape myth acceptance scale (RMAS). Developed by Burt (1980), the RMAS is comprised of 19 myths about rape, such as “*One reason that women falsely report a rape is that they frequently have a need to call attention to themselves*” and “*Many women have an unconscious wish to be raped, and may then unconsciously set up a situation in which they are likely to be attacked.*” This scale was used to measure the degree to which a participant supports false beliefs about rape and rape victims. Answers range from 1 (strongly disagree) to 9 (strongly agree). Higher scores indicate higher acceptance of rape myths. The scale used can be found in Appendix E. A total RMAS score for participants was calculated by adding their responses to each answer.

Lonsway and Fitzgerald (1994) critique the phrasing or inclusion of some questions in the scale. Based on these critiques, a series of questions asking if the individual would believe different groups of people (e.g. a black woman, a young boy, your best friend) was eliminated. Two questions asked what percentage of accusers are lying based on situational factors. These were narrowed down to one item and reworded into the statement, "*Women frequently lie about rape,*" as recommended by Lonsway and Fitzgerald (1994).

Covariates

Some variables that may have been extraneously related to the results were collected in a short questionnaire. The questionnaire used to measure the covariate variables can be found in Appendix F.

Average time gaming. Sexual imagery can be found in many games, and repeated and prolonged exposure to games with these images could desensitize a participant and decrease their reaction to a brief exposure to sexual objectification. To control for this level of previous exposure, participants were asked how many hours they spend playing video games in a typical week. If a range was given as a response, the average of the range was recorded for participants. Participants in this study spent an average of 14.32 hours (sd = 14.011) a week playing video games.

Relationship status. This study recruited exclusively participants sexually interested in women. If participant have a close romantic relationship with a woman, this could impact their perspective on rape myths or their own personal likelihood to sexually harass. Participants chose from several relationship

statuses, and were coded as either in a committed relationship or not (single or in a casual relationship). A majority of participants were not in a relationship (64.3%), with the remaining 35.7% reporting being in a committed relationship.

Daily presence of religion. An individual's religious conviction could have an effect on their responses to the LSH and RMAS, which contained questions pertaining to sexuality and violence that may be impacted by religious ideals that preclude violence or violent sexual conduct. A measure of daily spiritual presence was measured for participants in the game using a selection of questions from the scale of Daily Spiritual Experiences (Underwood, 1999). These questions gathered information on the daily presence of god or religion in the lives of participants. This daily involvement of religion in the lives of participants could have a stronger impact on their behavior towards women than exposure to sexual objectification. The questions were entered into a principal component analysis. Five of the six statements loaded on one component, which was used to create a measure of daily religiousness for this study. Cronbach's α was 0.92.

Chapter 4: Results

Research Question 1 sought to uncover any effects of exposure to sexual objectifying content on a gamer's cognitive processing and post-test attitudes toward women. This question was tested on the cognitive processes of attention and arousal and attitudes towards women represented by a likelihood to sexually harass and acceptance of common rape myths.

Results obtained from the self-report measures of social effects, LSH and RMAS, may not be valid and should be discounted. It became obvious during data collection that several participants were aware of the experiment manipulation. If they indicated an awareness of the manipulation, they were not eliminated due to the limited sample size which would have been too small for statistical analysis without. However, the awareness of the manipulation would allow the social response bias to have an impact on the participant's evaluations, leading to potential censorship. For this reason, the data for these measures should be considered invalid and may be disregarded. The analysis of this data is presented strictly for informative purposes, and due to the fundamental tenet of the psychophysiological approach that experiments should contain both psychophysiological data and self-report.

Attention

Attention was indexed using participant's heart rate in beats per minute (bpm). A phasic analysis of orienting responses was used to understand attention during key moments of exposure to the experimental variable.

Hypothesis 1a predicted main effect for condition, with participants exposed to a sexually objectified character exhibiting a stronger orienting response than participants exposed to the control female character upon first exposure at the start of the game. To analyze the data for this hypothesis, a 2 (Condition) x 6 (Time) repeated-measures ANOVA was calculated comparing the change scores in participant's heart rate (bpm) from baseline for participants in the control condition and those exposed to the sexually objectified character. The assumption of sphericity was violated; therefore, Huynh-Felt adjustments were made. A cubic or quadratic trend in the data is recognized as an indicator of cardiac orienting (Potter and Bolls, 2012). Both the cubic ($p = 0.394$) and the quadratic ($p = 0.172$) were not statistically significant. Figure 1 provides a visual representation of this, showing a lack of significant difference between the two conditions.

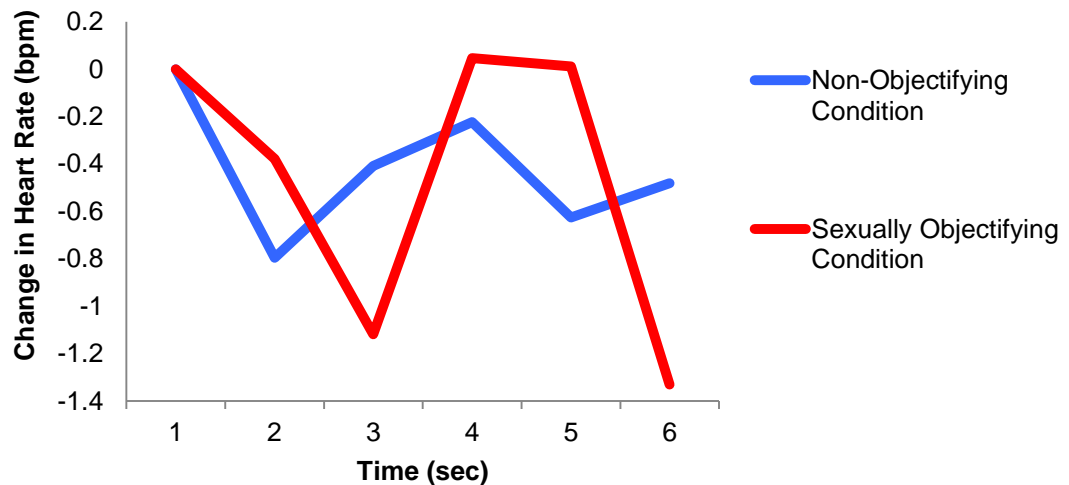


Figure 1. Orienting responses at first valid exposure by condition.

Time 1 in this figure represents the second before the camera opened on the participant. At second 2, the image appeared and the brain dedicated cognitive resources to encoding the image. The following seconds show cognitive efforts allocated to other processes, before returning attention to playing the game.

Hypothesis 1b predicted observable differences in attention over multiple perspective change exposures to the character. The data for this analysis came from six different exposures to the character, including the first exposure used in H1a. A 2 (Condition) x 6 (Time) x 6 (Exposure) repeated-measures ANOVA was calculated comparing the change scores in participant's heart rate (bpm) from baseline for participants in the control condition and those exposed to the sexually objectified character. The assumption of sphericity was violated; therefore, stricter Huynh-Feldt adjustments were used. The cubic trend for the Condition x Time interaction was significant, $F(1,67) = 7.081$, $p < .05$, $\eta_p^2 = 0.096$, which is an indicator for cardiac orienting. This effect size, though small, is meaningful. A large effect size would be concerning, as that would mean drastic or large changes in heart rate from exposure to media. The changes in psychophysiological results are typically miniscule (Potter & Bolls, 2012), and thus a small effect size is still psychologically meaningful. As can be seen in Figure 2, participants in the sexually objectifying condition experienced sustained cardiac orienting indexing their motivationally relevant attention. Participants in the non-objectifying condition have no evidence of sustained cardiac orienting through repeated presentations of the sexual aspects of the character throughout

gameplay. Values in this figure have been calculated as an average for each participant from the six different exposures measured for each point in time. This averaged value was then averaged for all participants in the condition.

Hypothesis 1 was supported.

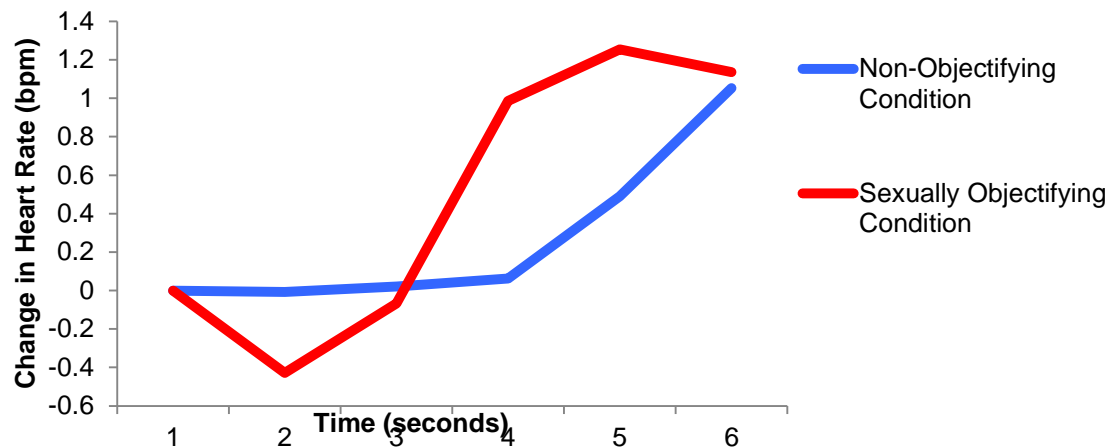


Figure 2. Orienting response by condition over changes in character presentations throughout gameplay. Data points for each time are averaged over the six different valid presentation of the character for each time point for each condition. Values are the

Arousal

Arousal was indexed using participant's skin conductance throughout the game. An equipment error occurred with one participant, so the skin conductance analyses are based on 69 participants. Hypothesis 2 predicted that participants who played as the sexually objectified female character would exhibit greater arousal during the gaming experience than participants in the control condition. To do this, a tonic analysis was used to observe arousal level throughout gameplay.

Arousal data was continuously collected during gameplay, then extracted over 10 second intervals. Ten seconds was chosen because interactions in the game that could represent a psychological change (e.g. interacting with other non-player characters, moving through the environment, completing the tasks on the checklist, breaking into building, etc.) occurred for greater than 15 seconds. By analyzing over 10 second intervals, the data set analyzed was limited to a manageable size without losing any significant experiences. The data was then grouped into quarters to represent time throughout the game, as increased exposure to the game may have impacted arousal level. Each quarter was comprised of 5 minutes, thus had 30 individual data points to represent the 10 second intervals.

To analyze the data for this hypothesis, a 2 (Condition) x 4 (Quarter) x 30 (Time) repeated-measures ANOVA was calculated comparing the arousal level measured through skin conductance for participants in the control condition and those exposed to the sexually objectified character. The assumption of sphericity was violated; therefore, Huynh-Feldt adjustments were made. There was no main effect for condition $F(1,67) = 1.114, p = .295$. No significant Condition x Quarter x Time interaction was found, $F(10.672,715.017) = 1.145, p = 0.324$. The cubic trend for the Condition x Time interaction was approaching significance, but was not significant, $F(1,67) = 2.367, p = 0.129$. Figure 3 shows this interaction. Participants playing in the control condition have observable but insignificantly greater arousal than those playing as a sexually objectified character.

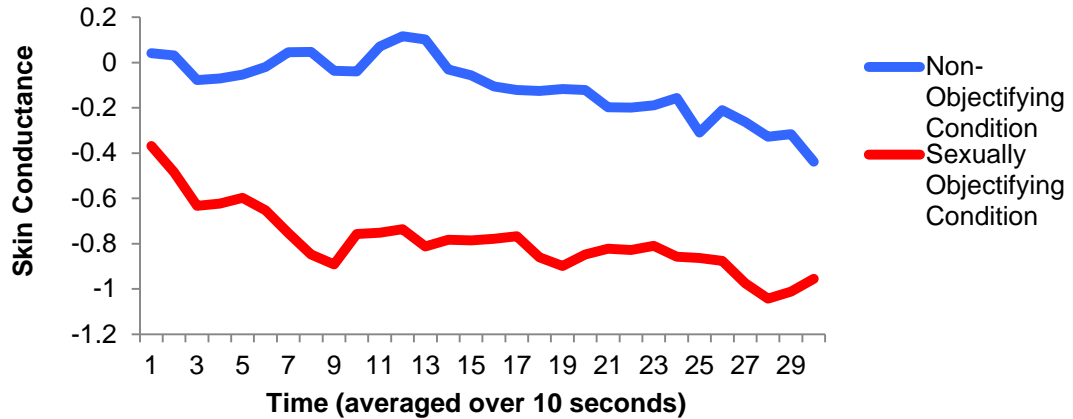


Figure 3. Skin Conductance by condition throughout gameplay.

LSH

Hypothesis 3 predicted that participants would score higher on an abbreviated version of the Likelihood to Sexually Harass scale after being primed by playing a sexually objectified character. An independent-samples t-test was calculated comparing the abbreviated LSH total scores of participants who played as the sexually objectified character compared to the control female character. No significant effect was found, $t(68) = 0.727, p > 0.05$. There was no significant difference on the LSH between the two conditions. Individuals who played as the sexually objectified female character ($m = 6.06, sd = 3.69$) had no difference in likelihood to sexually harass than those who played as the non-objectified female character ($m = 6.8, sd = 4.69$). Hypothesis 3 was not supported.

RMAS

Hypothesis 4 predicted that participants primed with the sexually objectified character would be more accepting of rape myths. All of the scores for this hypothesis can be seen in Table 1. An independent-samples t-test was

calculated comparing the RMAS total scores of participant who played as the sexually objectified character compared to the control female character. No significant effect was found, $t(68) = 1.432, p > .05$.

All RMAS statements were entered into principal component analysis with a rotation method of Varimax with Kaiser normalization. The statements loaded on several factors, the largest of which was used to create a rape myth fantasy factor, a sum of the responses to statements five, six, seven, and 10. Cronbach's α was 0.711.

An independent-samples t-test was calculated comparing the new RMAS Fantasy scores of participant who played as the sexually objectified character compared to the control female character. A significant effect was found, $t(59.946) = 1.991, p = 0.051$. Participants who played as the control objectified character were significantly more accepting of rape fantasy myths ($m = 9.63, sd = 5.26$) than participants primed with the sexually objectified character ($m = 7.49, sd = 3.58$). This difference disappears when controlling for daily religious importance, average time gaming, and relationship status, $F(1,62) = 48.772, p = 0.119$.

Overall, hypothesis 4 was not supported.

Table 1

Rape Myth Acceptance Scale (RMAS) by Condition

Scale	Sexually Objectifying Character	Non-Objectifying Character
	m (sd)	m (sd)
RMAS Total	30.69 (9.01)	34.2 (11.39)
RMAS Fantasy	7.49 (3.58)*	9.63 (5.26)*

*p < 0.10

Impact of Cognitive Processes on Social Measures

Research Question 2 sought information on correlations between the cognitive processes, emotion and arousal, and the social representations, the scores on the LSH and RMAS. Only one significant relationship was found – between the magnitude of orienting responses and the RMAS Fantasy score.

The magnitude for each orienting response was calculated by subtracting the minimum change score from the maximum change score for each exposure. An average score was created for each participant by adding all the magnitude values together and dividing by six. This value was used to indicate the strength of the orienting response. There was no significant difference between the magnitudes of orienting responses by condition, $t(67) = 1.050$, $p > 0.05$.

There was a weak positive correlation between the average magnitude of the orienting response and the RMAS Fantasy variable, $r(69) = .223$, $p < 0.10$. A higher magnitude of orienting response during gameplay was positively related to

an individual's scores on a limited set of rape myth statements that surrounded rape fantasy.

Chapter 5: Discussion

The goal of this study was to investigate the effects of the presence of sexual objectification on the cognitive processing and social opinions of regular video game players. Mediums like print and television advertisements have a wealth of research on the presence and effects of sexual objectification on viewers and consumers. However, gaming, relatively new and constantly developing, lacks the history to understand its impacts on media consumers. Gaming is a much more involved media, allowing users to transport themselves into the gaming world, and this changes the processes and effects of the experience in general and of its specific design components. The research on sexual objectification in traditional media lacks the transportation and involvement of gaming and may be missing important processes and effects because of it. This study sought to add to research on the topic using a different methodology to subvert the social response bias. Sexual objectification carries a large social stigma that can make it challenging to record honest opinions. Psychophysiological measures allowed responses and psychological processes to be measured during the gaming experience. Gaming presents complication in recording continuous responses, since it involves the media consumer's mind and body and limits divisions on their attention. Psychophysiological tools do not have that limitation, since they collect data without any cognitive effort from participants. Measures like orienting and nervous system activation would also be impossible for a participant to self-report. They are not measures that

participants are cognitively aware of, so this methodology allows insight into measures that other research cannot do. It also limits the participant's ability to manipulate their answers in response to social pressures – individuals do not have control of their heartbeat and skin conductance like they have control selecting a number between one and nine. This allows for unbiased data to be collected to understand better the processes and effects of the stigmatized content.

The effect of sexual objectification on attention as indexed through heart rate is a key finding of this study. Participants who played as a sexually objectified character had stronger cardiac orienting responses to major changes in the views on their characters sexualized body parts than participants in the control condition. This orienting response indicates that the content was motivationally relevant, and they were paying more attention at these moments than the control participants. This supports the application of the LC4MP theory presented by Lang (2009) – the inborn appetitive system would be reminded of the potential mate by a camera angle change that brings attention to the sexualized aspects of the character. When the presentation of the sexually objectified character was changed, even in the context of completing tasks in the game, participants spent cognitive resources taking note. Gamers who are sexually attracted to women would recognize those features regardless of the social pressure to not act on them, and that was reflected in the results.

No significant impact of exposure to sexual objectification was found in arousal, but this the lack of hypothesized result is of interest. A popular epithet in

the media that Sex Sells, and the presentation of women as sexual objects arouses and excites consumers of media, gaining their valuable attention and adding value for the media producer. This study found no support for this theory. There was no significant increase in arousal that showed participants gaming as the sexually objectified character were more excited at any point during gameplay than those who played as a conservatively fully clothed women. Though insignificant, there was in fact a trend of non-objectified gaming being more arousing, which may become significant with an increased sample that would reduce the variation in the results.

Despite the fact that the validity of self-report data in this study is questionable there is a result that could be of interest in future research on this topic. One significant difference was found in social effects, but it was contrary to the hypothesis. Participants who were exposed to a non-objectified character showed higher acceptance of myths surrounding rape fantasies than those in the sexually objectified condition. This effect lost significance when controlling for other variables – hours spent gaming a week, daily involvement with religious ideals, relationship status – but still merits discussion.

Theoretically, it is possible that this difference is a result of changes in the priming of neural networks. It is unclear if the contrary result is one of true positive societal change in the neural connections to sexual objectification, or if the network has just been expanded to internalize the societal stigma and need for censorship. In priming theory, once a node is activated, it radiates through a network of associated nodes built through an individual's experiences and

repeated exposures (Berkowitz, 1984). Research on sexual objectification posits that exposure to sexually objectifying content radiates through a network of connections involving women as sexual objects, less than human, or a threat to traditional male dominance (Dill et al., 2008; Fox and Bailenson, 2009). It is possible that the neural network connected to sexually objectified images has expanded to include the idea that women are not the sexual objects presented. An image of like the character in the game could prime thoughts of women as sexual objects, which could prime the campus conversation on respect for women and the participant's changed attitudes towards women. It is also possible that the lack of hypothesized effect could also just be a failing of the post-test presentation. Several participants admitted to knowing the manipulation in the sexually objectified condition. The participants would have neural networks that had expanded to include knowledge of the social against treating women as objects. With the time during the questionnaire to make all those connections, a participant would have had the ability to censor their responses to minimize social biases and present gamers in the best light possible, contrary to previous research and societal impressions.

Practically, these results don't highlight any need for immediate industry action, but they do not absolve gamers of the claims of issues. There is no strong causal evidence of an immediate danger of sexual objectification in gaming. However, the social response bias may have played a strong role in those results. The psychophysiological measures show that gamers found sexually objectifying content motivationally relevant. They were paying more attention to

these representations of women than their fully clothed counterparts, and that attention could be dangerous. Previous research has shown that these images can have negative impacts on attitudes about and towards women, and the greater attention paid to sexually objectified characters could be part of that.

These results give caution to activists using anecdotal evidence to claim a need for massive reform, but it does not give the industry the unilateral support to continue as is. This was a single study using a single style of game to study effects on a single gender that was further limited by the restriction from violence and free exploration. There is a definite need for more research using different methodologies to subvert biases and stigmas, as well as different styles and actions in the games to uncover any impacts of realistic gaming experiences.

Limitations

The most significant limitation is the lack of post-test self-report accuracy. The intention of the research was not well disguised in the post-test questions, which could have left results open to the social response bias. Participants who noted they were aware of the manipulation in the post-test questionnaire were not dropped from the research due to limited resources and sample, but including them invalidates the results of the self-report measures, which may have been subject to self-censorship. The campus atmosphere could have had an impact on these participants awareness of violent issues facing women, since a major focus was on the treatment of women as sexual objects and victims of violence. These participants were also habitual video game players, likely aware of the state of the media on gaming. Gamergate has put the focus on how these

games impact their players outside of the game. With the knowledge that society is watching and judging, these participants could have been manipulating their answers once they knew the purpose of the research to reduce the social stigma.

When looking for social effects of sexual objectification in video games, this research only looked at violent social effects surrounding sexual harassment and assault. There are more benign and subtle effects, such as negative attitudes towards women's autonomy and self-esteem measures, which could have been measured by this research and found significant differences by condition. In only looking at dangerous, dramatic measures, this study limited its findings to the most extreme.

The control variables gathered for this study were well intended, but could be more accurately collected. The hours an individual self-reported gaming in a week was consistently the only significant control variable, but asking an individual to recall an average amount over time is not the most accurate measure of reality. Since this was the only significant covariate, it would be important to measure this as accurately as possible, perhaps by having participants measure their gaming in the week for participation or asking more specific questions on days or games they play. Religion is a complex concept to measure, and only accounting for daily interaction with spirituality may not have fully captured it. It could be possible that a historic experience with religion had a more significant impact on how individuals view and treat others, and this would not have been measured for this study. For these reasons, results were reported without the controls in case the lack of accurate collection skewed the results.

The overall size of the sample limits some of the findings as well. Only 70 males participated in this study, a number large enough to tease out major differences but lacking in capturing the nuances. The use of only one gender also limited the findings and lost the potential gender differences that could occur with sexual objectification. Behm-Morawitz and Mastro (2009) had a more diverse and larger sample and were able to find significant differences by ensuring they did not exclude any portion of the population. Some of the results in this study may have been approaching significance, but failed to reach it due to high standard deviation. A larger sample size could have resolved that concern.

Future Research

To mitigate the issues with self-report and subvert the expansion of the neural networks that have internalized social stigma, the experimental design could be adjusted. One way to do so is to increase the amount of questions in the post-test questionnaire, including other controversial topics and distractor measures. By also using other games as distractors that had a controversial component (e.g. police violence, racial tension, religious undertones, moral ambiguities), the focus on sexual objectification could be dampened. Another methodology to bypass the self-censorship could be using implicit methods to index social effects. A test that relies indexes implicit attitudes by forcing the participant to react quickly or not allowing them long exposure to the image being tested would limit the time a participant could spend considering the question and what would be the most societally advantageous way to answer it. These

methodologies could be used separately or together to result in more valid measures of self-report.

The gaming experience represented in this study is also lacking the external validity of a real gaming experience. Flow is a psychological state “characterized by intense attention focus, pleasurable feelings, and emotional rewards” (Weber, Tamborini, Westcott-Baker, Kantor, 2009, p. 397). Video games like Skyrim are a particularly powerful tool for resulting in flow states because of the balance of challenges and skill presented in the medium (Weber et al., 2009). Because this research limited the actions of characters and artificially modified gamers’ behavior, it prevented participants from reaching the flow state present during non-experimental gaming. Future research should focus on maintaining the experimental control without limiting the actions of participants. One way to do this could be to use eye tracking or video recording to monitor and record the gaming experience, and eliminating the interrupting behaviors like violence during analysis instead of seeking to eliminate them during gameplay. Removing participant restrictions would allow participants to focus solely on the gaming experience and potentially achieve a flow state, instead of the rules of the experiment that limits their transportation into the video game.

Psychophysiology is also an important tool to develop. Gaming requires the full attention of the participant, so collecting continuous response data is challenging if not impossible. The use of psychophysiological tools allows the data to be collected in a passive way for participants, giving them their full

cognitive resources to allocate to the task at hand. While this methodology does limit the external validity of the study – playing a video game covered in sensors doesn't resemble reality – it allows for unique data collection. Ensuring that the sensors do not impede the gaming experience and vice versa is a development to come over time.

This research takes the next step in introducing a methodology less subjects to bias and societal pressure, but is not a perfect execution. With more participants and more implicit methodologies, this research could eliminate the limitations and be a more accurate representation of the true thoughts and behaviors of gamers exposed to sexual objectification. The significant difference in motivationally relevant attention highlights the need to continue research in this field and on this topic. Gamers are paying attention to the content of the game, and it needs to be understood how much of that content is being internalized and carried out into their daily lives and interactions with others.

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Appendix A: Experimental Manipulation

Control condition – Non-objectified female character



Experimental Condition – Sexually objectified female character



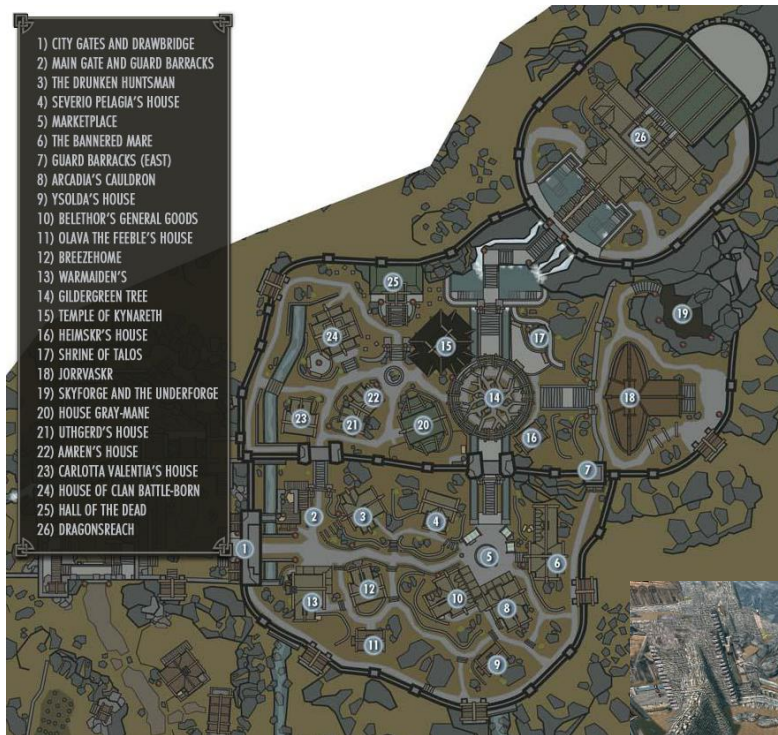
Appendix B: Task List

TASK LIST

*Complete these tasks while exploring the **SKYRIM** game. Complete as many as possible. If you complete them all, explore the game.*

1. Talk to **JARL BALGRUFF the GREATER** in **DRAGONREACH**. Tell him about the dragon in Helgen. Follow him and talk to **FARENGAR**. Accept their quests.
2. Go to **BELETHOR'S GENERAL GOODS** and sell **BELETHOR** your wolf pelts and novice hood.
*Ask him what he has for sale, and then scroll to **ALEX's goods**.*
3. Go talk to **HEIMSKR** (the man preaching in front of the statue in front of **DRAGONREACH**). Ask him about Talos.
4. Find **ADRIANNE AVENICCI** out **WARMAIDEN'S** and ask if she needs any help around the forge. **Forge her an iron dagger** and **craft some leather**.
5. Go back the market circle and talk to **JON BATTLE-BORN** outside of Belethor's General Goods. Ask him where to find work.
6. Go to **JORRVASKR** and find out why **SKJOR** joined the companions.
7. Go to **ARCADIA'S CAULDRON** and ask **ARCADIA** for training in alchemy.
8. Leave Whiterun to explore the farms outside in **SKYRIM**.
9. Harvest cabbage and other crops along the way and at the **PELAGIA** farm. Sell the cabbage back to **SEVERIO PELAGIA**.
10. Go to the **HONINGBREW MEADERY**. Buy something to eat from **SABJORN**.
11. Discover the **BATTLE-BORN FARMS** and harvest their crops. Talk to **ALFID BATTLE-BORN** to sell them back.
12. Return to **WHITERUN** and go to the **HALL OF THE DEAD**. Talk to **ANDURS** about the God of Death. Do not accept his quest.

Appendix C: Whiterun



Appendix D: Likelihood to Sexually Harass Questionnaire

This scale is normally comprised of 10 different scenarios. The following three were used based on pretesting within the sample to see which scenarios they could easily imagine.

Answers will be chosen from 1 (not at all likely) to 5 (very likely). The first two are the scales that will be used. The other scales are the remaining options from the original set of 10.

1. Imagine that you are a college student at a large midwestern university. You are a junior who just transferred from another school on the East coast. One night at a bar you meet an attractive student named Rhonda. Rhonda laments to you that she is failing a course in English poetry. She tells you that she has a paper due next week on the poet Shelley, and fears that she will fail since she has not begun to write it. You remark that you wrote a paper on Shelley at your former school. Your paper was given an A+. She asks you if you will let her use your paper in her course. She wants to just retype it and put her name on it. How likely are you to do the following things in this situation?
 - a. Would you let Rhonda use your paper?
 - b. Would you let Rhonda use your paper in exchange for sexual favors?
 - c. Would you ask Rhonda to come to your apartment to discuss the matter?
2. Imagine that you are a Hollywood film director. You are casting for a minor role in a film you are planning. The role calls for a particularly stunning actress, one with a lot of sex appeal. How likely are you to do the following things in this situation?
 - a. Would you give the role to the actress whom you personally found the sexiest?
 - b. Would you give the role to an actress who agreed to have sex with you?
 - c. Would you ask the actress to whom you were most personally attracted to talk with you about the role over dinner?
3. Imagine that you are a physician. You go over to the hospital one day to make your rounds visiting your patients. In looking over the records of one of your patients, you discover that one of the attending nurses on the previous shift made an error in administering drugs to your patient. She gave the wrong dosage of a drug. You examine the patient and discover that no harm was actually done. He seems fine. However, you realize that the ramifications of the error could have been catastrophic under other circumstances. You pull the files and find out who made the error. It turns

out that a new young nurse names Wendy H. was responsible. You have noticed Wendy in some of your visits to the hospital and have thought of asking her out to dinner. You realize she could lose her job if you report the incident. How likely are you to do each of the following things?

- a. Would you report Wendy to the hospital administration?
- b. Assuming that you fear no reprisal, would you tell Wendy in private that you will not report her if she will have sex with you?
- c. Assuming that you fear no reprisals, would you ask Wendy to join you for dinner to discuss the incident?

Appendix E: Rape Myth Acceptance Scale Questionnaire

Subjects will be asked how much they agree with the below statements from 1 (strongly disagree) to 7 (strongly agree)

1. A woman who goes to the home or apartment of a man on their first date implies that she is willing to have sex.
2. Any female can get raped.
3. One reason that women falsely report a rape is that they frequently have a need to call attention to themselves.
4. Any healthy woman can successfully resist a rapist if she really wants to.
5. When women go around braless or wearing short skirts and tight tops, they are just asking for trouble.
6. In the majority of rapes, the victim is promiscuous or has a bad reputation.
7. If a girl engages in necking or petting and she lets things get out of hand, it is her own fault if her partner forces sex on her.
8. Women who get raped while hitchhiking get what they deserve.
9. A woman who is stuck-up and thinks she is too good to talk to guys on the street deserves to be taught a lesson.
10. Many women have an unconscious wish to be raped, and may then unconsciously set up a situation in which they are likely to be attacked.
11. If a woman gets drunk at a party and has intercourse with a man she's just met there, she should be considered "fair game" to other males at the party who want to have sex with her too, whether she wants to or not.
12. Women frequently lie about rape.

Appendix F: Covariates

Average Time Gaming

1. How many hours a week do you play video games? (Reminder: A week has 168 hours.)

Relationship Status

1. What is your current relationship status?
 - a. Single (not in a relationship)
 - b. Committed relationship (only dating one person)
 - c. Non-committed relationship (casual)
 - d. Cohabiting (living together)
 - e. Married or Partnered

Religiousness

*** item not included in component*

1. I feel God's presence.
 - 1 - Many times a day
 - 2 - Every day
 - 3 - Most days
 - 4 - Some days
 - 5 - Once in a while
 - 6 - Never or almost never
2. I find strength and comfort in my religion.
 - 1 - Many times a day
 - 2 - Every day
 - 3 - Most days
 - 4 - Some days
 - 5 - Once in a while
 - 6 - Never or almost never
3. **** I feel deep inner peace or harmony.
 - 1 - Many times a day
 - 2 - Every day
 - 3 - Most days
 - 4 - Some days
 - 5 - Once in a while
 - 6 - Never or almost never
4. I desire to be closer to or in union with God.
 - 1 - Many times a day
 - 2 - Every day
 - 3 - Most days
 - 4 - Some days
 - 5 - Once in a while

- 6 - Never or almost never
- 5. I feel God's love for me, directly or through others.
 - 1 - Many times a day
 - 2 - Every day
 - 3 - Most days
 - 4 - Some days
 - 5 - Once in a while
 - 6 - Never or almost never
- 6. I am spiritually touched by the beauty of creation.
 - 1 - Many times a day
 - 2 - Every day
 - 3 - Most days
 - 4 - Some days
 - 5 - Once in a while
 - 6 - Never or almost never